ifm electronic

2014

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The company in your vicinity.

State-of-the-art communication.

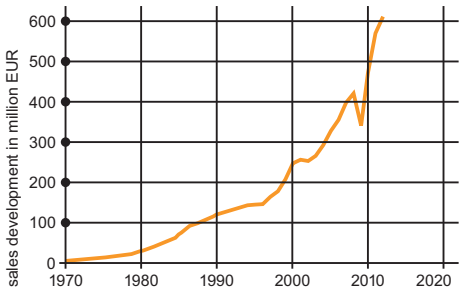
With the right address – www.ifm.com – only a mouse click separates you from the world of automation technology. See the power of our products in interactive representations. Gain an impression with 3-dimensional views of our units. Download CAD drawings for direct integration in your applications. Or order online in ifm's e-shop - fast, convenient and reliable.

We are there for you.

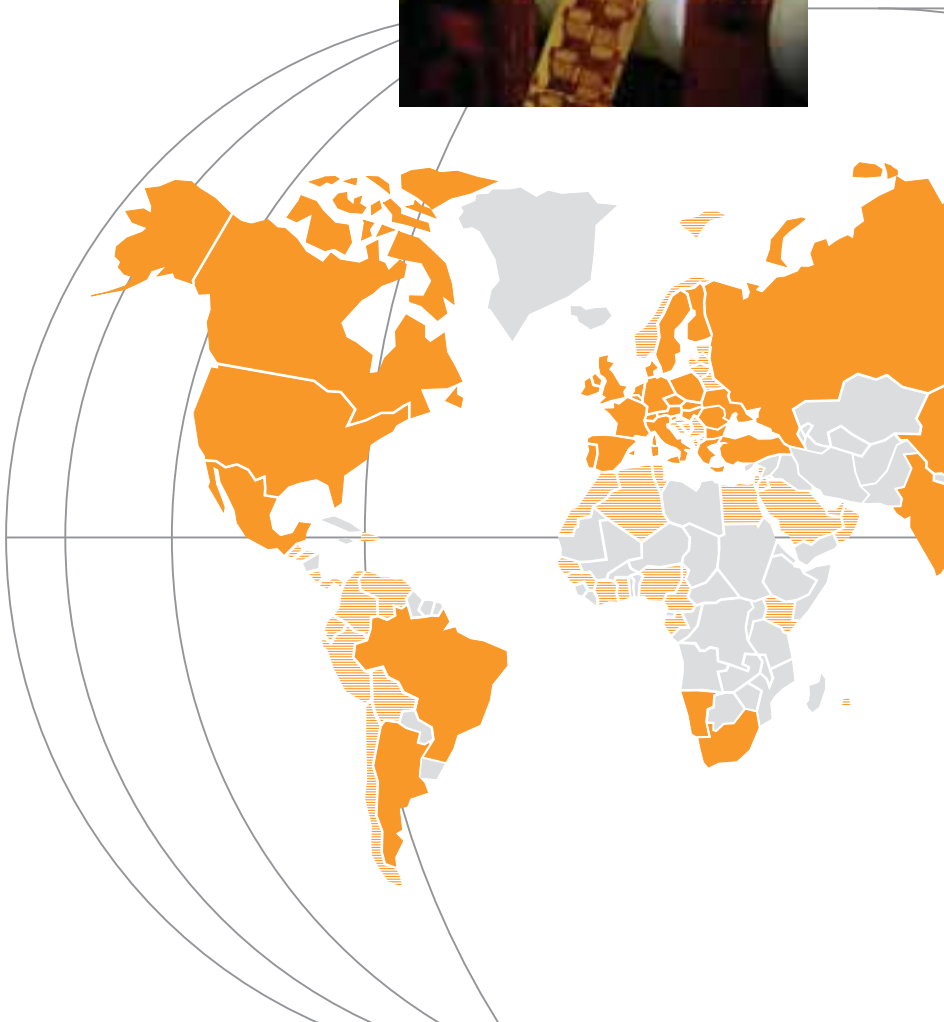
Close contact with our customers is part of our success. Therefore we have consistently developed our sales network right from the start. Today ifm electronic is represented in more than 70 countries – close to you! With application advice and service at the heart of our operation. For the introduction of new products and technologies we support you with workshops and seminars in our training centres or in your plant.

Security by success.

Since its foundation in 1969 ifm electronic has constantly grown, now having more than 5000 employees worldwide, and achieved a turnover of more than EUR 630 million in 2013. This success gives you the security of having a reliable partner for the implementation of your automation projects. Comprehensive service and a warranty of up to 5 years on standard units are just two examples of this reliability.



Turnover development since 1970.



Not only components.

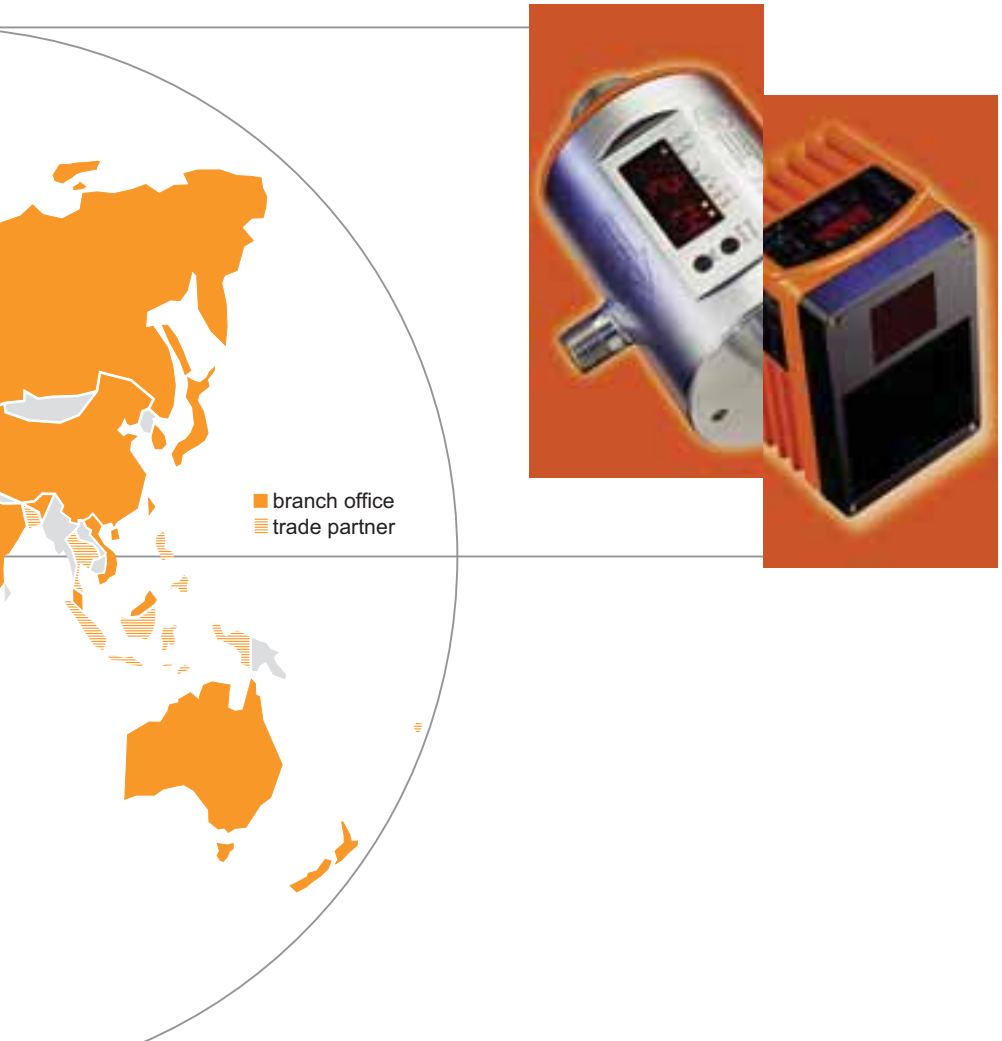
ifm stands for a large range of different sensors and systems for automation. Our range of of more than 7,800 articles guarantees flexibility and compatibility. So there is always a reliable solution for your automation projects – from the individual sensor with practical accessories to the complete system.

Availability guaranteed.

Your deadlines matter to us. That is why we are constantly optimising our production processes in order to be able to quickly and flexibly produce large quantities at a constantly high quality – and to continue to shorten delivery times. Your order is dispatched via our centralised logistics centre reliably and on time.

Quality as part of our philosophy.

The quality standard of our products is an integral part of our company philosophy. And we guarantee it! So we provide you, the users, with a maximum degree of security: By means of our own production technology, ifm film technology, as well as by means of extensive quality assurance measures such as 100 % final testing. By quality we understand, for example, ecologically conscious production – Made in Germany!



The development of innovative products is one of our core competences. From high-quality standard solutions to products specially tailored to the requirements of the individual industries – from mobile machines to the food industry.

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3A

3A Sanitary Standards, Inc. (3-A SSI) is an independent, not-for-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries.

AS-i

Actuator-Sensor Interface. Bus system for the first binary field level.

ATEX

Atmosphère Explosible. ATEX comprises the directives of the European Union in the field of explosion protection. On the one hand there is the 94/9/EC ATEX product directive and on the other hand the 1999/92/EC ATEX operation directive.

CCC

CCC (China Compulsory Certification) is a compulsory Chinese certification for certain products put on the market in China. Which products are concerned is specified in a catalogue created by the Chinese authorities.

cCSAus

Testing of a product by CSA according to the safety standards applicable in Canada and the USA.

CE

Conformité Européenne. By affixing the CE marking to a product, the manufacturer declares that it meets EU safety, health and environmental requirements.

cRUus

Testing of components by UL according to the safety standards applicable in Canada and the USA. Components can be used when the "condition of acceptability" is complied with for the final product.

CSA

Canadian Standards Association. A non-governmental Canadian organisation that sets standards and tests and certifies products for their reliability. By now it is active worldwide.

cULus

Testing of components by UL according to the safety standards applicable in Canada and the USA.

DIBt (WHG)

Deutsches Institut für Bautechnik (Federal Water Act). The Federal Water Act (WHG) is the essential part of the German law relating to water. It contains provisions for the protection and use of surface water and ground water and also regulations about the expansion of waters, water planning and flood protection.

DKD

The Deutscher Kalibrierdienst (DKD) is an association of calibration laboratories of industrial firms, research institutes, technical authorities, inspection and testing institutes. The DKD calibration certificates prove traceability to national standards as required in ISO 9000 and ISO / IEC 17025. They also serve as a metrological basis for the control of measurement and test equipment within the framework of quality management.

e1

Approval by the Kraftfahrt-Bundesamt (German Federal Motor Transport Authority). The e1 type approval by the German Federal Motor Transport Authority certifies that the units comply with the automotive standards. Units with this marking are allowed to be mounted on vehicles without expiry of their operating permit.

EG 1935/2004

The Regulation EC 1935/2004 has been taken into account for process sensors from ifm electronic which are intended for use in contact with food. You can obtain a list of the corresponding products and detailed information on request.

EHEDG

European Hygienic Engineering & Design Group. European supervisory authority for food and drugs. This authority grants approvals for products and materials used in the food and pharmaceutical industries.

FDA

Food and Drug Administration. US-American supervisory authority for food and drugs. This authority grants approvals for products and materials used in the food and pharmaceutical industries.

FM

Factory Mutual Research. A US-based insurance company that specializes in loss prevention services in the property insurance market sector. They provide material research, material testing and certifications in the field of fire and explosion protection.

PROFIBUS

Process Field Bus. Fieldbus system for important data quantities. It is available in several versions such as Profibus FMS, DP or PA. Profibus DP can be used over longer distances, e.g. as fieldbus for AS-i.

TÜV

Technischer Überwachungs Verein (technical inspection association). The German TÜV is a private-sector body carrying out technical safety tests that are stipulated by government laws or instructions.

UL

Underwriters Laboratories. An organisation founded in the USA for testing and certifying products and their safety.

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IE5348	CE, CUL, (CCC)	66
IE5349	CE, CUL, (CCC)	68
IE5350	CE, CUL, (CCC)	68
IE5351	CE, CUL, (CCC)	67
IE5352	CE, CUL, (CCC)	67
IE5366	CE, CUL, (CCC)	67
IE5367	CE, CUL, (CCC)	67
IE5368	CE, CUL, (CCC)	66
IE5369	CE, CUL, (CCC)	66
IE5379	CE, (CCC)	68
IE5381	CE, (CCC)	93
IE5382	CE, (CCC)	93
IE5390	CE, (CCC)	99
IE5391	CE, (CCC)	99
IE9203	CCC, CE	101
IE9902	CCC, CE	101
IE9940	CE, (CCC)	102
IEC200	CE, CUL, (CCC)	97
IEC201	CE, CUL, (CCC)	97
IEC202	CE, CUL, (CCC)	97
IEC203	CE, CUL, (CCC)	98
IER200	CE, CUL, (CCC)	104
IER201	CE, CUL, (CCC)	104
IER203	CE, CUL, (CCC)	104
IER204	CE, CUL, (CCC)	105
IER205	CE, CUL, (CCC)	106
IER206	CE, CUL, (CCC)	105
IF0001	CCC, CE	84
IF0003	CCC, CE	84
IF0005	CCC, CE	84
IF0007	CCC, CE	84
IF503A	CE	110
IF504A	CE	111
IF505A	CE	110
IF5188	CE, (CCC)	69
IF5249	CE, (CCC)	69
IF5297	CE, (CCC)	69
IF5313	CE, CCC	69
IF5329	CE, (CCC)	69

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IF5514	CE, (CCC)	92
IF5594	CE, (CCC)	92
IF5597	CE, CCC	69
IF5598	CCC, CE, CUL	69
IF5644	CE, CCC	69
IF5645	CCC, CE	69
IF5646	CCC, CE	69
IF5647	CCC, CE, CUL	69
IF5670	CE, CUL, (CCC)	107
IF5675	CE, CUL, (CCC)	107
IF5750	CE, CUL, (CCC)	107
IF5751	CE, CUL, (CCC)	108
IF5759	CCC, CE	92
IF5760	CCC, CE, CUL	92
IF5796	CE, (CCC)	92
IF5813	CE, (CCC)	92
IF5815	CE, (CCC)	91
IF5851	CE, CUL, (CCC)	92
IF6028	CE, (CCC)	72
IF6029	CE, (CCC)	73
IF6030	CE, (CCC)	72
IF6031	CE, (CCC)	73
IF6074	CE	108
IF9222	CCC, CE	102
IF9920	CCC, CE	102
IF9924	CCC, CE	102
IFC200	CE, CUL, (CCC)	94
IFC201	CE, CUL, (CCC)	95
IFC202	CE, CUL, (CCC)	94
IFC204	CE, CUL, (CCC)	93
IFC205	CE, CUL, (CCC)	94
IFC206	CE, CUL, (CCC)	100, 93
IFC207	CE, CUL, (CCC)	94
IFC208	CE, CUL, (CCC)	95
IFC209	CE, CUL, (CCC)	100, 94
IFC210	CE, CUL, (CCC)	100, 94
IFC229	CE, CUL, (CCC)	94
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IFC235	CE, (CCC)	95
IFC237	CE, CUL, (CCC)	94
IFC238	CE, CUL, (CCC)	94
IFC239	CE, CUL, (CCC)	102
IFC241	CE, CUL, (CCC)	102
IFC243	CE, CUL, (CCC)	102
IFC246	CE, CUL, (CCC)	99
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IFC248	CE, CUL, (CCC)	596
IFC258	CE, CUL, (CCC)	98

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IFC263	CE, CUL, (CCC)	98
IFC264	CE, CUL, (CCC)	99
IFC266	CE, CUL, (CCC)	98
IFM203	CE, CUL, E1, (CCC)	690
IFM204	CE, E1, (CCC)	691
IFM205	CCC, CE, CUL, E1	690
IFM206	CCC, CE, CUL, E1	690
IFM207	CE, CUL, E1, (CCC)	690
IFM208	CE, CUL, E1, (CCC)	690
IFM209	CCC, CE, CUL, E1	690
IFM210	CCC, CE, CUL, E1	690
IFR200	CE, CUL, (CCC)	104
IFR202	CE, CUL, (CCC)	104
IFR203	CE, CUL, (CCC)	105
IFR204	CE, CUL, (CCC)	105
IFR205	CE, CUL, (CCC)	106
IFR206	CE, (CCC)	105
IFS200	CE, CUL, (CCC)	61
IFS201	CE, CUL, (CCC)	61
IFS204	CE, CUL, (CCC)	61
IFS205	CE, CUL, (CCC)	61
IFS206	CE, CUL, (CCC)	61
IFS207	CE, CUL, (CCC)	61
IFS208	CE, CUL, (CCC)	61
IFS209	CE, CUL, (CCC)	61
IFS210	CE, CUL, (CCC)	61
IFS211	CE, CUL, (CCC)	61
IFS212	CE, CUL, (CCC)	61
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IFS214	CE, CUL, (CCC)	68
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IFS217	CE, CUL, (CCC)	68
IFS240	CE, CUL, (CCC)	64
IFS241	CE, CUL, (CCC)	64
IFS242	CE, CUL, (CCC)	65
IFS243	CE, CUL, (CCC)	65
IFT200	CE, CUL, (CCC)	87
IFT201	CE, CUL, (CCC)	87
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IFT203	CE, CUL, (CCC)	87
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IFT205	CE, CUL, (CCC)	87
IFT206	CE, CUL, (CCC)	87
IFT207	CE, CUL, (CCC)	87
IFT208	CE, CUL, (CCC)	87
IFT209	CE, CUL, (CCC)	88
IFT210	CE, CUL, (CCC)	87
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IFT243	CE, (CCC)	90
IFT244	CE, CUL, (CCC)	90
IFT245	CE, CUL, (CCC)	90
IFT246	CE, CUL, (CCC)	90
IFW200	CE, CUL, (CCC)	106
IFW201	CE, CUL, (CCC)	106
IG0005	CE, CUL, CCC	84
IG0006	CE, CUL, CCC	84
IG0011	CCC, CE, CUL	84
IG0012	CCC, CE	84
IG001A	CCC, CE	111
IG510A	CE	110
IG511A	CE	110
IG512A	CE	111
IG513A	CE	112
IG514A	CE	112
IG515A	CE	112
IG5202	CE, (CCC)	92
IG5221	CE, (CCC)	70
IG5285	CE, (CCC)	70
IG5397	CE, (CCC)	70
IG5398	CE, (CCC)	70
IG5399	CE, (CCC)	70
IG5401	CE, (CCC)	70
IG5533	CCC, CE	70
IG5593	CE, CCC	70
IG5594	CCC, CE	70
IG5595	CCC, CE, CUL	70
IG5596	CCC, CE	70
IG5597	CCC, CE	71
IG5602	CE, (CCC)	92
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IG5667	CE, CUL, (CCC)	108
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IG5718	CCC, CE	71
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IG6084	CE, (CCC)	73
IG6086	CE, (CCC)	72
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IGC203	CE, CUL, (CCC)	96
IGC204	CE, CUL, (CCC)	95
IGC205	CE, CUL, (CCC)	96
IGC206	CE, CUL, (CCC)	95
IGC207	CE, CUL, (CCC)	95
IGC208	CE, CUL, (CCC)	96
IGC209	CE, CUL, (CCC)	100, 95
IGC210	CE, CUL, (CCC)	100, 96
IGC220	CE, CUL, (CCC)	96
IGC221	CE, CUL, (CCC)	95
IGC222	CE, (CCC)	96
IGC223	CE, (CCC)	96
IGC224	CE, CUL, (CCC)	95
IGC225	CE, CUL, (CCC)	96
IGC232	CE, CUL, (CCC)	99
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IGC248	CE, CUL, (CCC)	98
IGC249	CE, CUL, (CCC)	99
IGC250	CE, CUL, (CCC)	99
IGC252	CE, CUL, (CCC)	98
IGM200	CE, CUL, E1, (CCC)	691
IGM201	CE, CUL, E1, (CCC)	691
IGM202	CE, CUL, E1, (CCC)	691
IGM203	CE, CUL, E1, (CCC)	691
IGM204	CCC, CE, CUL, E1	691
IGM205	CCC, CE, CUL, E1	691
IGM206	CCC, CE, CUL, E1	691
IGM207	CCC, CE, CUL, E1	691
IGR200	CE, CUL, (CCC)	104
IGR202	CE, CUL, (CCC)	104
IGR203	CE, CUL, (CCC)	105
IGR204	CE, CUL, (CCC)	105
IGR205	CE, CUL, (CCC)	106
IGR206	CE, (CCC)	105
IGS200	CE, CUL, (CCC)	62
IGS201	CE, CUL, (CCC)	62
IGS204	CE, CUL, (CCC)	62
IGS205	CE, CUL, (CCC)	62
IGS206	CE, CUL, (CCC)	62
IGS207	CE, CUL, (CCC)	62
IGS208	CE, CUL, (CCC)	62
IGS209	CE, CUL, (CCC)	62
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IGS216	CE, CUL, (CCC)	70
IGS217	CE, CUL, (CCC)	70
IGS232	CE, CUL, (CCC)	64
IGS233	CE, CUL, (CCC)	64
IGS234	CE, CUL, (CCC)	65
IGS235	CE, CUL, (CCC)	65
IGT200	CE, CUL, (CCC)	88
IGT201	CE, CUL, (CCC)	88
IGT202	CE, CUL, (CCC)	88
IGT203	CE, CUL, (CCC)	88
IGT204	CE, CUL, (CCC)	88
IGT205	CE, CUL, (CCC)	88
IGT206	CE, CUL, (CCC)	88
IGT207	CE, CUL, (CCC)	88
IGT208	CE, CUL, (CCC)	88
IGT209	CE, CUL, (CCC)	89
IGT219	CE, CUL, (CCC)	88
IGT220	CE, CUL, (CCC)	88
IGT240	CE, CUL, (CCC)	93
IGT247	CE, CUL, (CCC)	90
IGT248	CE, CUL, (CCC)	91
IGT249	CE, CUL, (CCC)	90
IGT250	CE, CUL, (CCC)	91
IGW200	CE, CUL, (CCC)	106
IGW201	CE, CUL, (CCC)	106
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II0006	CE, CCC	85
II0011	CE, CUL, CCC	85
II0012	CE, CUL, CCC	85
II001A	CCC, CE	113
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II503A	CE	111
II504A	CE, IEC	113
II5166	CE, (CCC)	71
II5256	CE, (CCC)	71
II5284	CE, (CCC)	71
II5300	CE, (CCC)	71
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II5369	CE, (CCC)	71
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II5733	CCC, CE	93
II5751	CCC, CE	93
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II5913	CE, (CCC)	72
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II5916	CE, (CCC)	72
II5917	CE, (CCC)	73
II5930	CE, (CCC)	109
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IIC200	CE, CUL, (CCC)	96
IIC201	CE, CUL, (CCC)	97
IIC206	CE, CUL, (CCC)	101, 96
IIC207	CE, CUL, (CCC)	97
IIC208	CE, (CCC)	97
IIC209	CE, (CCC)	97
IIC210	CE, CUL, (CCC)	97
IIC211	CE, CUL, (CCC)	97
IIC213	CE, CUL, (CCC)	103
IIC218	CE, CUL, (CCC)	100
IIC219	CE, CUL, (CCC)	100
IIC220	CE, CUL, (CCC)	101, 596
IIC221	CE, CUL, (CCC)	101, 596
IIC224	CE, CUL, (CCC)	98
IIC226	CE, CUL, (CCC)	98
IIM200	CE, CUL, E1, (CCC)	692
IIM201	CE, CUL, E1, (CCC)	692
IIM202	CE, CUL, E1, (CCC)	692
IIM203	CE, CUL, E1, (CCC)	692
IIM208	CCC, CE, CUL, E1	692
IIM209	CCC, CE, CUL, E1	692
IIM210	CCC, CE, CUL, E1	691
IIM211	CCC, CE, CUL, E1	692
IIR200	CE, CUL, (CCC)	104
IIR202	CE, CUL, (CCC)	104
IIR203	CE, CUL, (CCC)	105
IIR204	CE, CUL, (CCC)	105
IIR205	CE, CUL, (CCC)	106
IIR206	CE, (CCC)	105
IIS204	CE, CUL, (CCC)	63
IIS205	CE, CUL, (CCC)	63
IIS206	CE, CUL, (CCC)	63
IIS207	CE, CUL, (CCC)	63
IIS208	CE, CUL, (CCC)	63
IIS209	CE, CUL, (CCC)	63
IIS210	CE, CUL, (CCC)	63
IIS211	CE, CUL, (CCC)	63
IIS226	CE, CUL, (CCC)	65
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IIT204	CE, CUL, (CCC)	89
IIT205	CE, CUL, (CCC)	89
IIT206	CE, CUL, (CCC)	89
IIT207	CE, CUL, (CCC)	89
IIT208	CE, CUL, (CCC)	90
IIT209	CE, CUL, (CCC)	89
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IIT231	CE, CUL, (CCC)	91
IIT232	CE, CUL, (CCC)	91
IIW200	CE, CUL, (CCC)	106
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IL5002	CE, CUL, (CCC)	76
IL5003	CE, CUL, (CCC)	76
IL5004	CE, CUL, (CCC)	76
IL5005	CE, CUL, (CCC)	76
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IL5022	CE, CUL, (CCC)	76
IM0010	CCC, CE, CUL	86
IM0011	CCC, CE, CUL	86
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IM002A	CE	112
IM0049	CCC, CE	86
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IM5020	CE, CUL, (CCC)	80
IM5037	CCC, CE	80
IM5038	CCC, CE	80
IM5046	CE, (CCC)	80
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IM513A	CE	111
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AS-Interface	AS-Interface (actuator sensor interface) is a worldwide manufacturer-independent standard for the connection of actuators and sensors of the first field level. Data and power supply are jointly transmitted via a two-wire cable. Wiring complexity, documentation and set-up times are reduced.
ATEX	ATEX (Atmosphère explosible) is a brief description of the uniform EU directives 94/9/EC (for manufactures of units for hazardous areas) and 1999/92/EC (for operators of plants for hazardous areas) governing the safety requirements for explosion-hazardous areas. Since 30 June 2003, units for hazardous areas have to be approved to 94/9/EU regulations. For further information about international directives see the "Approvals" chapter.
e1 type approval	The e1 type approval by the German Federal Motor Transport Authority certifies that the units comply with the automotive standards.
IO-Link	IO-Link is a field-bus independent and open point-to-point communication interface. It is a low-cost possibility to transmit parameter, diagnosis and process data from a sensor or an actuator via an I/O module.
Safety	The EC Machinery Directive stipulates machinery should not present a risk. If safety is dependent on control systems, these must be designed so as to minimise malfunction. The IEC 62061 und ISO 13849-1 standards apply. Classification is made either in the Safety Integrity Level (SIL 1-3 in IEC 62061) or in the Performance Level (PL a-e in ISO 13849-1).

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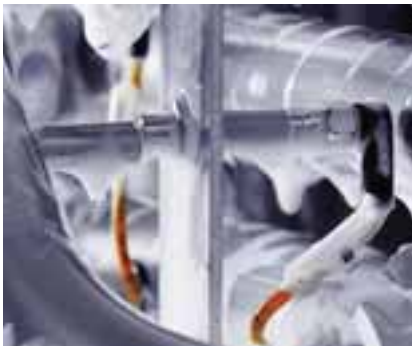
Well positioned

Position detection
in the food industry.



Different measurement techniques

ifm electronic offers a wide range of position sensors. Inductive, capacitive and magnetic sensors detect targets or objects in the range of a few millimetres up to several centimetres. For greater distances there are photoelectric sensors with ranges up to tens of metres.
Moreover special types such as optical fork and angle sensors, fibre optics, colour and contrast sensors or cylinder sensors are used for position detection in special applications. ifm also offers suitable solutions for the detection of valve positions. All sensors are fully electronic, i.e. they work without mechanical components. The advantage: they are wear-free and provide high switching frequencies.

Microprocessor technology makes it possible

The applied microprocessor technology allows fast and easy switch point setting via pushbuttons. Clearly visible LEDs indicate the switching status. In addition to the 3-wire output stage, many position sensors can also be supplied in a 2-wire version. ifm electronic also offers sensors with a built-in AS-Interface (AS-i).

Special applications

Sensors are used in many different areas. These include machine and plant construction as well as applications in factory automation and process technology. Special solutions are for example provided for food applications or mobile machines.
Besides constructional measures such as high-quality housing materials and coatings, the sensors also comply with applicable approvals (e.g. ATEX or e1).
Regular and thorough testing in production to the highest standards combined with equally high standards at the development stage ensure a consistently high quality.

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- **Extensive range of inductive sensors for industrial environments**
- **Standard cylindrical and rectangular housings**
- **High-quality housing materials**
- **Connector, cabled and wirable versions**
- **Wide selection of fixing accessories and connectors**

Inductive sensors

Inductive proximity sensors are used for input signals detecting machine parts in most automated processes. They supply the necessary signals for positions and limits, or serve as pulse pick-ups for counting tasks or for monitoring rotational speed. Inductive sensors offer ideal characteristics compared to mechanical switches: non-contact operation free from any wear and tear, high switching frequencies and accuracy. In addition, they are insensitive to vibration, dust and moisture. Inductive sensors detect all metals without contact.

Operating principles used in inductive sensors

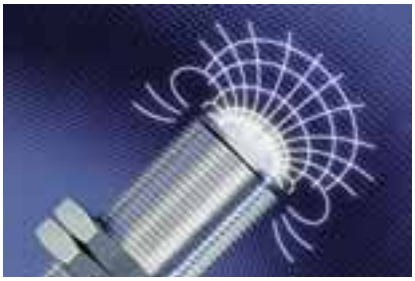
Inductive sensors operate on more than one physical principle; the standard sensor contains a coil which is used to propagate a very low energy oscillating electro-magnetic field. If a conductive material – for practical purposes a metal – enters this field, then eddy currents will be induced in the surface of the material which in turn draw energy from the oscillator. This reduces the oscillation amplitude and the change is converted into a switching signal. This operating principle permits detection of all metals irrespective of whether they are moving or not, but different metals will result in different sensing distances. If the sensor is designed to detect metals without this correction factor, the two oscillating fields are generated and the phase shift caused by a metal presence is evaluated.

Application sensors

Every application places different and often conflicting demands on the sensors used in different environments. Temperature shocks, mechanical influences or aggressive cleaning agents, oils and coolants are just a few of the possible environmental influences to which sensors are subjected. ifm electronic therefore offers inductive sensors which have been developed for specific applications. This includes, for example, the use of selected housing materials such as stainless steel, LCP, PEEK, PBT or ceramics. An innovative sealing concept from the sensor to the connector ensures ideal protection against ingress of moisture and aggressive media.

Typical application: Positioning sensing in automation technology; inductive sensors operate reliably and without wear.

High frequency electromagnetic field: The inductive sensor detects all metals.



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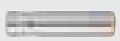
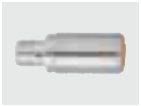
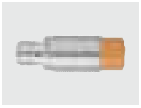
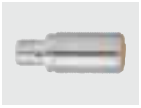
Sensors with increased sensing range for industrial applications

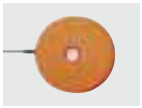
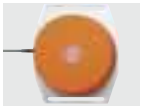
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	4 f	Brass	10...36	IP 67	700	100	1	**IFS204**
	M12 / L = 50	7 nf	Brass	10...36	IP 67	700	100	2	**IFS205**
	M12 / L = 70	4 f	Brass	10...36	IP 67	700	100	3	**IFS212**
	M12 / L = 70	7 nf	Brass	10...36	IP 67	700	100	4	**IFS213**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	4 f	Brass	10...36	IP 67	700	100	1	**IFS206**
	M12 / L = 50	7 nf	Brass	10...36	IP 67	700	100	2	**IFS207**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 70	4 f	Brass	10...30	IP 67	500	100	3	**IFS208**
	M12 / L = 70	7 nf	Brass	10...30	IP 67	500	100	4	**IFS209**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 45	4 f	Brass	10...30	IP 67	700	100	1	**IFS200**
	M12 / L = 50	7 nf	Brass	10...30	IP 67	700	100	2	**IFS201**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M12 / L = 46	4 f	Brass	10...36	IP 67	700	100	5	**IFS210**
	M12 / L = 51	7 nf	Brass	10...36	IP 67	700	100	6	**IFS211**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	8 f	Brass	10...36	IP 67	400	100	7	**IGS204**
	M18 / L = 51	12 nf	Brass	10...36	IP 67	300	100	8	**IGS205**
	M18 / L = 70	8 f	Brass	10...36	IP 67	400	100	9	**IGS212**
	M18 / L = 70	12 nf	Brass	10...36	IP 67	300	100	10	**IGS213**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	8 f	Brass	10...36	IP 67	400	100	7	**IGS206**
	M18 / L = 51	12 nf	Brass	10...36	IP 67	300	100	8	**IGS207**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	8 f	Brass	10...30	IP 67	400	100	9	**IGS208**
	M18 / L = 70	12 nf	Brass	10...30	IP 67	300	100	10	**IGS209**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 46	8 f	Brass	10...30	IP 67	300	100	7	**IGS200**
	M18 / L = 51	12 nf	Brass	10...30	IP 67	250	100	8	**IGS201**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 70	8 f	Brass	10...36	IP 68	400	100	11	**IG5953**
	M18 / L = 72	12 nf	Brass	10...36	IP 68	250	100	12	**IG5954**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M18 / L = 46	8 f	Brass	10...36	IP 67	400	100	13	**IGS210**
M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 50	15 f	Brass	10...36	IP 67	100	100	14	**IIS204**
	M30 / L = 50	22 nf	Brass	10...36	IP 67	100	100	15	**IIS205**
	M30 / L = 70	15 f	High-grade st. steel	10...36	IP 67	100	100	16	**IIS210**
	M30 / L = 70	22 nf	High-grade st. steel	10...36	IP 67	100	100	17	**IIS211**
M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 50	15 f	Brass	10...36	IP 67	100	100	14	**IIS208**
	M30 / L = 50	22 nf	Brass	10...36	IP 67	100	100	15	**IIS209**
M12 connector · Output function ⎍⎽ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 70	15 f	Brass	10...36	IP 67	100	100	16	**IIS206**
	M30 / L = 70	22 nf	Brass	10...36	IP 67	100	100	17	**IIS207**
Cable 2 m · Output function ⎍⎽ · 2-wire · AC · Wiring diagram no. 3									
	–	70 nf	PBT	90...250	IP 65	5	250	–	**I12001***
	special design	70 nf	PBT	90...250	IP 65	5	250	18	**I12003***
Cable 2 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 4									
	special design	70 nf	PBT	10...36	IP 65	5	250	19	**I17001**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	special design	70 nf	PBT	10...36	IP 65	5	250	18	**I17003**
Cable 2 m · Output function ⎍ · 2-wire · AC · Wiring diagram no. 3									
	Ø 164	120 nf	PBT	90...250	IP 65	3	250	20	**I22001***
	Ø 164	120 nf	PBT	90...250	IP 65	3	250	21	**I22003***
7/8" connector · Output function ⎍ · 2-wire · AC · Wiring diagram no. 5 · Connector groups 31, 32									
	special design	120 nf	PBT	90...250	IP 65	3	250	22	**I22006***
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	Ø 164	120 nf	PBT	10...36	IP 65	3	250	20	**I27001**

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Sensors with increased sensing range for industrial oils and coolants and mobile applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20									
	M12 / L = 60	4 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	700	100	23	**IFS240**
	M12 / L = 60	7 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	700	100	24	**IFS241**
	M18 / L = 60	8 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	400	100	25	**IGS232**
	M18 / L = 60	12 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	300	100	26	**IGS233**

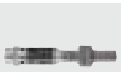
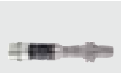
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20									
	M30 / L = 60	15 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	27	**IIS226**
	M30 / L = 60	22 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	28	**IIS227**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20									
	M12 / L = 60	4 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	700	100	23	**IFS242**
	M12 / L = 60	7 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	700	100	24	**IFS243**
	M18 / L = 60	8 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	400	100	25	**IGS234**
	M18 / L = 60	12 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	300	100	26	**IGS235**
	M30 / L = 60	15 f	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	27	**IIS228**
	M30 / L = 60	22 nf	Brass	10...30	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	28	**IIS229**

f = flush / nf = non flush

Sensors for industrial applications, threaded housings

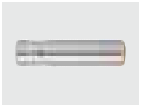
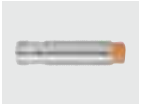
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M5 / L = 30	0.8 f	stainless steel	10...36	IP 65	2000	100	29	**IY5029**
	M5 / L = 23	0.8 f	stainless steel	10...30	IP 65	2000	100	30	**IY5051**
	M5 / L = 23	1.2 f	stainless steel	10...30	IP 65	2000	100	30	**IY5052**

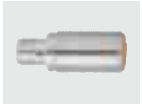
You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M5 / L = 27	1.5 nf	stainless steel	10...30	IP 67	1800	100	31	**IY5049**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M5 / L = 45	0.8 f	stainless steel	10...36	IP 65	2000	100	32	**IY5036**
	M5 / L = 41	1.5 nf	stainless steel	10...30	IP 67	1800	100	33	**IY5048**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M8 / L = 35	1 f	Brass	10...36	IP 67	750	200	34	**IE5072**
	M8 / L = 50	1 f	Brass	10...36	IP 67	750	200	35	**IE5121**
	M8 / L = 50	1 f	PBT	10...36	IP 67	1000	200	35	**IE5129**
	M8 / L = 20	1.5 f	stainless steel	10...30	IP 67	4000	200	36	**IE5348**
	M8 / L = 27	2 f	High-grade st. steel	10...30	IP 67	1500	100	37	**IE5368**
	M8 / L = 35	2 nf	PBT	10...36	IP 67	800	200	34	**IE5099**
	M8 / L = 27	4 nf	High-grade st. steel	10...30	IP 67	500	100	38	**IE5369**
Cable 2 m · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	M8 / L = 50	1 f	Brass	5...36	IP 67	2000	200	35	**IE5222**
	M8 / L = 50	2 nf	Brass	5...36	IP 67	2700	200	39	**IE5238**
	M8 / L = 50	2 nf	PBT (Pocan)	5...36	IP 67	2000	200	35	**IE5202**

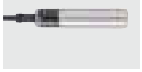
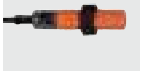
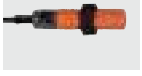
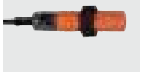
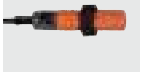
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 36									
	M8 / L = 37	3 f	Brass	10...30	IP 67	1000	100	40	**IE5343**
	M8 / L = 37	5 nf	Brass	10...30	IP 67	700	100	41	**IE5345**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 37	3 f	Brass	10...30	IP 67	1000	100	42	**IE5344**
	M8 / L = 37	5 nf	Brass	10...30	IP 67	700	100	41	**IE5346**
Cable 0.3 m · with M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M8 / L = 37	3 f	Brass	10...30	IP 67	1000	100	40	**IE5351**
	M8 / L = 37	5 nf	Brass	10...30	IP 67	700	100	41	**IE5352**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 50	2 f	Brass	10...36	IP 65 / IP 67	1300	200	43	**IE5287**
	M8 / L = 30	2 f	High-grade st. steel	10...30	IP 67	1500	100	44	**IE5366**
	M8 / L = 30.5	4 nf	High-grade st. steel	10...30	IP 65 / IP 67	800	100	45	**IE5367**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 7 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 50	1 f	Brass	10...36	IP 65	2000	250	46	**IE5258**
M8 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 40	3 f	Brass	10...30	IP 67	1000	100	47	**IE5338**
	M8 / L = 40	5 nf	High-grade st. steel	10...30	IP 67	700	100	48	**IE5340**

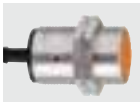
You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 37 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 40	3 f	Brass	10...30	IP 67	1000	100	49	**IE5349**
	M8 / L = 40	5 nf	High-grade st. steel	10...30	IP 65 / IP 67	600	100	48	**IE5350**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M8 / L = 53	1 f	Brass	10...36	IP 67	750	200	50	**IE5090**
	M8 / L = 62	2 f	Brass	10...36	IP 67	1000	250	51	**IE5312**
	M8 / L = 50	2 f	High-grade st. steel	10...36	IP 68	1000	100	52	**IE5379**
	M8 / L = 62	4 nf	Brass	10...36	IP 67	300	200	53	**IE5288**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M8 / L = 62	2 f	Brass	10...36	IP 67	800	250	54	**IE5327**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M8 / L = 69	1 f	Brass	5...36	IP 67	2700	200	55	**IE5203**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	2 f	Brass	10...36	IP 67	700	100	1	**IFS214**
	M12 / L = 70	2 f	Brass	10...36	IP 67	700	100	3	**IFS216**
	M12 / L = 50	4 nf	Brass	10...36	IP 67	700	100	2	**IFS215**
	M12 / L = 70	4 nf	Brass	10...36	IP 67	700	100	4	**IFS217**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M12 / L = 35	2 f	Brass	10...36	IP 67	1500	150	56	**IF5188**
	M12 / L = 71	2 f	Brass	10...55	IP 67	800	250	57	**IF5297**
	M12 / L = 71	2 f	PBT	10...55	IP 67	800	250	57	**IF5313**
	M12 / L = 35	4 nf	Brass	10...36	IP 67	1500	150	58	**IF5249**
	M12 / L = 71	4 nf	Brass	10...36	IP 67	1500	250	59	**IF5329**
	M12 / L = 71	4 nf	PBT	10...36	IP 67	400	250	57	**IF5345**
Cable 2 m · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	M12 / L = 71	2 f	Brass	10...55	IP 67	1100	400	57	**IF5645**
	M12 / L = 71	2 f	PBT	10...55	IP 67	1100	400	57	**IF5644**
	M12 / L = 71	4 nf	Brass	10...55	IP 67	1500	400	59	**IF5646**
	M12 / L = 71	4 nf	PBT	10...55	IP 67	1500	400	57	**IF5597**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 83	2 f	Brass	10...55	IP 67	1100	300	60	**IF5598**
	M12 / L = 83	4 nf	Brass	10...55	IP 67	1500	300	61	**IF5647**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	5 f	Brass	10...36	IP 67	400	100	7	**IGS214**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	5 f	Brass	10...36	IP 67	400	100	9	**IGS216**
	M18 / L = 70	8 nf	Brass	10...36	IP 67	300	100	10	**IGS217**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 38	5 f	Brass	18...36	IP 67	500	150	62	**IG5221**
	M18 / L = 80	5 f	Brass	10...36	IP 67	500	250	63	**IG5397**
	M18 / L = 80	5 f	PBT	10...36	IP 67	500	250	63	**IG5399**
	M18 / L = 38	8 nf	Brass	18...36	IP 67	200	150	64	**IG5285**
	M18 / L = 80	8 nf	Brass	10...36	IP 67	300	250	65	**IG5398**
	M18 / L = 80	8 nf	PBT	10...36	IP 67	300	250	63	**IG5401**
Cable 2 m · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	M18 / L = 80	5 f	PBT	10...55	IP 67	700	400	63	**IG5593**
	M18 / L = 80	5 f	Brass	10...55	IP 67	700	400	63	**IG5594**
	M18 / L = 80	8 nf	PBT	10...55	IP 67	300	400	63	**IG5533**
	M18 / L = 80	8 nf	Brass	10...55	IP 67	300	400	65	**IG5596**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 70	5 f	Brass	10...55	IP 67	700	400	66	**IG5595**

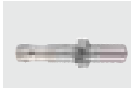
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎓ / ⏚ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 76	8 nf	Brass	10...55	IP 67	300	400	67	**IG5597**
Terminals · Output function ⎓ / ⏚ · 2-wire · DC PNP/NPN · Wiring diagram no. 38									
	M18 / L = 110	5 f	PBT	10...55	IP 65	800	400	68	**IG5718**
	M18 / L = 110	8 nf	PBT	10...55	IP 65	300	400	68	**IG5719**
Cable 2 m · Output function ⎓ · 3-wire · DC PNP · Wiring diagram no. 4									
	M30 / L = 45	10 f	Brass	18...36	IP 67	300	150	69	**II5166**
	M30 / L = 81	10 f	Brass	10...36	IP 67	250	250	70	**II5256**
	M30 / L = 81	10 f	PBT	10...36	IP 67	250	250	70	**II5369**
	M30 / L = 45	15 nf	Brass	18...36	IP 67	250	150	71	**II5346**
	M30 / L = 81	15 nf	Brass	10...36	IP 67	250	250	72	**II5284**
	M30 / L = 81	15 nf	PBT	10...36	IP 67	250	250	70	**II5300**
Cable 2 m · Output function ⎓ / ⏚ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	M30 / L = 45	10 f	Brass	10...55	IP 67	450	400	69	**II5493**
	M30 / L = 81	10 f	PBT	10...55	IP 67	450	400	70	**II5488**
	M30 / L = 81	10 f	Brass	10...55	IP 67	450	400	70	**II5489**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	M30 / L = 81	15 nf	PBT	10...55	IP 67	200	400	70	**II5436**
	M30 / L = 81	15 nf	Brass	10...55	IP 67	200	400	72	**II5491**
M12 connector · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M30 / L = 78	10 f	Brass	10...55	IP 67	450	400	73	**II5490**
	M30 / L = 78	15 nf	Brass	10...55	IP 67	200	400	74	**II5492**

f = flush / nf = non flush

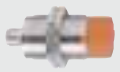
Sensors with analogue output 4...20 mA for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · 3-wire · DC analogue · Wiring diagram no. 8 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 70	0.2...2 f	Brass	15...30	IP 67	–	–	3	**IF6028**
	M12 / L = 70	0.4...4 nf	Brass	15...30	IP 67	–	–	4	**IF6030**
	M18 / L = 60	0.5...5 f	Brass	15...30	IP 67	–	–	75	**IG6086**
	M18 / L = 60	0.8...8 nf	Brass	15...30	IP 67	–	–	76	**IG6083**
	M30 / L = 70	1.0...10 f	Brass	15...30	IP 67	–	–	16	**II5916**
	M30 / L = 70	1.0...15 nf	Brass	15...30	IP 67	–	–	17	**II5913**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · 3-wire · DC analogue · Wiring diagram no. 8 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	1...15 f	PA (polyamide)	15...30	IP 67	–	–	77	**IM5139**
	40 x 40 x 54	1...26 nf	PA (polyamide)	15...30	IP 67	–	–	77	**IM5141**

f = flush / nf = non flush

Sensors with analogue output 0...10 V for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 0...10 V analogue · 3-wire · DC analogue · Wiring diagram no. 8 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 70	0.2...2 f	Brass	15...30	IP 67	–	–	3	**IF6029**
	M12 / L = 70	0.4...4 nf	Brass	15...30	IP 67	–	–	4	**IF6031**
	M18 / L = 60	0.5...5 f	Brass	15...30	IP 67	–	–	75	**IG6087**
	M18 / L = 60	0.8...8 nf	Brass	15...30	IP 67	–	–	76	**IG6084**
	M30 / L = 70	1.0...10 f	Brass	15...30	IP 67	–	–	16	**II5917**
	M30 / L = 70	1.0...15 nf	Brass	15...30	IP 67	–	–	17	**II5914**
	40 x 40 x 54	1...15 f	PA (polyamide)	15...30	IP 67	–	–	77	**IM5140**
	40 x 40 x 54	1...26 nf	PA (polyamide)	15...30	IP 67	–	–	77	**IM5142**

f = flush / nf = non flush

You can find wiring diagrams and scale drawings from page 120

Sensors with smooth sleeve for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	Ø 4 / L = 30	0.8 f	stainless steel	10...36	IP 65	2000	100	78	**IZ5026**
	Ø 4 / L = 23	0.8 f	stainless steel	10...30	IP 65	2000	100	79	**IZ5051**
	–	1 nf	stainless steel	10...30	IP 67	5000	100	80	**IZ5048**
	Ø 4 / L = 23	1.2 f	stainless steel	10...30	IP 65	2000	100	79	**IZ5052**
	Ø 4 / L = 27	1.5 nf	stainless steel	10...30	IP 67	1800	100	81	**IZ5047**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	Ø 4 / L = 45	0.8 f	stainless steel	10...36	IP 65	2000	100	82	**IZ5035**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 117, 119									
	Ø 4 / L = 41	1.5 nf	stainless steel	10...30	IP 67	1800	100	83	**IZ5046**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	Ø 6.5 / L = 35	1 f	Brass	10...36	IP 67	900	200	84	**IT5001**
	Ø 6.5 / L = 19	2 f	stainless steel	10...30	IP 67	1000	200	85	**IT5039**
	Ø 6.5 / L = 27	2 f	High-grade st. steel	10...30	IP 67	1500	100	86	**IT5042**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	Ø 6.5 / L = 49	1 f	Brass	10...36	IP 65	2000	250	87	**IT5021**
	Ø 6.5 / L = 49	1.5 f	Brass	10...36	IP 65	2000	250	87	**IT5034**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	Ø 6.5 / L = 30	2 f	High-grade st. steel	10...30	IP 67	1500	100	88	**IT5040**
	Ø 6.5 / L = 50	4 nf	High-grade st. steel	10...30	IP 67	300	100	89	**IT5044**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	Ø 20 / L = 77	10 nf	PBT	10...36	IP 67	300	250	90	**IA5082**
Cable 2 m · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	Ø 20 / L = 77	10 nf	PBT	10...55	IP 67	300	400	90	**IA5108**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	Ø 20 / L = 93	10 nf	PBT	10...36	IP 67	300	250	91	**IA5127**
Terminals · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 9									
	Ø 20 / L = 92	10 nf	PBT	10...36	IP 65	300	250	92	**IA5062**
Terminals · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 9									
	Ø 20 / L = 92	10 nf	PBT	10...36	IP 65	300	250	92	**IA5063**
Terminals · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 38									
	Ø 20 / L = 92	10 nf	PBT	10...55	IP 65	300	300	92	**IA5122**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	Ø 34 / L = 82	20 nf	PBT	10...36	IP 67	60	250	93	**IB5096**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Terminals · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 38									
	Ø 34 / L = 98	20 nf	PBT	10...55	IP 65	300	300	94	**IB5124**
Terminals · Output function ⎍ / ⎍ · 3-wire · DC PNP · Wiring diagram no. 9									
	Ø 34 / L = 98	20 nf	PBT	10...36	IP 65	350	250	94	**IB5063**
	Ø 34 / L = 98	30 nf	PBT	10...36	IP 65	350	200	94	**IB5133**

f = flush / nf = non flush

Sensors for industrial applications, rectangular housings

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	25 x 5 x 5	0.8 f	aluminium	10...30	IP 65	1000	100	95	**IL5022**
	40 x 8 x 8	2 f	Brass	10...36	IP 65	2000	250	96	**IL5002**
	40 x 8 x 8	2 f	Brass	10...36	IP 65	2000	250	96	**IL5003**
	40 x 8 x 8	2.5 f	Brass	10...36	IP 65	2000	250	96	**IL5020**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	40 x 8 x 8	2 f	Brass	10...36	IP 65	2000	250	97	**IL5004**
	40 x 8 x 8	2 f	Brass	10...36	IP 65	2000	250	97	**IL5005**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	28 x 10 x 16	2 f	PBT	10...36	IP 67	800	200	98	**IS5001**

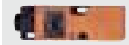
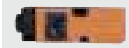
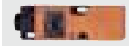
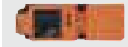
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	28 x 10 x 16	3 nf	PBT	10...36	IP 67	100	200	98	**IS5031**
	28 x 10 x 16	4 nf	PBT	10...36	IP 67	2000	250	99	**IS5070**
Cable 2 m · Output function ⎍ / ⎎ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	28 x 10 x 16	2 f	PBT	5...36	IP 67	2000	200	98	**IS5026**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	28 x 10 x 16	2 f	PBT	10...36	IP 67	800	200	100	**IS5035**
	28 x 10 x 16	4 nf	PBT	10...36	IP 67	2000	250	100	**IS5071**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	40 x 12 x 26	2 f	PBT	10...36	IP 67	1400	250	101	**IN5121**
	40 x 12 x 26	4 nf	PBT	10...36	IP 67	1300	250	101	**IN5129**
Cable 2 m · Output function ⎍ / ⎎ · 2-wire · DC PNP/NPN · Wiring diagram no. 35									
	40 x 12 x 26	2 f	PBT	10...55	IP 67	1300	400	101	**IN5207**
	40 x 12 x 26	4 nf	PBT	10...55	IP 67	1200	300	101	**IN5208**
Cable 2 m · Output function ⎎ · 3-wire · DC PNP · Wiring diagram no. 10									
	40 x 12 x 26	2 f	PBT	10...36	IP 67	1400	250	101	**IN5186**
	40 x 12 x 26	4 nf	PBT	10...36	IP 67	1300	250	101	**IN5188**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	40 x 12 x 26	2 f	PBT	10...36	IP 67	1400	250	102	**IN5230**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	40 x 12 x 26	4 nf	PBT	10...36	IP 65	1300	250	102	**IN5212**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	60 x 36 x 10	5 f	PBT	10...36	IP 67	400	250	103	**IW5051**
	60 x 36 x 10	8 nf	PBT	10...36	IP 67	300	250	103	**IW5058**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 10									
	60 x 36 x 10	8 nf	PBT	10...36	IP 67	300	250	104	**IW5053**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	60 x 36 x 10	8 nf	PBT	10...36	IP 65	300	250	105	**IW5064**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 7 · Connector groups 1, 2, 3, 74, 80									
	60 x 36 x 10	8 nf	PBT	10...36	IP 67	300	250	105	**IW5062**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	100	200	77	**IM5115**
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	77	**IM5128**
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	106	**IM5119**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	80	200	77	**IM5116**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	77	**IM5130**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5120**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	60	200	77	**IM5117**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	200	200	77	**IM5131**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5129**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	100	200	77	**IM5123**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	77	**IM5132**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 110, 111, 112, 113									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	106	**IM5124**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	80	200	77	**IM5134**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	77	**IM5133**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 110, 111, 112, 113									
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5125**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	60	200	77	**IM5136**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67 / IP 69K	200	200	77	**IM5135**

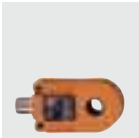
You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 110, 111, 112, 113									
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5126**
M12 connector · 2-wire · AS-i · Wiring diagram no. 12 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	15 f	PBT	26.5...31.6	IP 67	100	–	77	**IM5118**
Terminals · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 9									
	40 x 40 x 120	15 f	PPE	10...36	IP 65	350	250	107	**IM5020**
	40 x 40 x 120	20 nf	PPE	10...36	IP 65	350	250	107	**IM5019**
	40 x 40 x 120	30 nf	PPE	10...36	IP 65	100	250	107	**IM5046**
Terminals · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 38									
	40 x 40 x 120	15 f	PPE	10...55	IP 65	350	400	107	**IM5037**
	40 x 40 x 120	20 nf	PPE	10...55	IP 65	300	400	107	**IM5038**
Terminals · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 13									
	40 x 40 x 118	15 f	PBT	10...60	IP 67	150	200	108	**IV5003**
	40 x 40 x 118	20 f	PBT	10...60	IP 67	150	200	109	**IV5004**
Terminals · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 39									
	90 x 60 x 40	40 nf	PPE	10...36	IP 65	15	250	110	**IC5005**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	92 x 80 x 40	50 f	PPE	10...36	IP 67	70	250	111	**ID5055**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	92 x 80 x 40	50 f	PPE	10...36	IP 67	70	250	111	**ID5058**
Terminals · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 39									
	105 x 80 x 40	60 nf	PPE	10...36	IP 65	100	250	112	**ID5005**
M12 connector · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	105 x 80 x 40	60 nf	PPE	10...36	IP 67	100	250	113	**ID5046**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	120 x 80 x 30	50 nf	PPE	10...36	IP 67	100	250	114	**ID5026**

f = flush / nf = non flush

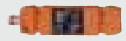
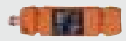
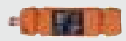
Ring sensors for industrial applications

Type	Inside diameter [mm]	Operating principle	Minimum diameter of the steel ball [Ø mm]	Part speed max. [m/s]	Pulse stretching [ms]	Response time / break time [ms]	Drawing no.	Order no.
M12 connector · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	10.1	static	1.5	35	10...150	0.5 / 10	115	**I7R201**
	10.1	dynamic	0.6	35	0.1...150	0.2 / 0.2	115	**I7R203**
	15.1	static	2	35	10...150	0.5 / 10	116	**I7R205**
	15.1	dynamic	0.8	35	0.1...150	0.2 / 0.2	116	**I7R207**
	20.1	static	2.5	35	10...150	0.5 / 10	117	**I7R209**
	20.1	dynamic	1.0	35	0.1...150	0.2 / 0.2	117	**I7R211**

You can find wiring diagrams and scale drawings from page 120

Type	Inside diameter [mm]	Operating principle	Minimum diameter of the steel ball [Ø mm]	Part speed max. [m/s]	Pulse stretching [ms]	Response time / break time [ms]	Draw-ing no.	Order no.
M12 connector · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	25.1	static	3.0	35	10...150	0.5 / 10	118	**I7R213**
	25.1	dynamic	1.2	35	0.1...150	0.2 / 0.2	118	**I7R215**
M12 connector · Output function ⎍/⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	10.1	static	1.5	35	10...150	0.5 / 10	115	**I7R202**
M12 connector · Output function ⎍/⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	10.1	dynamic	0.6	35	0.1...150	0.2 / 0.2	115	**I7R204**
	15.1	static	2	35	10...150	0.5 / 10	116	**I7R206**
	15.1	dynamic	0.8	35	0.1...150	0.2 / 0.2	116	**I7R208**
	20.1	static	2.5	35	10...150	0.5 / 10	117	**I7R210**
	20.1	dynamic	1.0	35	0.1...150	0.2 / 0.2	117	**I7R212**
	25.1	static	3.0	35	10...150	0.5 / 10	118	**I7R214**
	25.1	dynamic	1.2	35	0.1...150	0.2 / 0.2	118	**I7R216**
M12 connector · Output function ⎍/⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	51	static	6	35	10...150	0.5 / 10	119	**I7R217**

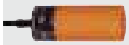
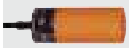
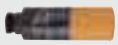
Tube sensors for industrial applications

Type	Sensing range [mm]	Operating principle	Minimum diameter of the steel ball [Ø mm]	Part speed max. [m/s]	Pulse stretching [ms]	Response time / break time [ms]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 1, 2, 3, 74, 80								
	≤ 14	static	3.0	35	100	0.5 / 100	120	**I85000**
M8 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 1, 3, 74, 80								
	≤ 14	static	3.0	35	100	0.5 / 100	120	**I85001**
Cable 0.09 m · with M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	≤ 14	static	3.0	35	100	0.5 / 100	121	**I85002**
Cable 0.09 m · with M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	≤ 14	static	3.0	35	100	0.5 / 100	121	**I85003**
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 1, 2, 3, 74, 80								
	≤ 20	dynamic	1.0	35	100	0.2 / 100	120	**I85004**
M8 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 1, 3, 74, 80								
	≤ 20	dynamic	1.0	35	100	0.2 / 100	120	**I85005**
Cable 0.09 m · with M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 14 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	≤ 20	dynamic	1.0	35	100	0.2 / 100	121	**I85006**
Cable 0.09 m · with M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 15 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	≤ 20	dynamic	1.0	35	100	0.2 / 100	121	**I85007**

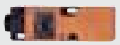
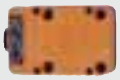
You can find wiring diagrams and scale drawings from page 120

Sensors for industrial applications, AC and AC/DC

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎓ · 2-wire · AC · Wiring diagram no. 3									
	M12 / L = 71.5	2 f	PBT	20...250	IP 67	25	250	122	**IF0001***
	M12 / L = 71.5	2 f	Brass	20...250	IP 67	25	250	122	**IF0005***
	M12 / L = 71.5	4 nf	PBT	20...250	IP 67	25	250	122	**IF0003***
	M12 / L = 71	4 nf	Brass	20...250	IP 67	25	250	123	**IF0007***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 16									
	M18 / L = 80	5 f	PBT	20...250	IP 67	25 / 50	350 / 100	63	**IG0005***
	M18 / L = 80	5 f	Brass	20...250	IP 67	25 / 50	350 / 100	63	**IG0011***
	M18 / L = 80	8 nf	PBT	20...250	IP 67	25 / 50	350 / 100	63	**IG0006***
	M18 / L = 80	8 nf	Brass	20...250	IP 67	25 / 50	350 / 100	65	**IG0012***
	Ø 20 / L = 77	10 nf	PBT	20...250	IP 67	25 / 70	350 / 100	90	**IA0004***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 17									
	Ø 20 / L = 77	10 nf	PBT	20...250	IP 67	25 / 70	350 / 100	90	**IA0027***
Terminals · Output function ⎓ / ⎓ · 2-wire · AC/DC · Wiring diagram no. 18									
	Ø 20 / L = 92	10 nf	PBT	20...250	IP 65	25 / 70	350 / 100	92	**IA0032***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 16									
	M30 / L = 81	10 f	PBT	20...250	IP 67	25 / 50	350 / 100	70	**II0005***

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 16									
	M30 / L = 81	10 f	Brass	20...250	IP 67	25 / 50	350 / 100	70	**II0011***
	M30 / L = 81	15 nf	PBT	20...250	IP 67	25 / 50	350 / 100	70	**II0006***
	M30 / L = 81	15 nf	Brass	20...250	IP 67	25 / 50	350 / 100	72	**II0012***
	Ø 34 / L = 82	20 nf	PBT	20...250	IP 67	25 / 50	350 / 100	93	**IB0004***
	Ø 34 / L = 82	30 nf	PBT	20...250	IP 67	25 / 50	350 / 100	93	**IB0026***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 17									
	Ø 34 / L = 82	20 nf	PBT	20...250	IP 67	25 / 50	350 / 100	93	**IB0017***
	Ø 34 / L = 82	30 nf	PBT	20...250	IP 67	25 / 50	350 / 100	93	**IB0027***
Terminals · Output function ⎓ / ⎓ · 2-wire · AC/DC · Wiring diagram no. 18									
	Ø 34 / L = 98	20 nf	PBT	20...250	IP 65	25 / 50	350 / 100	94	**IB0016***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 16									
	40 x 12 x 26	2 f	PBT	20...250	IP 67	25 / 50	350 / 100	101	**IN0073***
	40 x 12 x 26	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	101	**IN0081***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 17									
	40 x 12 x 26	2 f	PBT	20...250	IP 67	25 / 50	350 / 100	101	**IN0077***
	40 x 12 x 26	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	101	**IN0085***

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Terminals · Output function ⎓ / ⏚ · 2-wire · AC/DC · Wiring diagram no. 18									
	40 x 40 x 120	15 f	PPE	20...250	IP 65	20 / 55	350 / 100	107	**IM0011***
	40 x 40 x 120	20 nf	PPE	20...250	IP 65	20 / 55	350 / 100	107	**IM0010***
1/2" connector · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 19 · Connector group 29									
	40 x 40 x 66	35 nf	PPE	20...250	IP 67	20 / 50	350 / 100	124	**IM0049***
	40 x 40 x 66	20 f	PPE	20...250	IP 67	25 / 140	350 / 100	125	**IM0054***
	40 x 40 x 66	35 nf	PPE	20...250	IP 67	20 / 50	350 / 100	125	**IM0053***
Terminals · Output function ⎓ / ⏚ · 2-wire · AC/DC · Wiring diagram no. 40									
	90 x 60 x 40	40 nf	PPE	20...250	IP 65	10	350 / 100	110	**IC0003***
Cable 2 m · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 16									
	120 x 80 x 30	50 nf	modified PPE	20...250	IP 65	25 / 35	350 / 100	114	**ID0014***
M12 connector · Output function ⎓ · 2-wire · AC/DC · Wiring diagram no. 19 · Connector group 7									
	92 x 80 x 40	50 f	modified PPE	20...250	IP 67	25	350 / 100	111	**ID0049***
Terminals · Output function ⎓ / ⏚ · 2-wire · AC/DC · Wiring diagram no. 40									
	105 x 80 x 40	60 nf	modified PPE	20...250	IP 65	4	350 / 100	112	**ID0013***

f = flush / nf = non flush

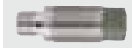
*** Note for AC and AC/DC units**

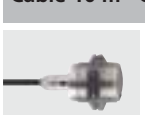
Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Sensors for hygienic and wet areas with increased sensing range

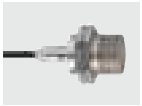
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M12 / L = 45	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	1	**IFT203**
	M12 / L = 50	7 nf	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	126	**IFT200**
	M12 / L = 70	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	700	100	3	**IFT216**
	M12 / L = 70	7 nf	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	4	**IFT217**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 123, 126									
	M12 / L = 45	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	1	**IFT204**
	M12 / L = 50	7 nf	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	126	**IFT201**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 123, 126									
	M12 / L = 70	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	500	100	3	**IFT205**
	M12 / L = 70	7 nf	High-grade st. steel	10...30	IP 68 / IP 69K	700	100	127	**IFT202**
	Ø 12 / L = 70	7 nf	High-grade st. steel	10...30	IP 68 / IP 69K	700	100	128	**IFT210**
Cable 6 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M12 / L = 50	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	129	**IFT206**
	M12 / L = 61	7 nf	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	130	**IFT208**
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M12 / L = 50	4 f	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	129	**IFT207**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M12 / L = 61	7 nf	High-grade st. steel	10...36	IP 68 / IP 69K	800	100	130	**IFT209**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M18 / L = 46	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	600	100	7	**IGT203**
	M18 / L = 51	12 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	131	**IGT200**
	M18 / L = 70	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	400	100	9	**IGT219**
	M18 / L = 70	12 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	10	**IGT220**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector group 123									
	M18 / L = 46	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	600	100	7	**IGT204**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 123, 126									
	M18 / L = 51	12 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	131	**IGT201**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 123, 126									
	M18 / L = 70	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	400	100	9	**IGT205**
	M18 / L = 70	12 nf	High-grade st. steel	10...30	IP 68 / IP 69K	300	100	132	**IGT202**
Cable 6 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 57	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	600	100	133	**IGT206**
	M18 / L = 62	12 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	134	**IGT208**
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 57	8 f	High-grade st. steel	10...36	IP 68 / IP 69K	600	100	133	**IGT207**

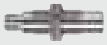
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 62	12 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	134	**IGT209**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M30 / L = 50	14 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	14	**IIT205**
	M30 / L = 50	22 nf	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	135	**IIT200**
	M30 / L = 70	15 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	16	**IIT212**
	M30 / L = 70	22 nf	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	17	**IIT213**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 123, 126									
	M30 / L = 70	14 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	16	**IIT204**
	M30 / L = 70	22 nf	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	17	**IIT202**
1/2" UNF-Connector · Output function ⎍ · 2-wire · AC/DC · Wiring diagram no. 20 · Connector group 29									
	M30 / L = 70	22 nf	High-grade st. steel	20...140	IP 68 / IP 69K	25 / 100	200	136	**IIT002**
Cable 6 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M30 / L = 59	22 nf	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	137	**IIT207**
	M30 / L = 59	14 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	138	**IIT209**
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M30 / L = 59	14 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	138	**IIT206**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M30 / L = 59	22 nf	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	137	**IIT208**

f = flush / nf = non flush

Full metal sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	Ø 12 / L = 60	3 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	139	**IFT243**
	M12 / L = 60	3 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	140	**IFT240**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126, 128									
	M12 / L = 70	6 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	141	**IFT245**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector group 123									
	M12 / L = 60	3 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	140	**IFT244**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 123, 128									
	M12 / L = 70	6 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	141	**IFT246**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M18 / L = 70	5 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	66	**IGT247**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126, 128									
	M18 / L = 70	12 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	142	**IGT249**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 123, 126									
	M18 / L = 70	5 f	High-grade st. steel	10...36	IP 68 / IP 69K	100	100	66	**IGT248**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 123, 128									
	M18 / L = 70	12 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	142	**IGT250**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M30 / L = 70	10 f	High-grade st. steel	10...36	IP 68 / IP 69K	50	100	143	**IIT228**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126, 128									
	M30 / L = 70	25 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	250	100	144	**IIT231**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector group 123									
	M30 / L = 70	10 f	High-grade st. steel	10...36	IP 68 / IP 69K	50	100	143	**IIT230**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 123, 128									
	M30 / L = 70	25 nf	High-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	250	100	144	**IIT232**

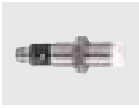
f = flush / nf = non flush

Sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M8 / L = 70	1 f	High-grade st. steel	10...36	IP 67	2000	200	145	**IE5215**
	M8 / L = 55	2 nf	High-grade st. steel	10...36	IP 67	2000	200	146	**IE5295**
	M12 / L = 44	2 f	High-grade st. steel	10...36	IP 67	1200	250	147	**IF5815**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M12 / L = 59	2 f	High-grade st. steel	10...36	IP 67	1100	200	148	**IF5514**
	M12 / L = 83	2 f	High-grade st. steel	10...36	IP 67	800	250	60	**IF5851**
	M12 / L = 44	4 nf	High-grade st. steel	10...36	IP 67	1400	150	149	**IF5796**
	M12 / L = 59	4 nf	High-grade st. steel	10...36	IP 67	1400	250	150	**IF5813**
	M12 / L = 83	4 nf	High-grade st. steel	10...36	IP 67	400	250	61	**IF5594**
M12 connector · Output function ⎍⎽ /⎽⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 123, 125, 150									
	M12 / L = 83	2 f	High-grade st. steel	10...55	IP 67	1100	400	60	**IF5759**
	M12 / L = 83	4 nf	High-grade st. steel	10...55	IP 67	1500	300	61	**IF5760**
Cable 2 m · Output function ⎍⎽+⎽⎍ · 4-wire · DC PNP · Wiring diagram no. 21									
	M18 / L = 80	8 nf	High-grade st. steel	10...36	IP 67	320	250	65	**IG5202**
M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M18 / L = 76	5 f	High-grade st. steel	10...36	IP 67	500	250	151	**IG5813**
	M18 / L = 90	8 nf	High-grade st. steel	10...36	IP 67	300	250	152	**IG5602**
M12 connector · Output function ⎍⎽+⎽⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 123, 125, 126, 150, 151									
	M18 / L = 45	10 nf	High-grade st. steel	10...36	IP 67	300	250	153	**IG5846**
M12 connector · Output function ⎍⎽ /⎽⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 123, 125, 150									
	M18 / L = 90	5 f	High-grade st. steel	10...55	IP 67	700	400	154	**IG5806**

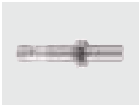
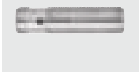
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 123, 125, 150									
	M18 / L = 77	8 nf	High-grade st. steel	10...55	IP 67	300	300	155	**IG5772**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 123, 126									
	M18 / L = 70	8 nf	High-grade st. steel	10...36	IP 68 / IP 69K	300	100	132	**IGT240**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M30 / L = 92	10 f	High-grade st. steel	10...36	IP 67	250	250	156	**II5689**
	M30 / L = 92	15 nf	High-grade st. steel	10...36	IP 67	200	250	157	**II5776**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 123, 125, 150									
	M30 / L = 92	10 f	High-grade st. steel	10...55	IP 67	450	400	156	**II5751**
	M30 / L = 78	15 nf	High-grade st. steel	10...55	IP 67	200	400	74	**II5733**

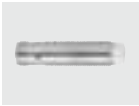
f = flush / nf = non flush

Sensors for oils and coolants with increased sensing range

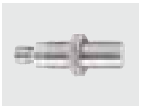
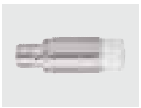
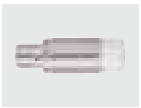
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M8 / L = 50	2 f	High-grade st. steel	10...36	IP 67	1000	200	52	**IE5381**
	M8 / L = 50	4 nf	High-grade st. steel	10...36	IP 67	700	200	158	**IE5382**
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC204**
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC206**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	4 f	Brass	10...36	IP 68	700	200	140	**IFC229**
	M12 / L = 70	4 f	Brass	10...36	IP 68	700	100	3	**IFC237**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC207**
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC209**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 45	4 f	Brass	10...30	IP 68	700	100	1	**IFC200**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 41 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 45	4 f	Brass	10...30	IP 68	700	100	1	**IFC202**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 70	4 f	Brass	10...30	IP 68	500	100	3	**IFC210**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 60	4 f	Brass	10...36	IP 68	700	100	140	**IFC234**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 50	7 nf	Brass	10...36	IP 68	700	100	2	**IFC205**
	M12 / L = 60	7 nf	Brass	10...36	IP 68	700	200	159	**IFC230**
	M12 / L = 70	7 nf	Brass	10...36	IP 68	700	100	4	**IFC238**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 50	7 nf	Brass	10...36	IP 68	700	100	2	**IFC208**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 50	7 nf	Brass	10...30	IP 68	700	100	2	**IFC201**
M12 connector · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 60	7 nf	Brass	10...36	IP 68	500	100	159	**IFC235**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	8 f	Brass	10...36	IP 68	400	100	7	**IGC204**
	M18 / L = 46	8 f	Brass	10...36	IP 68	400	100	7	**IGC206**
	M18 / L = 60	8 f	Brass	10...36	IP 68	400	200	75	**IGC221**
	M18 / L = 70	8 f	Brass	10...36	IP 68	400	100	9	**IGC224**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	8 f	Brass	10...36	IP 68	400	100	7	**IGC207**
	M18 / L = 46	8 f	Brass	10...36	IP 68	400	100	7	**IGC209**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 46	8 f	Brass	10...30	IP 68	400	100	7	**IGC200**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 41 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 46	8 f	Brass	10...30	IP 68	300	100	7	**IGC202**

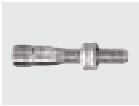
You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 70	8 f	Brass	10...30	IP 68	400	100	9	**IGC222**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	8 f	Brass	10...30	IP 68	400	100	9	**IGC210**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 51	12 nf	Brass	10...36	IP 68	300	100	8	**IGC205**
	M18 / L = 60	12 nf	Brass	10...36	IP 68	300	200	76	**IGC220**
	M18 / L = 70	12 nf	Brass	10...36	IP 68	300	100	10	**IGC225**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 51	12 nf	Brass	10...36	IP 68	300	100	8	**IGC208**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 33 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 51	12 nf	Brass	10...30	IP 68	250	100	8	**IGC201**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 41 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 51	12 nf	Brass	10...30	IP 68	250	100	8	**IGC203**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 70	12 nf	Brass	10...36	IP 68	300	100	10	**IGC223**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 50	15 f	Brass	10...36	IP 68	100	100	14	**IIC200**
	M30 / L = 60	15 f	Brass	10...36	IP 68	100	200	160	**IIC206**

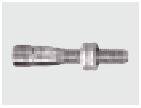
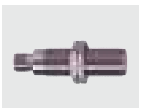
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 70	15 f	High-grade st. steel	10...36	IP 68	100	100	16	**IIC210**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M30 / L = 70	15 f	Brass	10...30	IP 68	100	100	16	**IIC208**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 50	22 nf	Brass	10...36	IP 68	100	100	15	**IIC201**
	M30 / L = 60	22 nf	Brass	10...36	IP 68	100	200	161	**IIC207**
	M30 / L = 70	22 nf	High-grade st. steel	10...36	IP 68	100	100	17	**IIC211**
M12 connector · Output function ⎍ / ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 34 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M30 / L = 70	22 nf	Brass	10...30	IP 68	100	100	17	**IIC209**

f = flush / nf = non flush

Full metal sensors for oils and coolants

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 50	2 f	High-grade st. steel	10...36	IP 67	100	100	162	**IEC201**
M8 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 1, 3, 74, 80									
	M8 / L = 50	2 f	High-grade st. steel	10...36	IP 67	100	100	162	**IEC202**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M8 / L = 60	2 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	163	**IEC200**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M8 / L = 60	2 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	163	**IEC203**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	3 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	140	**IFC258**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 60	3 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	140	**IFC266**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	5 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	66	**IGC248**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 70	5 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	66	**IGC252**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 70	10 f	High-grade st. steel	10...36	IP 67 / IP 68	50	100	143	**IIC224**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M30 / L = 70	10 f	High-grade st. steel	10...36	IP 67 / IP 68	50	100	143	**IIC226**

f = flush / nf = non flush

Full metal sensors for oils and coolants with correction factor K = 0

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	2.5 f	High-grade st. steel	10...36	IP 68	100	100	140	**IFC263**

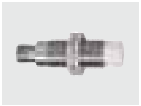
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	2.5 f	High-grade st. steel	10...36	IP 68	100	100	140	**IFC264**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	4.5 f	High-grade st. steel	10...36	IP 68	100	100	164	**IGC249**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	4.5 f	High-grade st. steel	10...36	IP 68	100	100	164	**IGC250**

f = flush / nf = non flush

Sensors for oils and coolants with correction factor K = 1

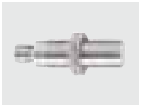
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 65	1.5 f	High-grade st. steel	10...30	IP 67	1000	200	165	**IE5390**
	M8 / L = 65	4 nf	High-grade st. steel	10...30	IP 67	1000	200	166	**IE5391**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M12 / L = 65	3 f	Brass	10...30	IP 68	2000	200	167	**IFC259**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 65	8 nf	High-grade st. steel	10...30	IP 68	2000	200	168	**IFC246**
	M18 / L = 65	5 f	High-grade st. steel	10...30	IP 68	2000	200	169	**IGC232**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 65	12 nf	High-grade st. steel	10...30	IP 68	2000	200	170	**IGC233**
	M30 / L = 65	10 f	High-grade st. steel	10...30	IP 68	1000	200	171	**IIC218**
	M30 / L = 65	22 nf	High-grade st. steel	10...30	IP 68	1000	200	172	**IIC219**

f = flush / nf = non flush

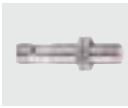
Sensors for oils and coolants with ceramic sensing face

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC206**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	4 f	Brass	10...36	IP 68	700	100	1	**IFC209**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 70	4 f	Brass	10...30	IP 68	500	100	3	**IFC210**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 46	8 f	Brass	10...36	IP 68	400	100	7	**IGC209**
M12 connector · Output function ⎍ · 3-wire DC PNP · 2-wire DC PNP/NPN · Wiring diagram no. 32 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 70	8 f	Brass	10...30	IP 68	400	100	9	**IGC210**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍⎓ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 60	15 f	Brass	10...36	IP 68	100	200	160	**IIC206**

f = flush / nf = non flush

Sensors for oils and coolants, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · 2-wire · AS-i · Wiring diagram no. 12 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 60	4 f	High-grade st. steel	26.5...31.6	IP 68	100	–	140	**IFC247**
	M18 / L = 60	8 f	High-grade st. steel	26.5...31.6	IP 68	100	–	75	**IGC234**
	M18 / L = 60	12 nf	High-grade st. steel	26.5...31.6	IP 68	100	–	76	**IGC235**
	M30 / L = 60	14 f	High-grade st. steel	26.5...31.6	IP 68	100	–	160	**IIC220**
	M30 / L = 60	22 nf	High-grade st. steel	26.5...31.6	IP 68	100	–	161	**IIC221**

f = flush / nf = non flush

Sensors for oils and coolants, threaded housings

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 42									
	M8 / L = 42	2 f	Brass	10...55	IP 67	1000	100	173	**IE9203**
Cable 0.8 m · with M12 connector · Output function ⎍⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M8 / L = 42	2 f	Brass	10...55	IP 67	1000	100	174	**IE9902**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M8 / L = 69	1 f	Brass	5...36	IP 65	2000	200	55	**IE9940**
Cable 2 m · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 42									
	M12 / L = 54	2 f	Brass	10...55	IP 67	800	100	175	**IF9222**
Cable 0.8 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 43 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 54	2 f	Brass	10...55	IP 67	800	100	176	**IF9920**
Cable 2 m · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 23									
	M18 / L = 54	5 f	Brass	10...55	IP 67	700	400	177	**IG5682**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 45	2 f	Brass	10...36	IP 68	700	200	1	**IFC239**
	M12 / L = 60	2 f	Brass	10...36	IP 68	700	200	140	**IFC243**
	M12 / L = 70	2 f	Brass	10...36	IP 68	700	200	3	**IFC241**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M12 / L = 60	2 f	Brass	10...55	IP 67	800	100	178	**IF9924**
Cable 0.8 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 58	5 f	Brass	10...55	IP 67	700	400	179	**IG9984**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M18 / L = 65	5 f	Brass	10...55	IP 67	700	400	180	**IG9983**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 50	15 nf	High-grade st. steel	10...36	IP 68	100	200	15	**IIC213**

f = flush / nf = non flush

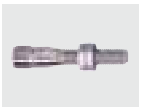
Sensors for oils and coolants, rectangular housings

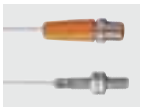
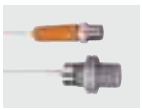
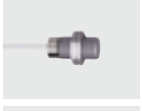
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 0.8 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	26 x 26 x 26	10 f	polyamide	10...36	IP 67	250	100	181	**IO5017**
Cable 0.15 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	26 x 26 x 26	10 f	polyamide	10...36	IP 67	250	100	181	**IO5018**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	26 x 26 x 43	10 f	polyamide	10...36	IP 67	250	100	182	**IO5016**
Cable 0.8 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 44 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	15 f	PA (polyamide)	10...36	IP 67	200	100	183	**IM5137**
Cable 0.8 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 43 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	15 f	PA (polyamide)	10...36	IP 67	200	100	183	**IM5138**
M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 43 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 40 x 54	15 f	PA (polyamide)	10...36	IP 67	200	100	184	**IM5127**

f = flush / nf = non flush

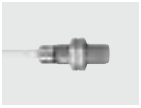
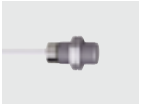
You can find wiring diagrams and scale drawings from page 120

Full metal sensors with non-stick coating against weld spatter

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M8 / L = 60	2 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	163	**IER200**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 110, 112, 113									
	M8 / L = 60	2 f	High-grade st. steel	10...36	IP 67 / IP 68	100	100	163	**IER201**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M12 / L = 60	4 f	High-grade st. steel	10...36	IP 67	2	100	140	**IFR200**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 110, 112, 113									
	M12 / L = 60	4 f	High-grade st. steel	10...36	IP 67	2	100	140	**IFR202**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M18 / L = 70	6 f	High-grade st. steel	10...36	IP 67	2	100	66	**IGR200**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 110, 112, 113									
	M18 / L = 70	6 f	High-grade st. steel	10...36	IP 67	2	100	66	**IGR202**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M30 / L = 70	12 f	High-grade st. steel	10...36	IP 67	2	100	143	**IIR200**
M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 6 · Connector groups 110, 112, 113									
	M30 / L = 70	12 f	High-grade st. steel	10...36	IP 67	2	100	143	**IIR202**
Cable 0.3 m · with M12 connector · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 110, 112, 113									
	M8 / L = 45	2 f	High-grade st. steel	10...36	IP 67	150	100	185	**IER203**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 110, 112, 113									
	M8 / L = 45	2 f	High-grade st. steel	10...36	IP 67	150	100	185	**IER206**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 110, 112, 113									
	M12 / L = 40	4 f	High-grade st. steel	10...36	IP 67	75	100	186	**IFR203**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 110, 112, 113									
	M12 / L = 40	4 f	High-grade st. steel	10...36	IP 67	75	100	186	**IFR206**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 110, 112, 113									
	M18 / L = 40	6 f	High-grade st. steel	10...36	IP 67	50	100	187	**IGR203**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 110, 112, 113									
	M18 / L = 40	6 f	High-grade st. steel	10...36	IP 67	50	100	187	**IGR206**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 22 · Connector groups 110, 112, 113									
	M30 / L = 40	12 f	High-grade st. steel	10...36	IP 67	25	100	188	**IIR203**
Cable 0.3 m · with M12 connector · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 110, 112, 113									
	M30 / L = 40	12 f	High-grade st. steel	10...36	IP 67	25	100	188	**IIR206**
Cable 3 m · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 25									
	M8 / L = 45	2 f	High-grade st. steel	10...36	IP 67	150	100	189	**IER204**
	M12 / L = 40	4 f	High-grade st. steel	10...36	IP 67	75	100	190	**IFR204**
	M18 / L = 40	6 f	High-grade st. steel	10...36	IP 67	50	100	191	**IGR204**
	M30 / L = 40	12 f	High-grade st. steel	10...36	IP 67	25	100	192	**IIR204**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 5 m · Output function ⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 25									
	M8 / L = 45	2 f	High-grade st. steel	10...36	IP 67	150	100	189	**IER205**
	M12 / L = 40	4 f	High-grade st. steel	10...36	IP 67	75	100	190	**IFR205**
	M18 / L = 40	6 f	High-grade st. steel	10...36	IP 67	50	100	191	**IGR205**
	M30 / L = 40	12 f	High-grade st. steel	10...36	IP 67	25	100	192	**IIR205**

f = flush / nf = non flush

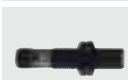
Electromagnetic field immune sensors with correction factor K = 1

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M12 / L = 65	3 f	Brass	10...30	IP 67	4000	200	193	**IFW200**
	M12 / L = 65	8 nf	Brass	10...30	IP 67	4000	200	194	**IFW201**
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 65	5 f	Brass	10...30	IP 67	2000	200	169	**IGW200**
	M18 / L = 65	12 nf	Brass	10...30	IP 67	2000	200	170	**IGW201**
	M30 / L = 65	10 f	Brass	10...30	IP 67	1000	200	171	**IIW200**
	M30 / L = 65	22 nf	Brass	10...30	IP 67	1000	200	195	**IIW201**
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	106	**IM5119**

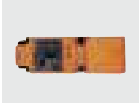
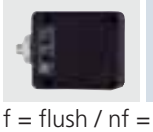
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5120**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5129**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 110, 111, 112, 113									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	106	**IM5124**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5125**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67	200	200	106	**IM5126**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	200	200	77	**IM5132**
	40 x 40 x 54	35 nf	PA (polyamide)	10...36	IP 67	200	200	77	**IM5133**
	40 x 40 x 54	40 nf	PA (polyamide)	10...36	IP 67 / IP 69K	200	200	77	**IM5135**

f = flush / nf = non flush

Electromagnetic field immune sensors

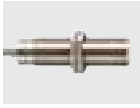
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M12 / L = 60	2 f	Brass	10...36	IP 67	1000	250	196	**IF5670**
	M12 / L = 60	2 f	Brass	10...36	IP 67	1000	250	196	**IF5750**
	M12 / L = 60	4 nf	Brass	10...36	IP 67	1000	250	197	**IF5675**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 110, 111, 112, 113									
	M12 / L = 60	4 nf	Brass	10...36	IP 67	1000	250	197	**IF5751**
	M18 / L = 60	5 f	Brass	10...36	IP 67	700	250	75	**IG5647**
	M18 / L = 60	5 f	Brass	10...36	IP 67	700	250	75	**IG5667**
	M30 / L = 60	10 f	Brass	10...36	IP 67	250	250	198	**II5503**
	40 x 40 x 118	15 f	modified PPE	10...60	IP 67	50	200	199	**IV5025**
M12 connector · Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 110, 111, 112, 113									
	92 x 80 x 40	50 f	PPE	10...36	IP 67	70	250	111	**ID5059**

f = flush / nf = non flush

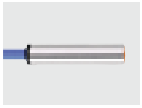
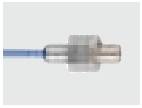
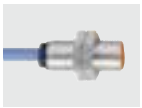
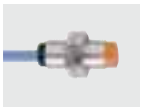
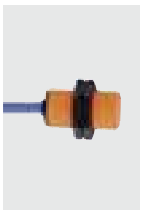
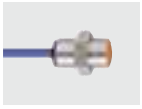
Sensors for high-temperature applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 5 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M12 / L = 56	3 f	stainless steel	10...35	IP 65	500	120	200	**IF6074**
Cable 5 m · Output function ⎍ · 5-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 70	5 f	stainless steel	10...35	IP 65	400	150	201	**IG6614**
Cable 5 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M18 / L = 77	8 nf	stainless steel	10...35	IP 65	400	150	202	**IG6119**

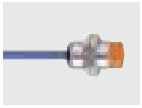
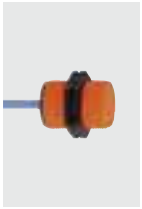
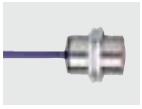
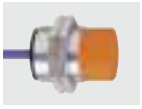
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 5 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4									
	M30 / L = 79	15 nf	stainless steel	10...35	IP 65	200	150	203	**II5930**
	M30 / L = 70	10 f	High-grade st. steel	10...35	IP 65	200	150	204	**II5961**
	M50 / L = 70	20 f	stainless steel	10...35	IP 65	100	150	205	**I95045**

f = flush / nf = non flush

Sensors with ATEX approval 1D / 2G

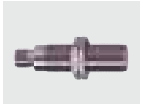
Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 2-wire · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 26										
	Ø 6.5 / L = 30	1 f	Brass	8.2 DC	7.5...30	80	70	2000	206	**NT5001**
	M8 / L = 30	1 f	Brass	8.2 DC	7.5...30	80	70	2000	207	**NE5001**
	M12 / L = 30	2 f	PBT	8.2 DC	7.5...30	140	340	1200	208	**NF5001**
	M12 / L = 30	4 nf	PBT	8.2 DC	7.5...30	140	130	1500	208	**NF5003**
	M12 / L = 30	2 f	Brass	8.2 DC	7.5...30	140	340	1200	208	**NF5002**
	M12 / L = 30	4 nf	Brass	8.2 DC	7.5...30	140	130	1500	209	**NF5004**
	M18 / L = 33	5 f	PBT	8.2 DC	7.5...30	145	45	720	210	**NG5001**
	M18 / L = 33	8 nf	PBT	8.2 DC	7.5...30	155	50	300	210	**NG5003**
	M18 / L = 33	5 f	Brass	8.2 DC	7.5...30	145	45	720	210	**NG5002**

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
Cable 2 m · Output function ⌐ · 2-wire · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 26										
	M18 / L = 33	8 nf	Brass	8.2 DC	7.5...30	155	50	300	211	**NG5004**
	M30 / L = 41	10 f	PBT	8.2 DC	7.5...30	145	140	450	212	**NI5001**
	M30 / L = 41	15 nf	PBT	8.2 DC	7.5...30	145	110	200	212	**NI5003**
	M30 / L = 41	10 f	Brass	8.2 DC	7.5...30	145	140	450	212	**NI5002**
	M30 / L = 41	15 nf	Brass	8.2 DC	7.5...30	145	110	200	213	**NI5004**
	28 x 10 x 16	2 f	PBT	8.2 DC	7.5...30	80	110	800	214	**NS5002**
	40 x 12 x 26	4 nf	PBT	8.2 DC	7.5...30	110	135	400	215	**NN5002**

f = flush / nf = non flush

Sensors with ATEX approval 3D/3G

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
M12 connector · Output function ⌐ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 147, 149										
	M12 / L = 60	3 f	High-grade st. steel	10...36 DC	–	–	–	100	140	**IF503A**
	M12 / L = 70	6 nf	High-grade st. steel	10...36 DC	–	–	–	500	141	**IF505A**
	M18 / L = 70	5 f	High-grade st. steel	10...36 DC	–	–	–	100	66	**IG510A**
	M18 / L = 70	12 nf	High-grade st. steel	10...36 DC	–	–	–	500	142	**IG511A**
	M30 / L = 70	10 f	High-grade st. steel	10...36 DC	–	–	–	50	216	**II502A**

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 147, 149										
	M30 / L = 70	25 nf	High-grade st. steel	10...36 DC	–	–	–	250	144	**II503A**
M12 connector · Output function ⎍⎾ · 3-wire · DC PNP · Wiring diagram no. 2 · Connector groups 147, 149										
	M12 / L = 60	3 f	High-grade st. steel	10...36 DC	–	–	–	100	140	**IF504A**
	M18 / L = 70	5 f	High-grade st. steel	10...36 DC	–	–	–	100	66	**IG512A**
M12 connector · Output function normally open / closed · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 147, 149										
	40 x 40 x 54	40 nf	PC	10...30 DC	–	–	–	60	217	**IM511A**
	40 x 40 x 54	20 f	PC	10...30 DC	–	–	–	100	217	**IM512A**
	40 x 40 x 54	30 nf	PC	10...30 DC	–	–	–	100	217	**IM513A**

f = flush / nf = non flush

Sensors with ATEX approval 3D

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
Terminals · Output function ⎍⎽ / ⎍⎾ · 2-wire · AC/DC · Wiring diagram no. 40										
	105 x 80 x 42	60 nf	PPE	20...250 AC/DC	–	–	–	4	218	**ID002A***
Terminals · Output function ⎍⎽ / ⎍⎾ · 3-wire · DC PNP · Wiring diagram no. 39										
	105 x 80 x 42	60 nf	PPE	10...30 DC	–	–	–	100	218	**ID502A**
Cable 2 m · Output function ⎍⎽ · 2-wire · AC/DC · Wiring diagram no. 16										
	M18 / L = 80	8 nf	Brass	20...250 AC/DC	–	–	–	25 / 50	219	**IG001A***

You can find wiring diagrams and scale drawings from page 120

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 4										
	M18 / L = 80	8 nf	Brass	10...30 DC	–	–	–	300	219	**IG513A**
· Output function ⎍+⎍ · 4-wire · DC PNP · Wiring diagram no. 11 · Connector groups 147, 149										
	M18 / L = 80	10 nf	High-grade st. steel	10...30 DC	–	–	–	300	220	**IG514A**
Cable 2 m · Output function ⎍/⎍ · 2-wire · DC PNP/NPN · Wiring diagram no. 35										
	M18 / L = 80	8 nf	Brass	10...30 DC	–	–	–	300	219	**IG515A**
Terminals · Output function ⎍/⎍ · 3-wire · AC/DC · Wiring diagram no. 45										
	40 x 40 x 105	20 f	PC	20...250 AC/DC	–	–	–	10	221	**IM001A***
Terminals · Output function ⎍/⎍ · 2-wire · AC/DC · Wiring diagram no. 18										
	40 x 40 x 105	40 nf	PC	20...250 AC/DC	–	–	–	10	221	**IM002A***
Terminals · Output function ⎍/⎍ · 4-wire · DC · Wiring diagram no. 46										
	40 x 40 x 105	20 f	PC	10...30 DC	–	–	–	100	221	**IM506A**
	40 x 40 x 105	40 nf	PC	10...30 DC	–	–	–	100	221	**IM507A**
Terminals · Output function ⎍/⎍ · 2-wire · DC · Wiring diagram no. 47										
	40 x 40 x 105	20 f	PC	10...55 DC	–	–	–	100	221	**IM508A**
Terminals · Output function ⎍ · 4-wire · DC · Wiring diagram no. 27										
	40 x 40 x 105	20 f	PC	10...30 DC	–	–	–	100	221	**IM509A**

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
Terminals · Output function normally open / closed · 4-wire · DC · Wiring diagram no. 28										
	40 x 40 x 105	20 f	PC	10...30 DC	–	–	–	100	221	**IM510A**
Cable 6 m · Output function ⎓ · 3-wire · AC/DC · Wiring diagram no. 16										
	M30 / L = 81	15 nf	Brass	20...250 AC/DC	–	–	–	25 / 50	222	**II001A***

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Sensors with ATEX approval 2D / 3G

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
M12 connector · Output function ⎓ · 3-wire · DC PNP · Wiring diagram no. 29 · Connector groups 147, 149										
	M30 / L = 70	10 f	High-grade st. steel	10...36 DC	–	–	–	50	216	**II504A**
Terminals · Output function ⎓ / ⏚ · 3-wire · DC PNP · Wiring diagram no. 48										
	105 x 80 x 42	60 nf	modified PPE	10...30 DC	–	–	–	100	218	**ID503A**

f = flush / nf = non flush

Slot sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Draw-ing no.	Order no.
Cable 0.5 m · Output function ⏚ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 26									
	Special design	–	PBT	–	IP 67	5000	–	223	**N7S20A**
Cable with connector 0.065 m · Output function ⏚ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 30									
	Special design	–	PBT	–	IP 67	3000	–	224	**N7S21A**

You can find wiring diagrams and scale drawings from page 120

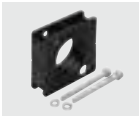
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 0.065 m · Output function ⎍ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 31									
	special design	–	PBT	–	IP 67	3000	–	225	**N7S23A**

Switching amplifiers with ATEX approval

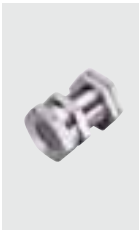
Type	Description	Order no.
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 1-channel · Relay output · Programmable output function · Short-circuit and wire monitoring	**N0031A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 2-channel · Relay outputs · Programmable output function · Short-circuit and wire monitoring	**N0032A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 2-channel · Relay outputs · Programmable output function · Short-circuit and wire monitoring	**N0033A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 1-channel · Relay output · Programmable output function · Short-circuit and wire monitoring	**N0530A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 1-channel · Transistor outputs · Programmable output function · Short-circuit and wire monitoring	**N0531A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 2-channel · Optocoupler output · Programmable output function · Short-circuit and wire monitoring	**N0532A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 2-channel · Relay outputs · Programmable output function · Short-circuit and wire monitoring	**N0533A**
	Switching amplifier for Namur sensors according to 94/9/EG (ATEX) · ATEX approval · Group II, category (1) G D · 2-channel · Transistor outputs · Programmable output function · Short-circuit and wire monitoring	**N0534A**

Accessories for sensors with smooth sleeve

Type	Description	Order no.
	Mounting clip · Ø 12 mm · for smooth body switches - Ø 12 mm · Form V · Housing materials: stainless steel	**E11530**
	Mounting clip · Ø 18 mm · for smooth body switches - Ø 18 mm · Form V · Housing materials: stainless steel	**E11531**

Type	Description	Order no.
	Mounting clamp · Ø 4 mm · Housing materials: TPE	**E10204**
	Mounting clamp · Ø 6.5 mm · Housing materials: PPE	**E10014**
	Mounting clamp · Ø 20 mm · Housing materials: PA	**E10192**
	Mounting clamp · Ø 34 mm · Housing materials: PA	**E10193**
	Mounting clamp · Ø 20 mm · Housing materials: Mounting clamp: PBT / socket screw: steel galvanised	**E10016**
	Mounting clamp · Ø 34 mm · Housing materials: PBT	**E10017**
	Limit plungers · for type Ø 6.5 mm · with Sn = 1 mm f · Housing materials: Limit plungers: free cutting steel / plunger: C45K hardened on front / nut: Brass nickel-plated	**E10155**

Accessories for threaded M8 housings

Type	Description	Order no.
	Angle bracket · for type M8 · Housing materials: stainless steel	**E10734**
	Mounting clamp · Ø 8 mm · Housing materials: aluminium black anodised	**E10221**
	Mounting clamp · Ø 8 mm · with end stop · for type M8 · Housing materials: PC	**E11521**
	Mounting sleeve · M12 x 1 - Ø 8 mm · 32 mm · with end stop · for type M8 · Housing materials: Brass special coating	**E10848**
	Mounting sleeve · M12 x 1 - Ø 8 mm · 42 mm · with end stop · for type M8 · Housing materials: Brass special coating	**E10849**
	Limit plungers · for types M8 x 1 · with Sn = 1 mm f, 2 mm f and 3 mm f · Housing materials: Limit plungers: free cutting steel / plunger: C45K hardened on front / nut: Brass nickel-plated	**E10154**

You can find wiring diagrams and scale drawings from page 120

Accessories for threaded M12 housings

Type	Description	Order no.
	Angle bracket · for type M12 · Housing materials: stainless steel	E10735
	Mounting clip · O-shaped · for type M12 · Housing materials: stainless steel	E11533
	Mounting clamp · Ø 12 mm · Housing materials: PBT	E10015
	Mounting clamp · Ø 12 mm · with end stop · for type M12 · Housing materials: PC	E11047
	Mounting clamp · Ø 12 mm · with end stop · For sensors with 45° chamfer · for type M12 · Housing materials: PC	E11994
	Mounting sleeve · M16 x 1 - Ø 12 mm · 45 mm · with end stop · for type M12 · Housing materials: Brass nickel-plated	E10741
	Mounting sleeve · M16 x 1 - Ø 12 mm · 34 mm · with end stop · for type M12 · Housing materials: Brass nickel-plated	E10806
	Mounting sleeve · M16 x 1 - Ø 12 mm · with end stop · for type M12 · Housing materials: Brass nickel-plated	E11114
	Lock nuts metal · M12 x 1 · Housing materials: Brass nickel-plated	E10024
	Lock nuts metal · M12 x 1 · Housing materials: stainless steel 316Ti / 1.4571	E10025

Accessories for threaded M18 housings

Type	Description	Order no.
	Angle bracket · for type M18 · Housing materials: stainless steel	E10736
	Mounting clip · O-shaped · for type M18 · Housing materials: stainless steel	E11534

Type	Description	Order no.
	Mounting clamp · Ø 20 mm - Ø 18 mm · with reducing bush · for type M18 · Housing materials: PBT	**E10076**
	Mounting clamp · Ø 18 mm · with end stop · for type M18 · Housing materials: PC	**E11048**
	Mounting clamp · Ø 18 mm · with end stop · For sensors with 45° chamfer · for type M18 · Housing materials: PC	**E11995**
	Mounting sleeve · M24 x 1.5 - Ø 18 mm · 58 mm · with end stop · for type M18 · Housing materials: Brass nickel-plated	**E10742**
	Mounting sleeve · M24 x 1.5 - Ø 18 mm · 36 mm · with end stop · for type M18 · Housing materials: Brass nickel-plated	**E10807**
	Mounting sleeve · M22 x 1 - Ø 18 mm · with end stop · for type M18 · Housing materials: Brass white bronze coated	**E11115**
	Plastic nut for flow plate · M18 x 1 · Housing materials: POM	**E19503**
	Lock nuts metal · M18 x 1 · Housing materials: Brass nickel-plated	**E10027**
	Lock nuts metal · M18 x 1 · Housing materials: stainless steel 316Ti / 1.4571	**E10028**

Accessories for threaded M30 housings

Type	Description	Order no.
	Angle bracket · for type M30 · Housing materials: stainless steel	**E10737**
	Mounting clamp · Ø 34 mm - Ø 30 mm · with reducing bush · for type M30 · Housing materials: PBT	**E10077**
	Mounting clamp · Ø 30 mm · with end stop · for type M30 · Housing materials: PC	**E11049**
	Mounting clamp · Ø 30 mm · with end stop · For sensors with 45° chamfer · for type M30 · Housing materials: PC	**E11996**

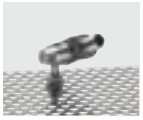
You can find wiring diagrams and scale drawings from page 120

Type	Description	Order no.
	Mounting sleeve · M36 x 1.5 - Ø 30 mm · 58 mm · with end stop · for type M30 · Housing materials: Brass nickel-plated	E10743
	Mounting sleeve · M36 x 1.5 - Ø 30 mm · 36 mm · with end stop · for type M30 · Housing materials: Brass nickel-plated	E10808
	Lock nuts metal · M30 x 1.5 · Housing materials: Brass nickel-plated	E10030
	Lock nuts metal · M30 x 1.5 · Housing materials: stainless steel 316Ti / 1.4571	E10031

Accessories for rectangular housings

Type	Description	Order no.
	Mounting bracket · with integrated snap-on rail · for type IDC · Housing materials: stainless steel	E10730
	Protective bracket · for cable units · for type IW, KW, OW · Housing materials: stainless steel 316Ti / 1.4571	E20813

System components

Type	Description	Order no.
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20718
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20719
	Angle bracket · Clamp mounting · for type IW, OW, KQ5 · Housing materials: stainless steel 316Ti / 1.4571	E20811
	Protective bracket · for cable units · for type IW, KW, OW · Housing materials: stainless steel 316Ti / 1.4571	E20813
	Protective bracket · for devices with M8 connection · for type OW, IW · Housing materials: stainless steel 316Ti / 1.4571	E20814

Type	Description	Order no.
	Mounting set · Ø 12.2 mm · Clamp mounting · free-standing M8 · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20856**
	Mounting set · Ø 12.2 mm · Clamp mounting · free-standing M8 · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20857**
	Mounting set · Ø 12.2 mm · Clamp mounting · free-standing M8 · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20860**
	Mounting set · Ø 12.2 mm · Clamp mounting · free-standing M8 · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20861**
	Mounting set · Ø 12.2 mm · Clamp mounting · aluminium profile · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20864**
	Mounting set · Ø 12.2 mm · Clamp mounting · aluminium profile · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20865**
	Mounting set · Ø 18.5 mm · Clamp mounting · aluminium profile · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20866**
	Mounting set · Ø 18.5 mm · Clamp mounting · aluminium profile · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20867**
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20869**
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20870**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20873**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20874**
	Mounting set · Ø 30.2 mm · Clamp mounting · aluminium profile · for type II, KI, OID, OI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20875**

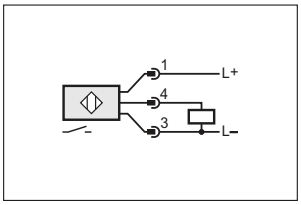
You can find wiring diagrams and scale drawings from page 120

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white

1



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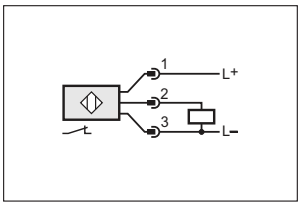

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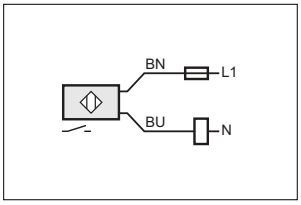

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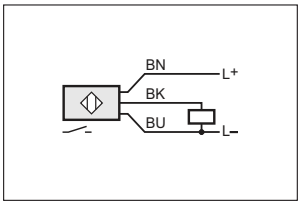

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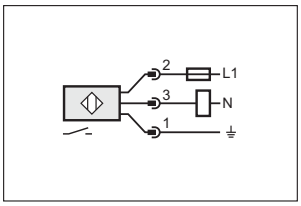

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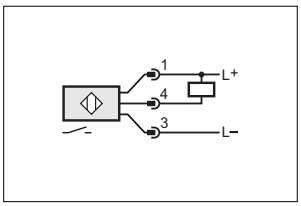

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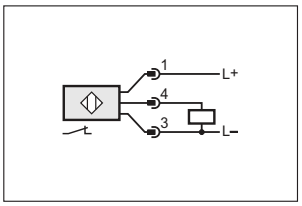

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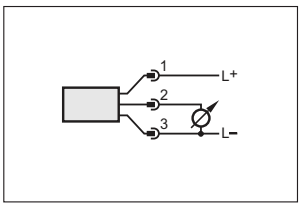

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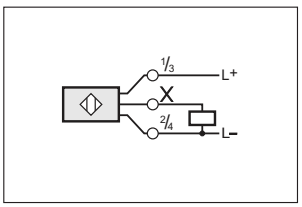

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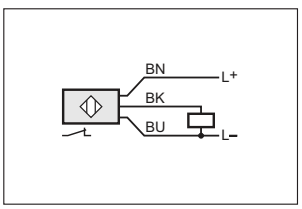

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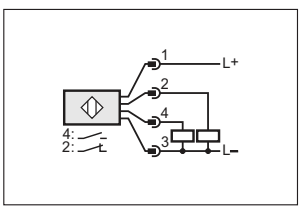

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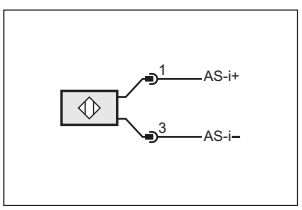

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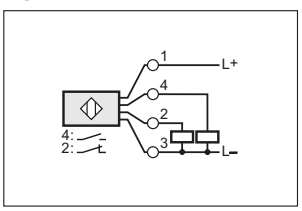

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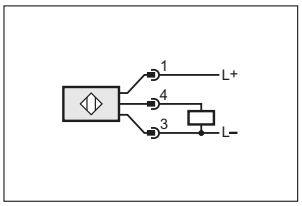

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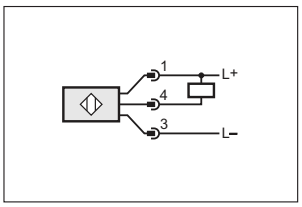

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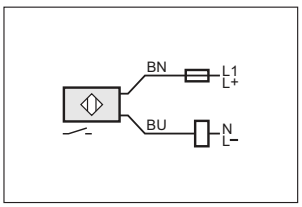

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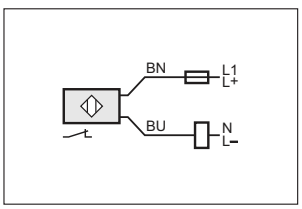

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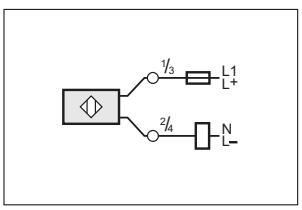

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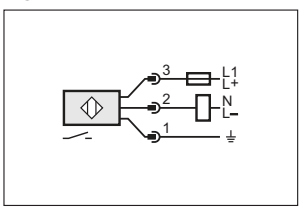

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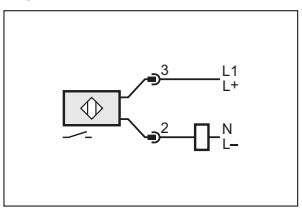

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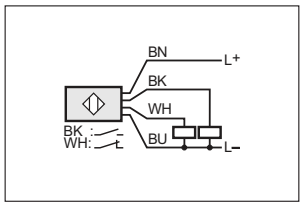

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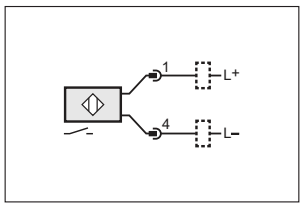

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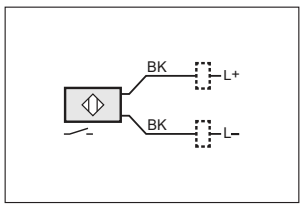

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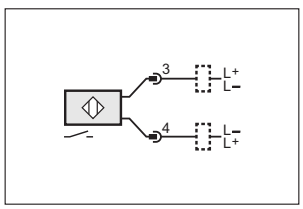

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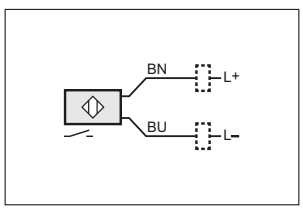

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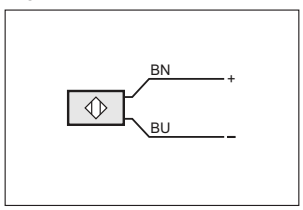

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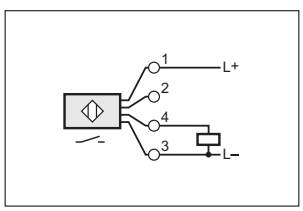
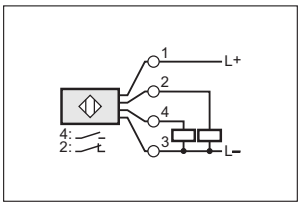


Wiring diagrams

28



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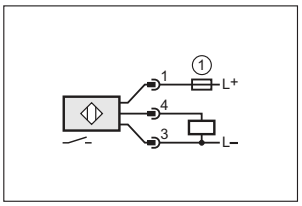

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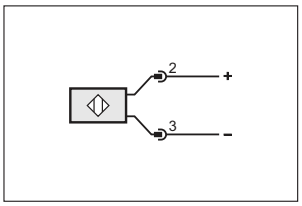

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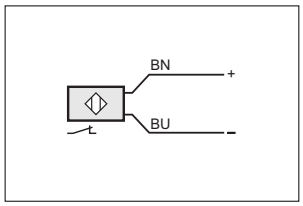

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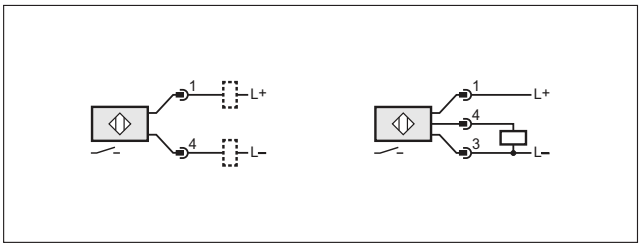

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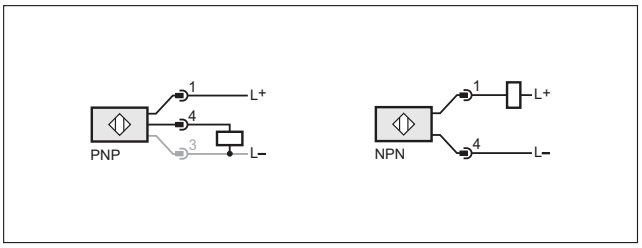

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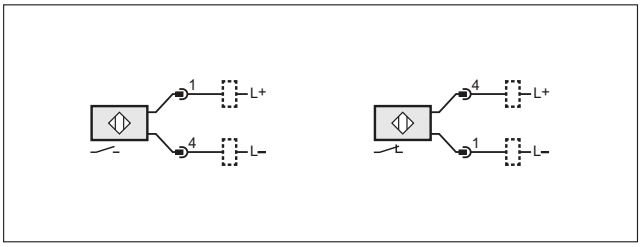

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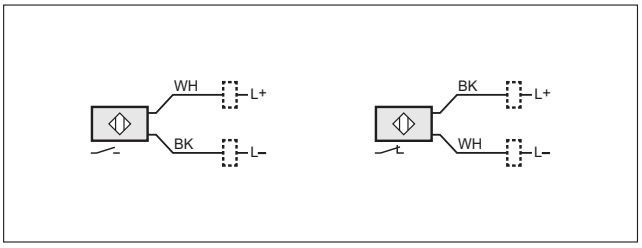

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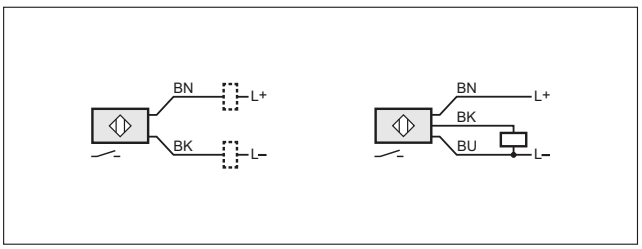

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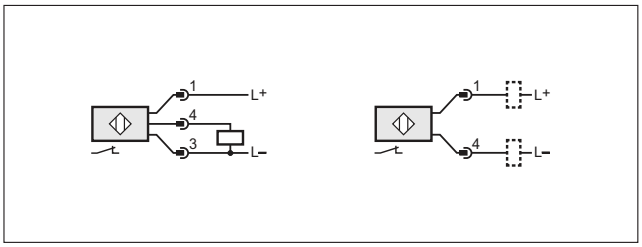

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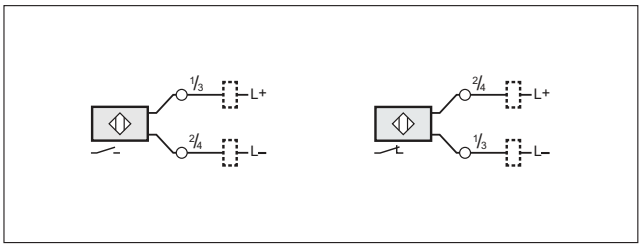

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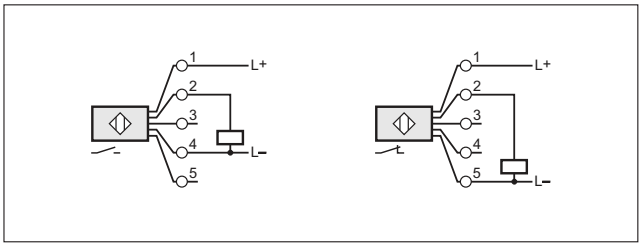

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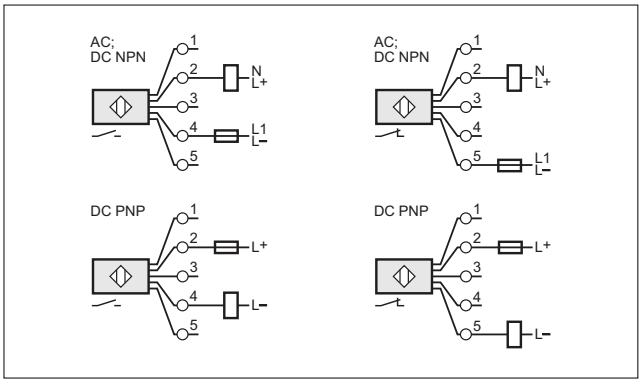

Wiring diagrams

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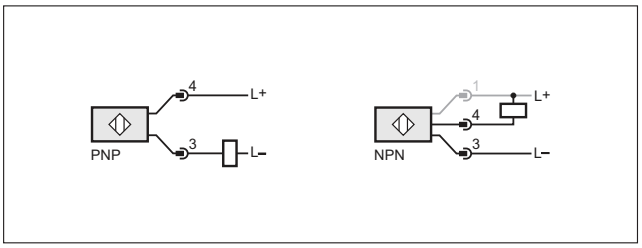

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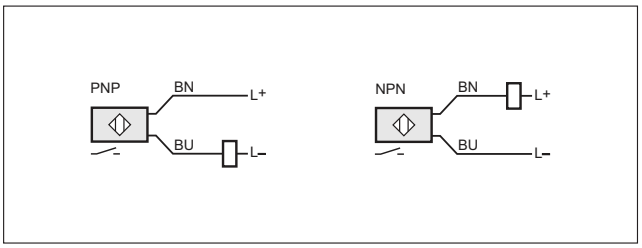

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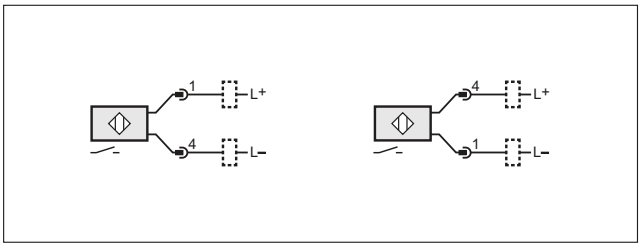

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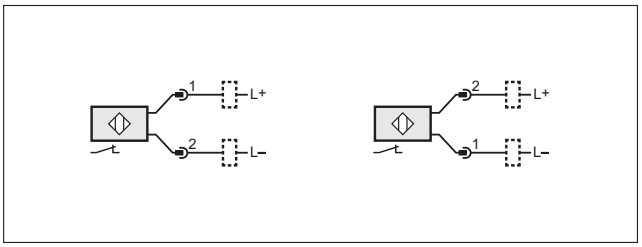

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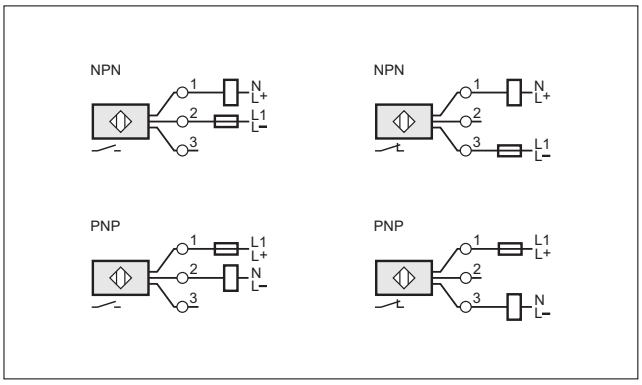

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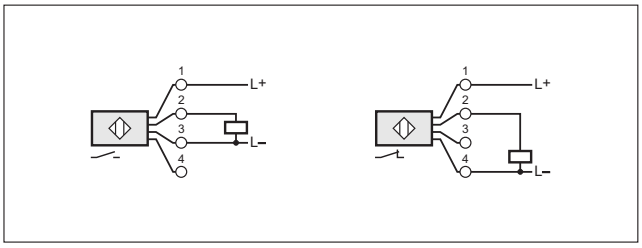

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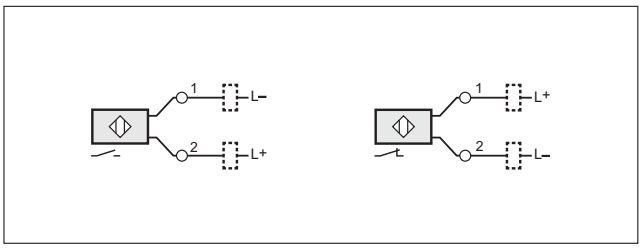

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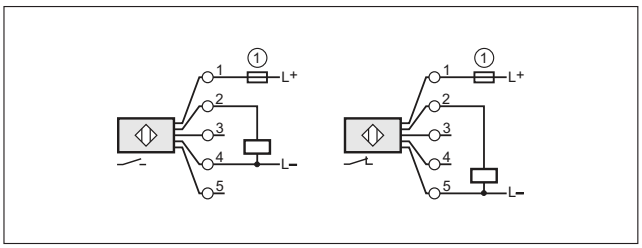

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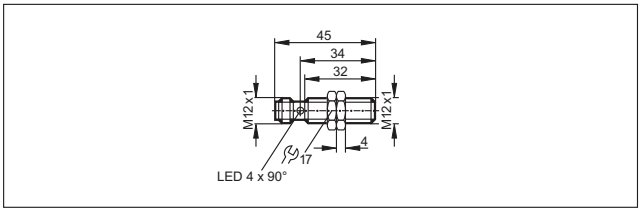

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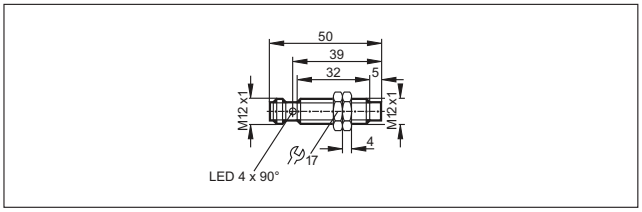

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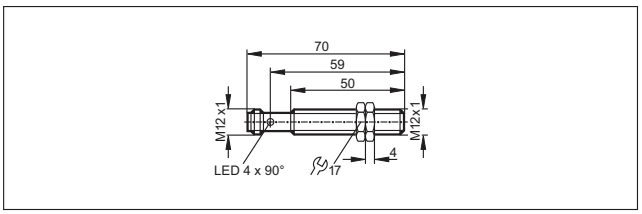

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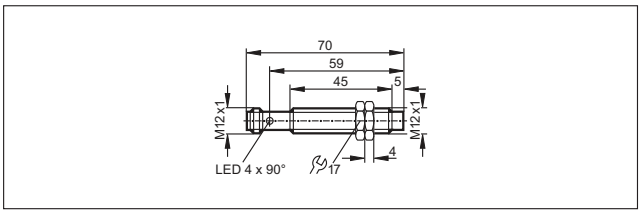

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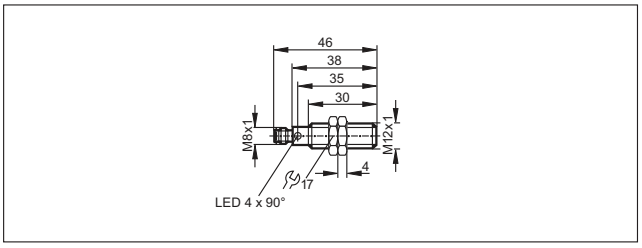

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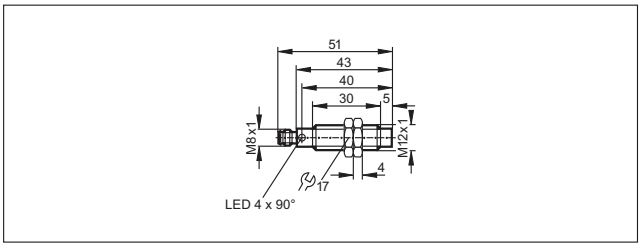

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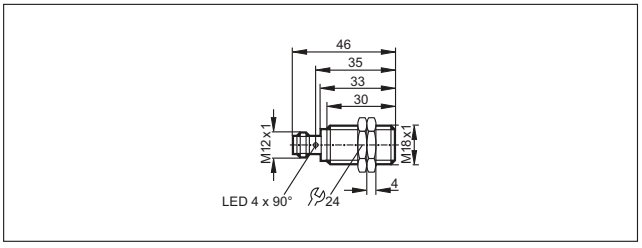

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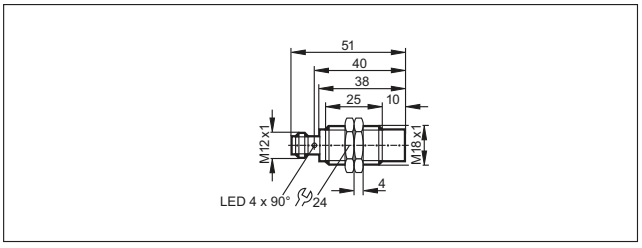

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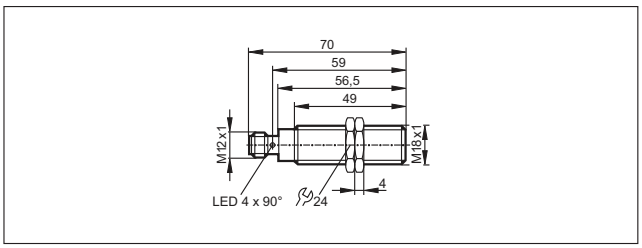

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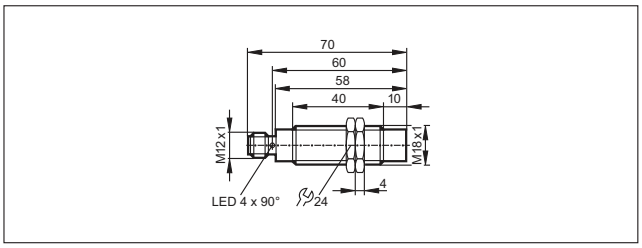

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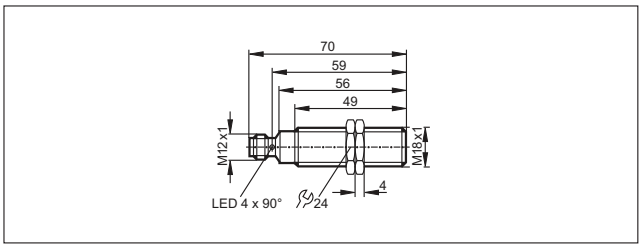

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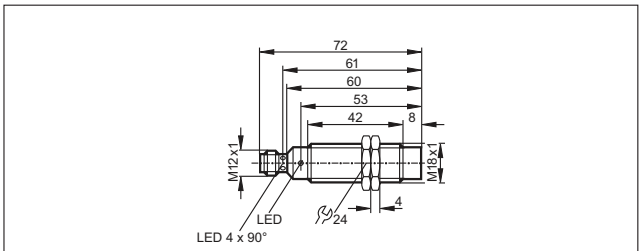

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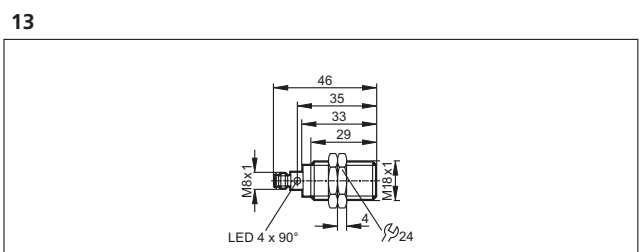

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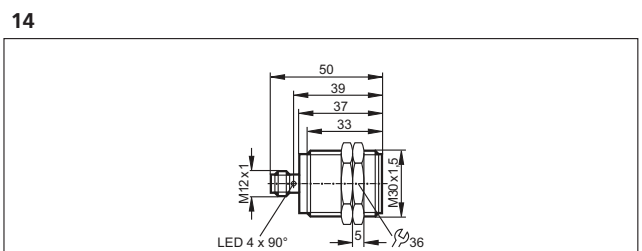

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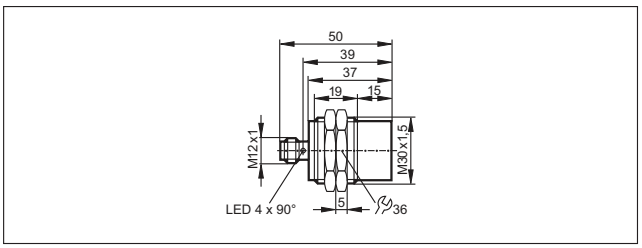

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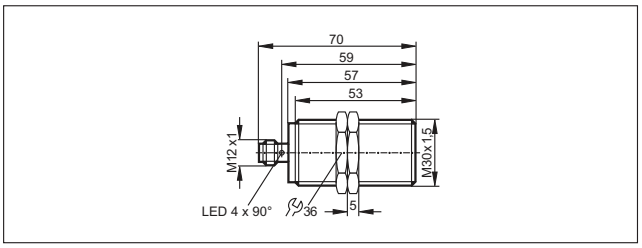

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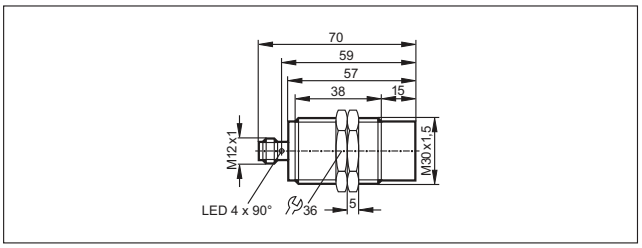

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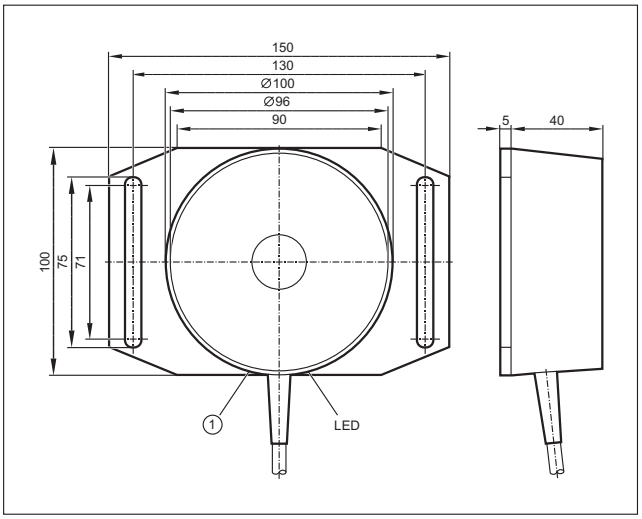

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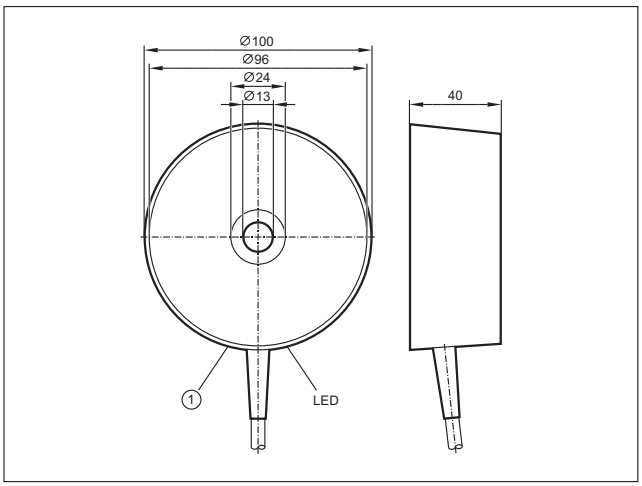

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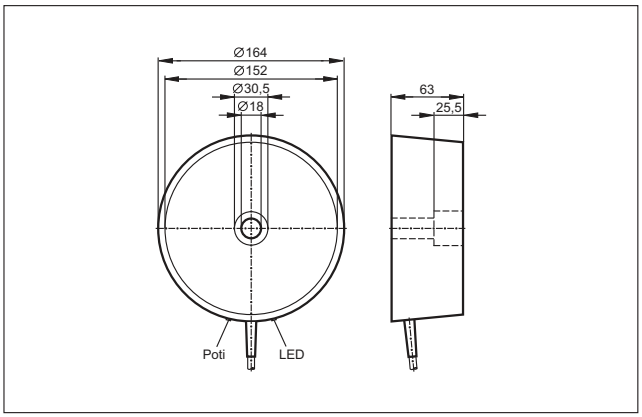

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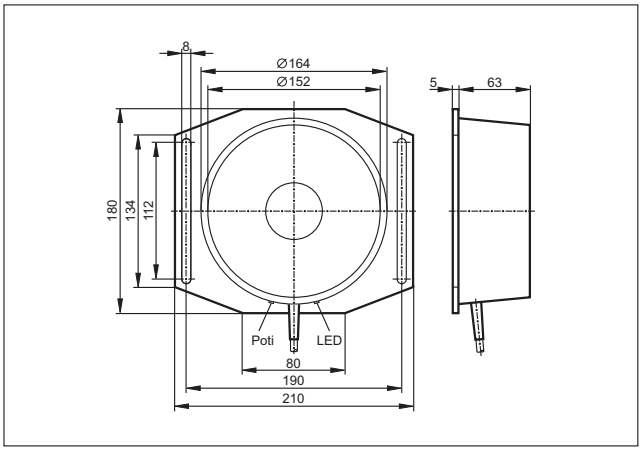

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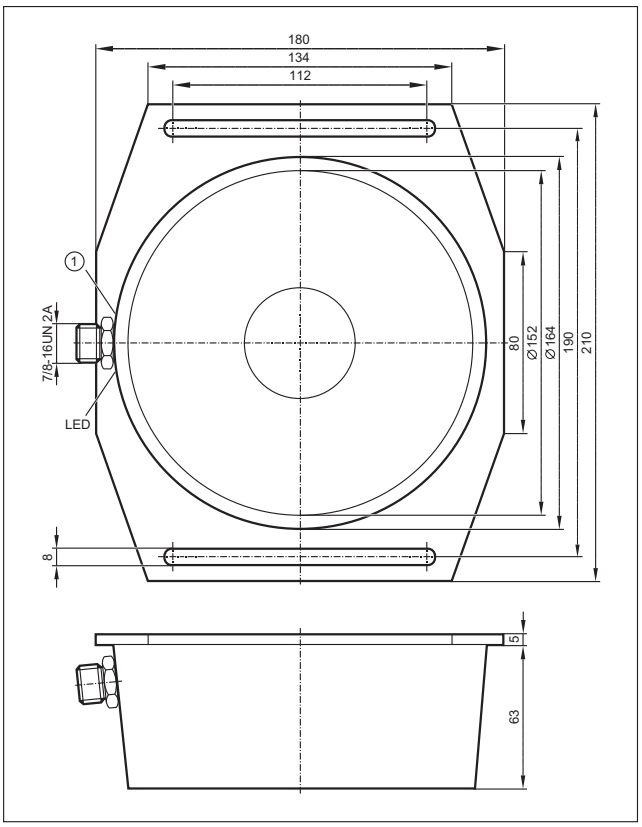

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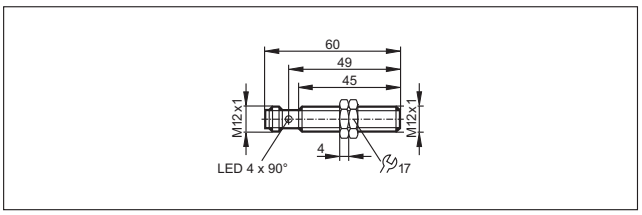

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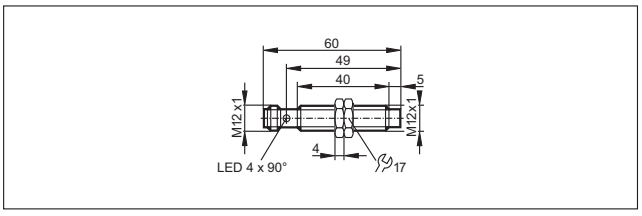

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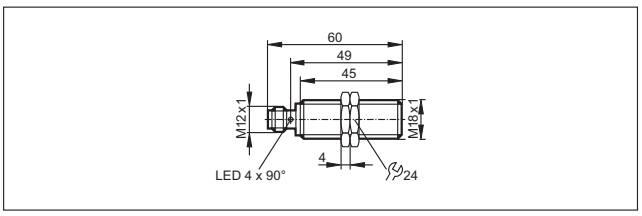

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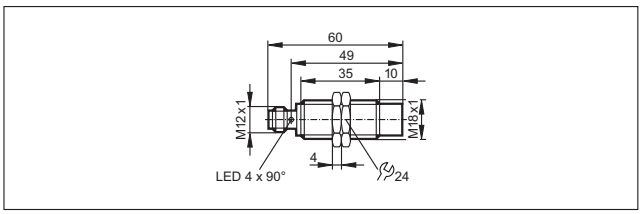

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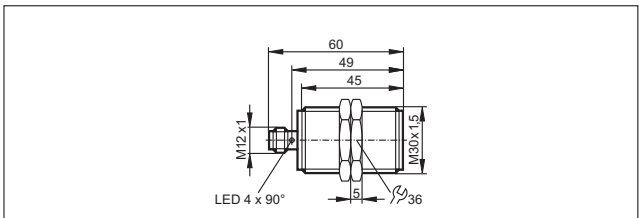

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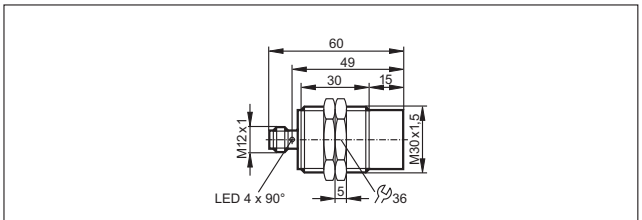

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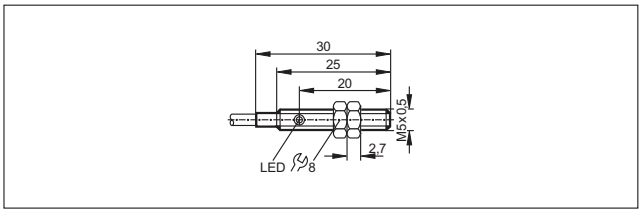

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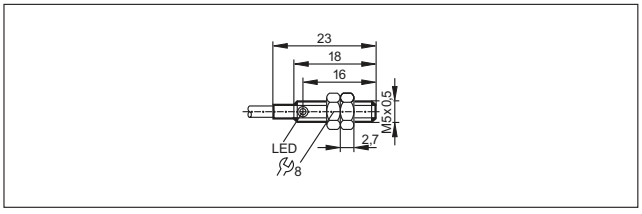

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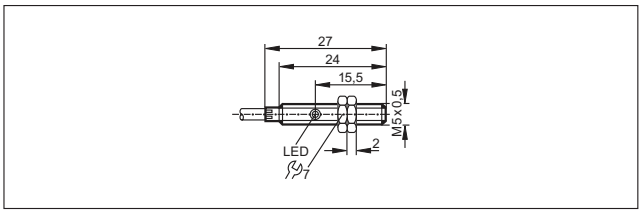

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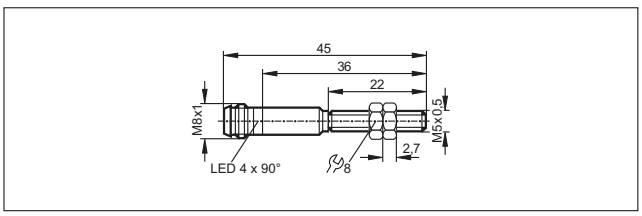

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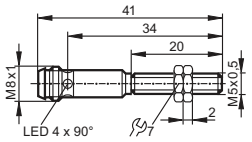

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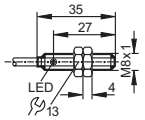

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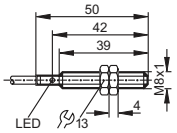

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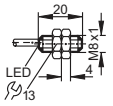

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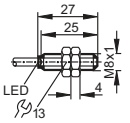

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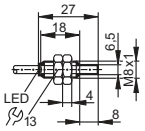

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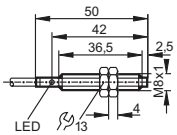

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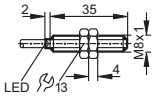

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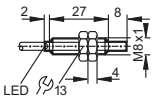

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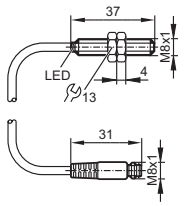

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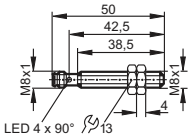

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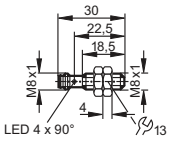

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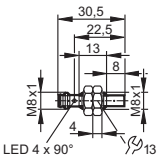

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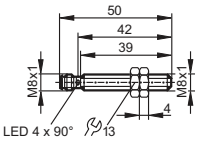

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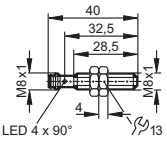

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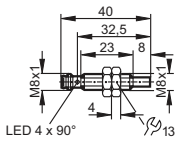

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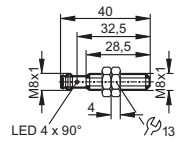

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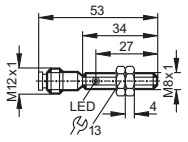

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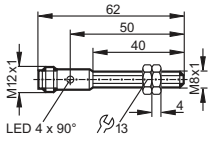

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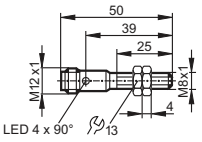

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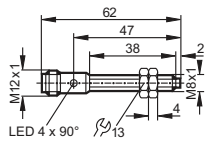

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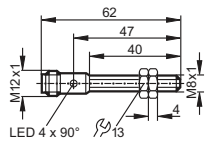

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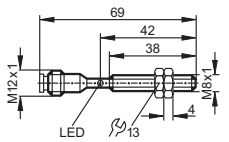

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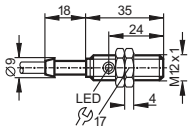

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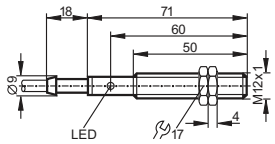

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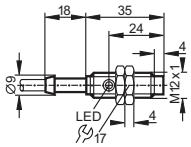

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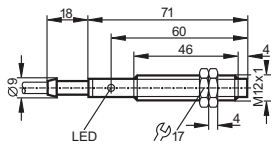

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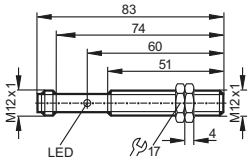

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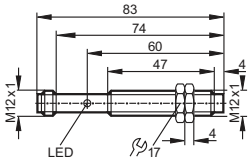

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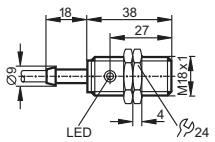

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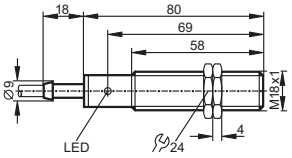

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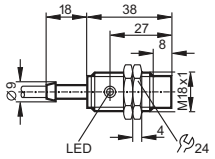

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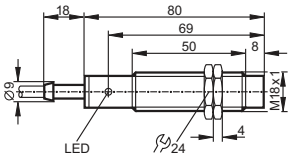

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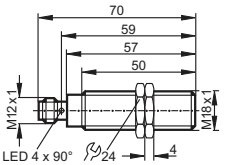

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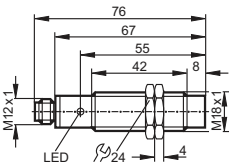

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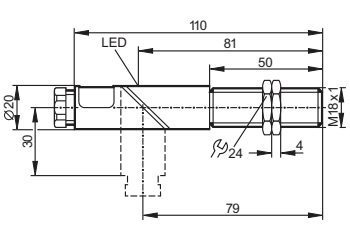

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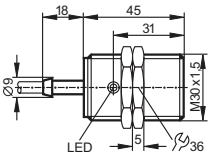

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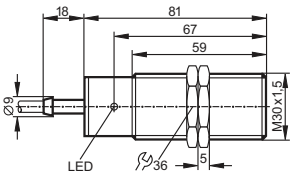

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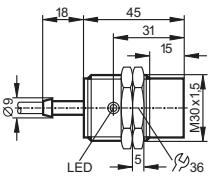

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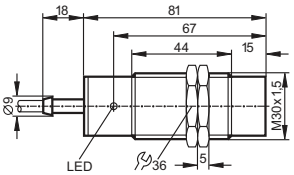

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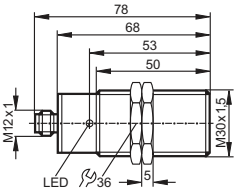

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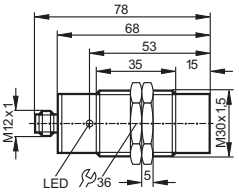

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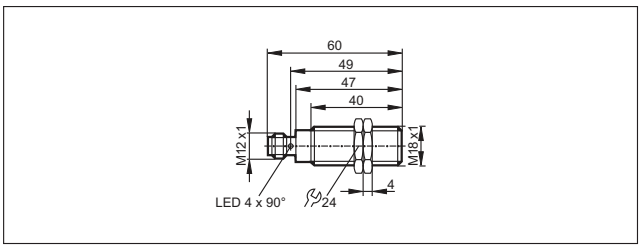

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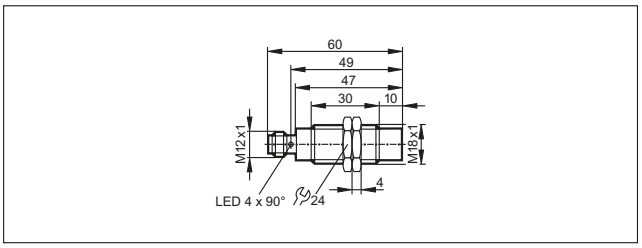

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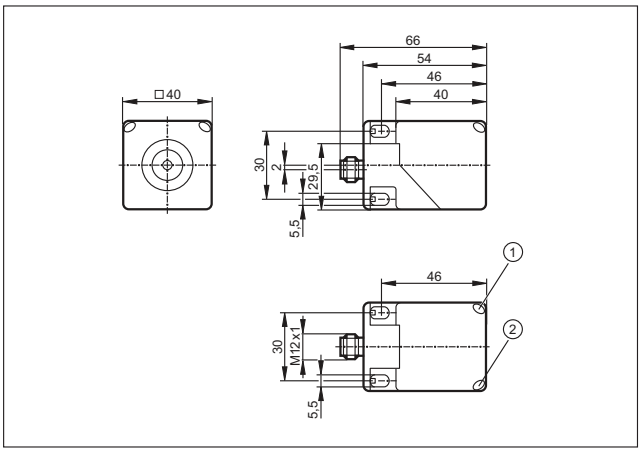

1: LED yellow, 2: LED green

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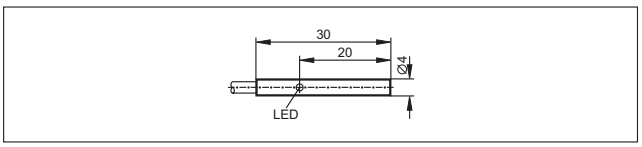

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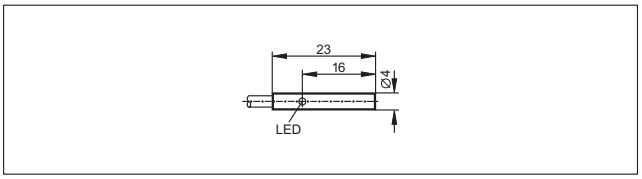

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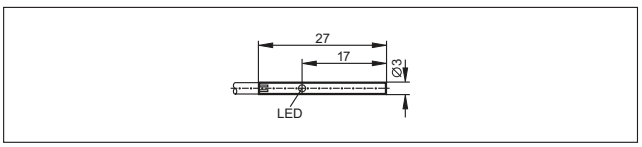

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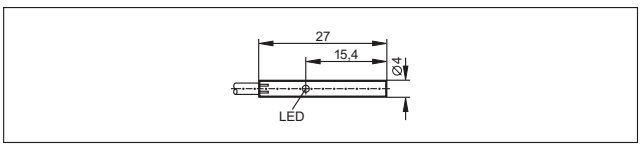

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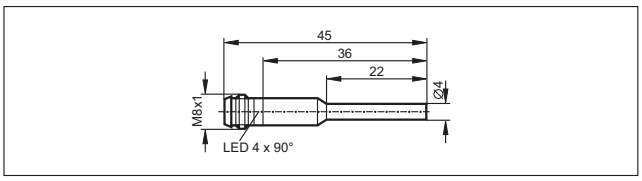

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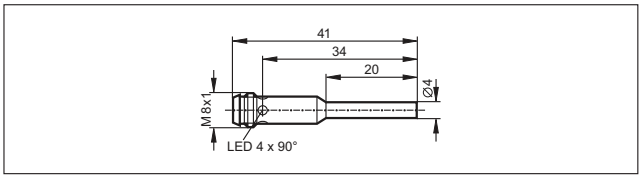

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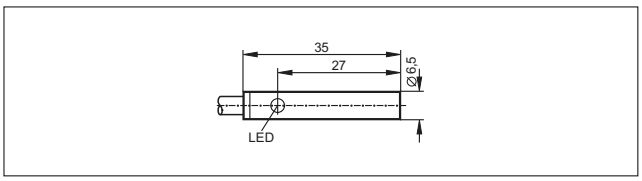

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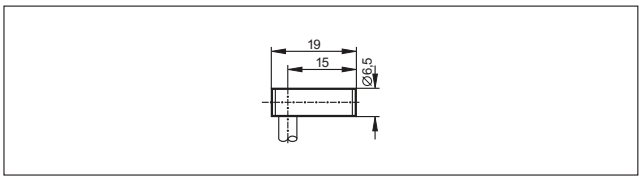

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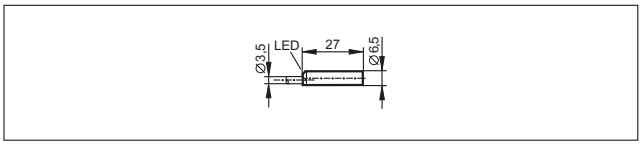

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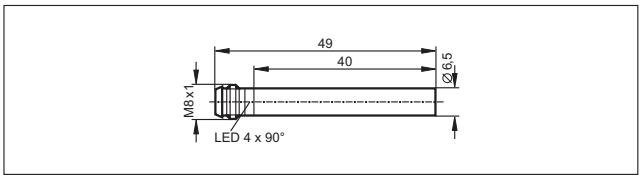

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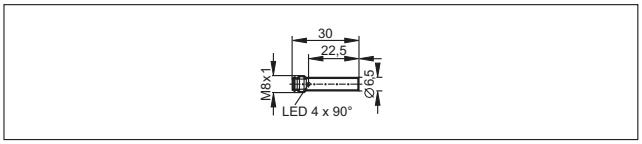

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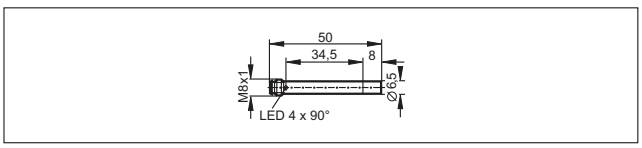

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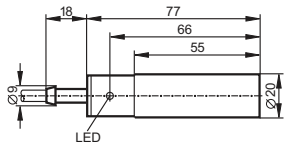

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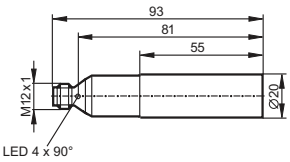

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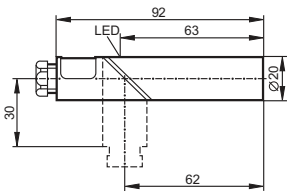

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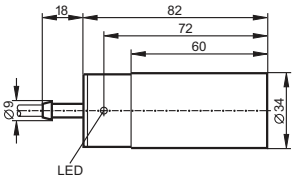

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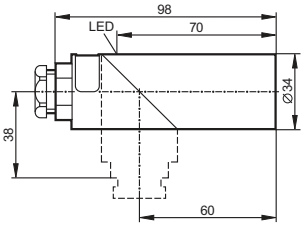

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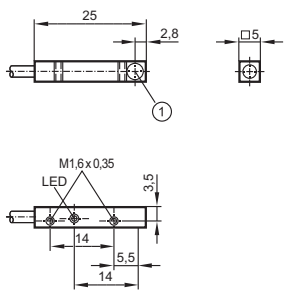

1: sensing face

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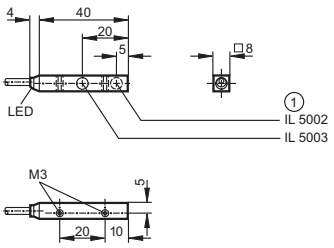

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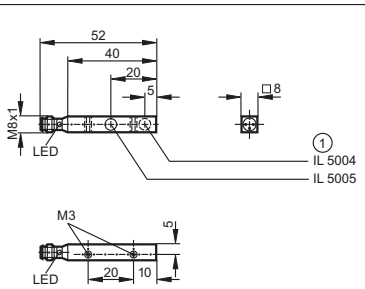

1: sensing face

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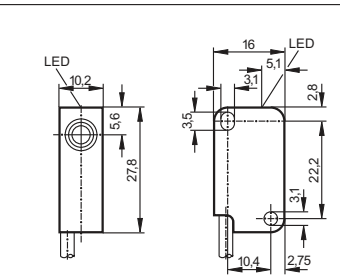

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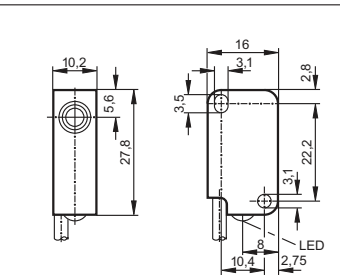

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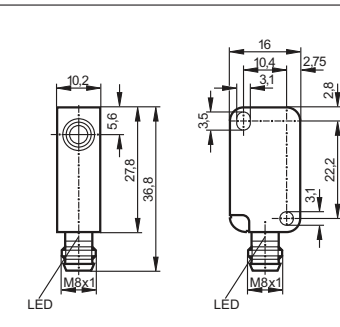

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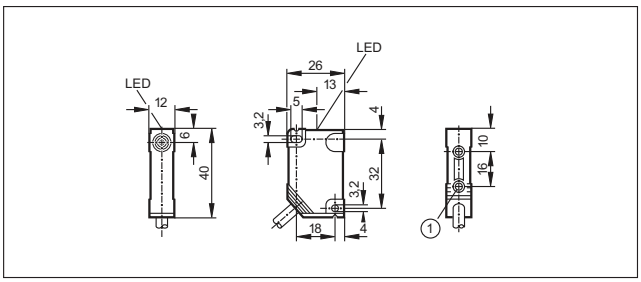
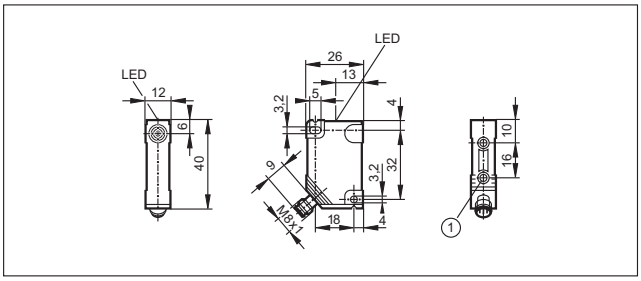


1: threaded insert M3, depth 5.8 mm, max. tightening torque 1.2 Nm (screw fixing class 8.8) when brass insert in contact with counterpart.

102



1: threaded insert M3, depth 5.8 mm, max. tightening torque 1.2 Nm (screw fixing class 8.8) when brass insert in contact with counterpart.

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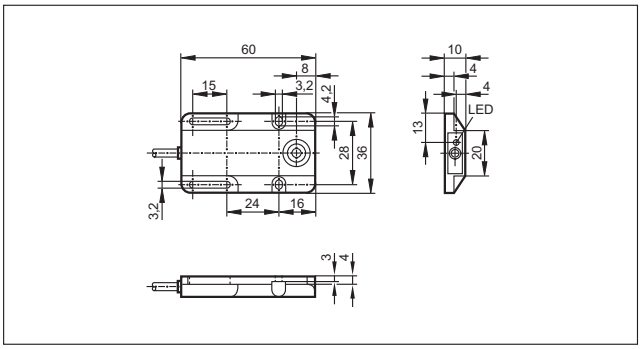

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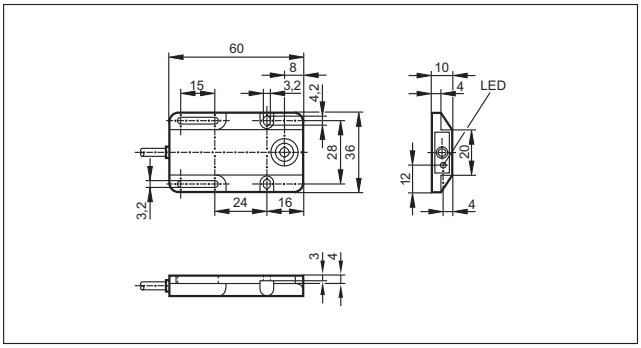

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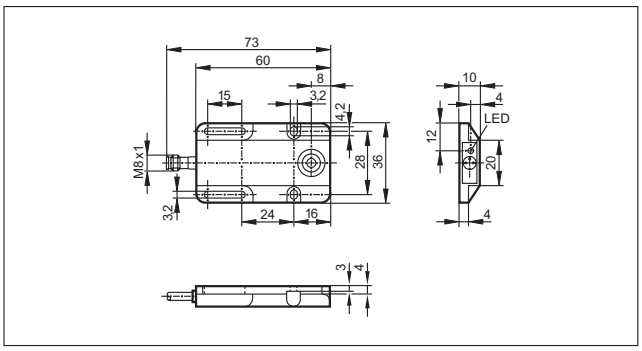

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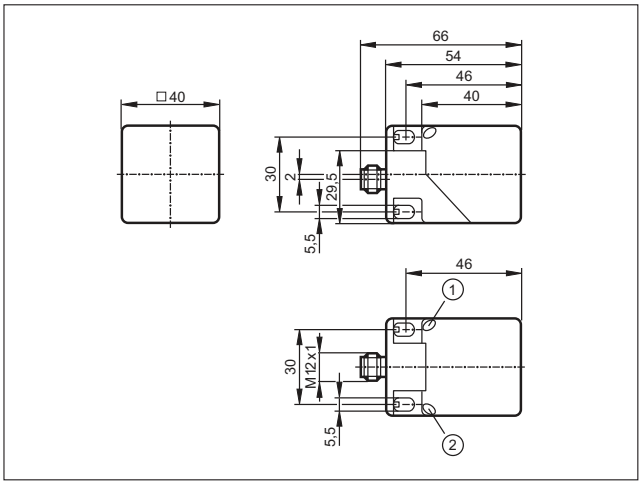

1: LED yellow, 2: LED green

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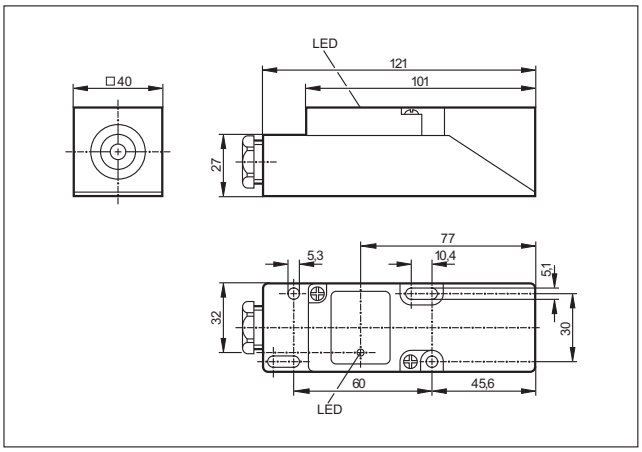

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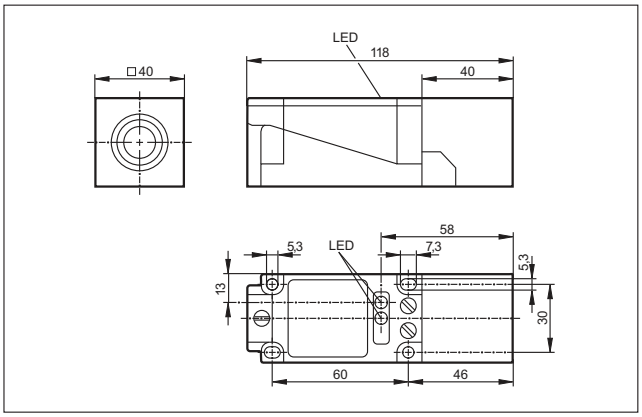

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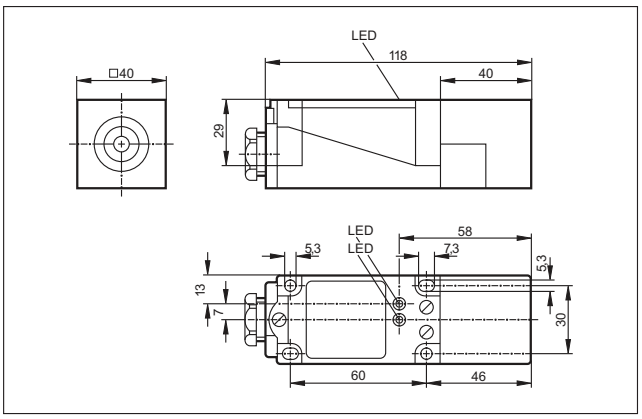
109



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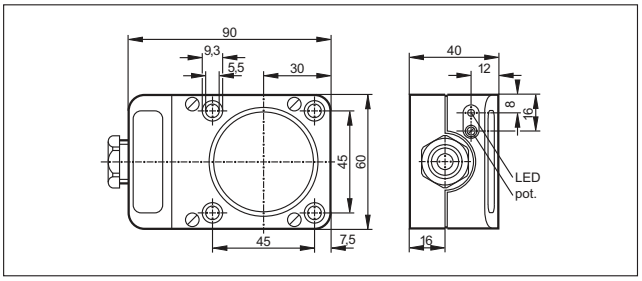

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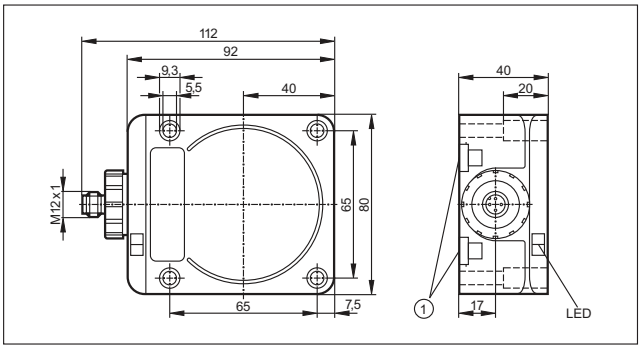

1: Mounting on DIN rail

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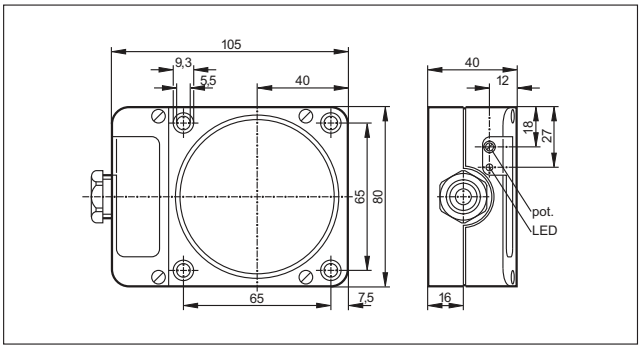

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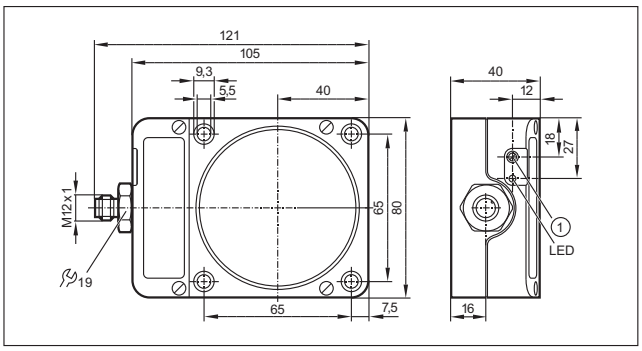

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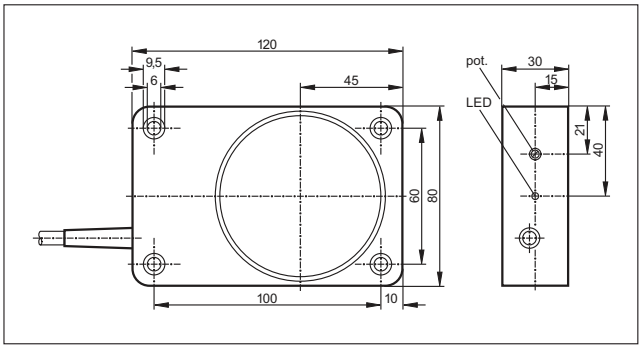

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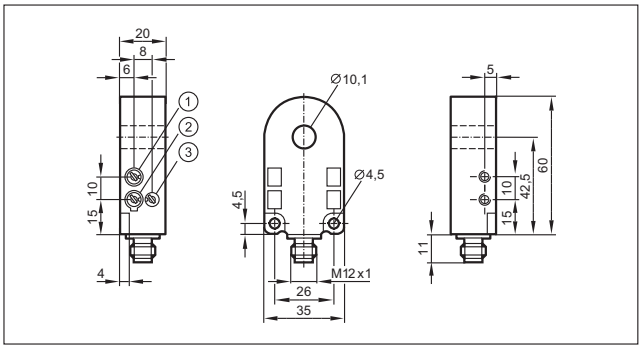
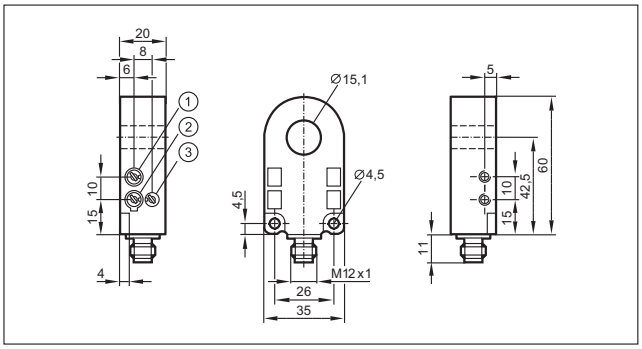


1: Sensitivity, 2: Output function, 3: Pulse stretching time

116



1: Sensitivity, 2: Output function, 3: Pulse stretching time

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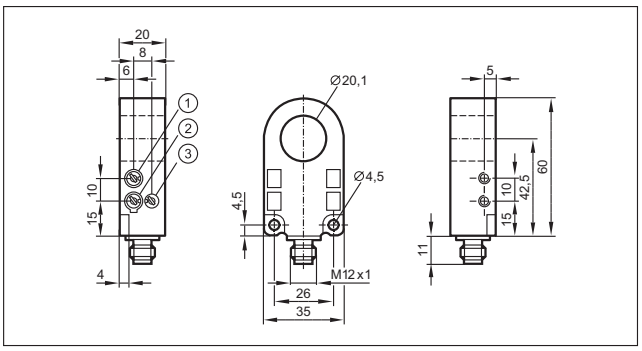
117



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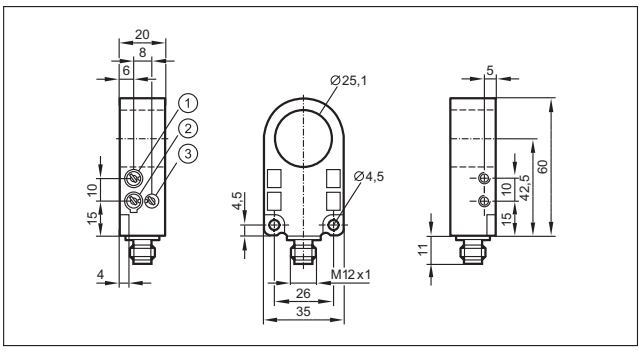

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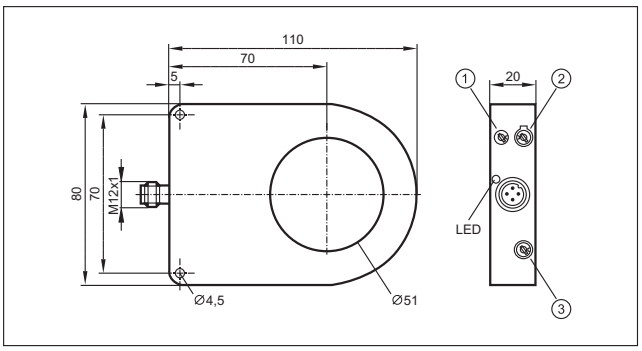

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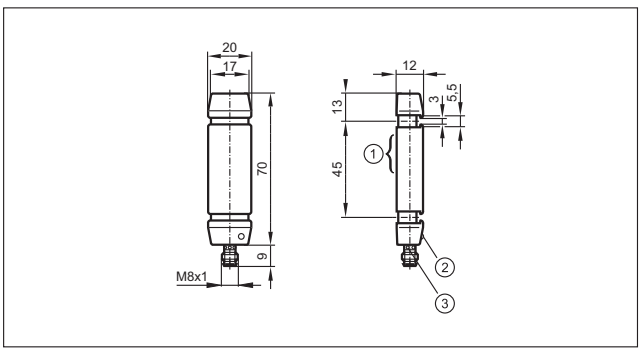
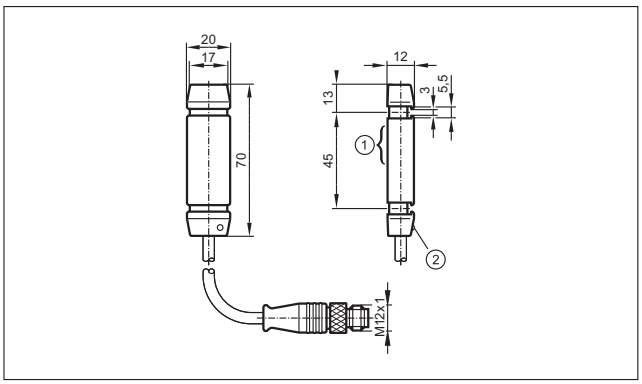


1: sensing face, 2: LED operating status, 3: LED switching status

121



1: sensing face, 2: LED operating status

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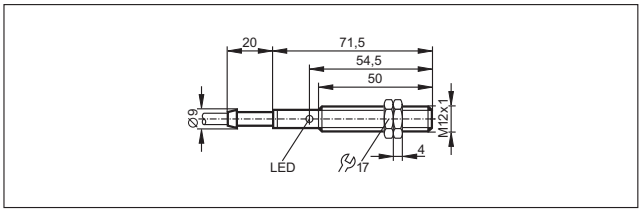

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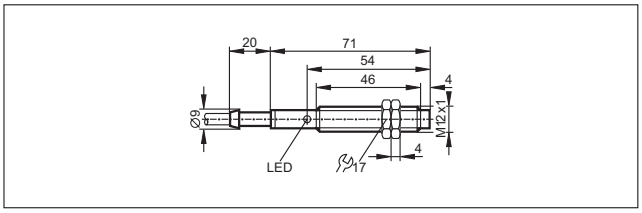

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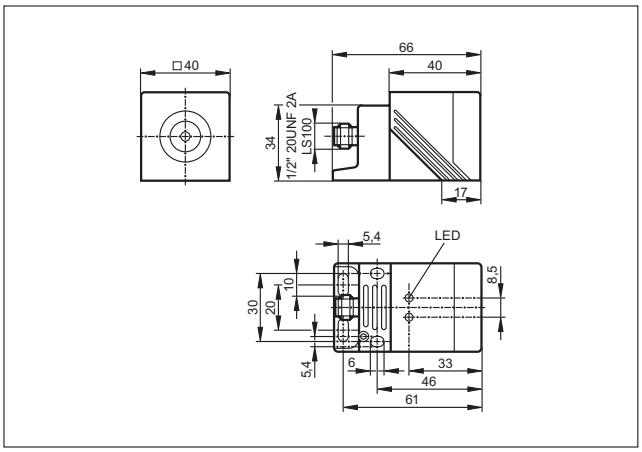

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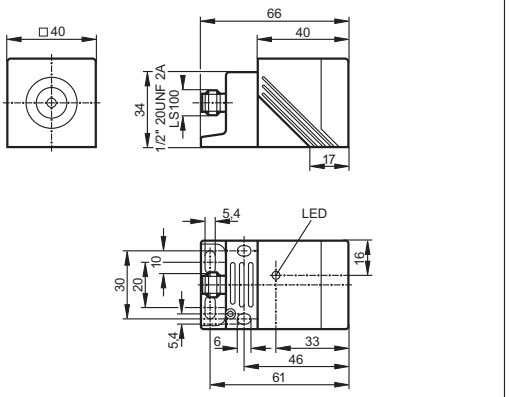

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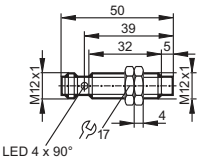

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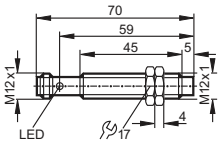

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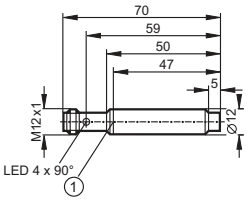

1: locating groove

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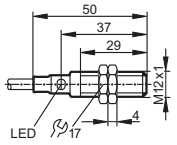

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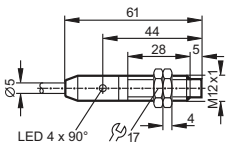

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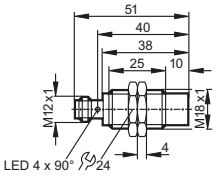

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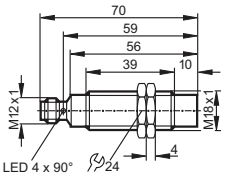

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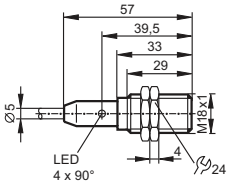

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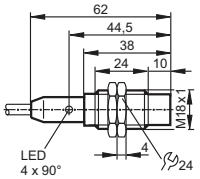

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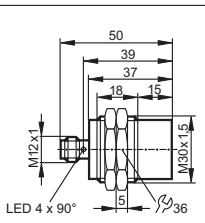

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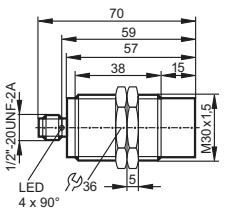

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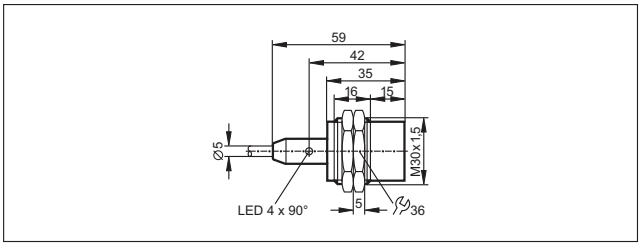

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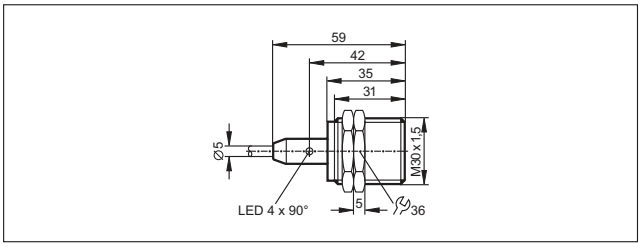

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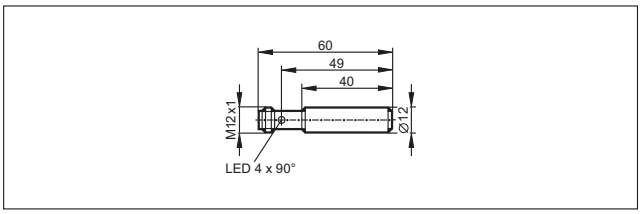

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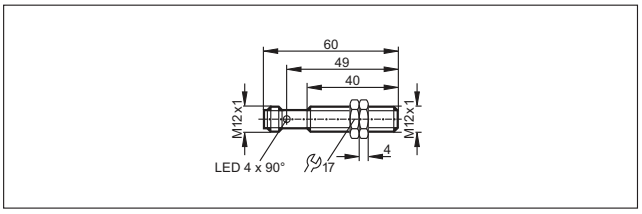

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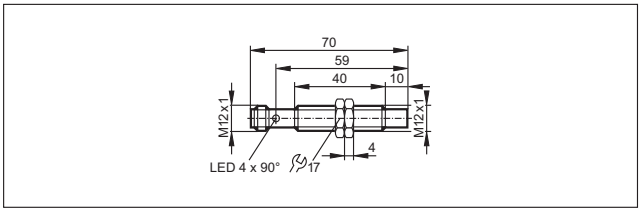

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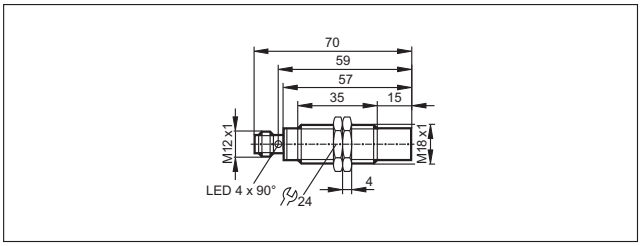

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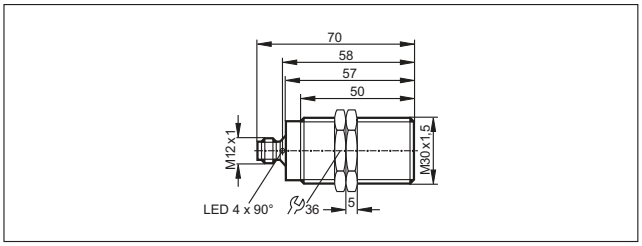

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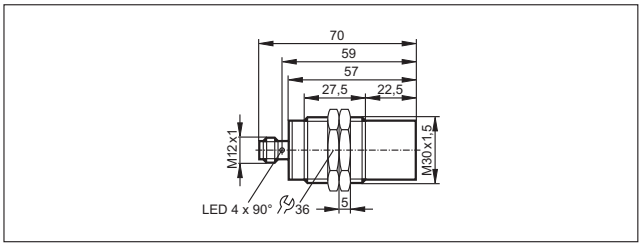

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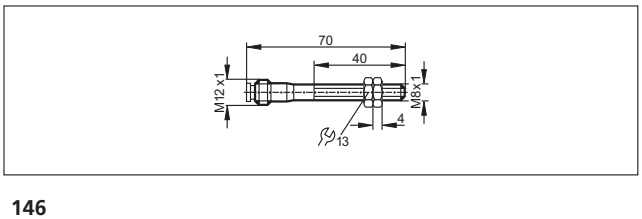

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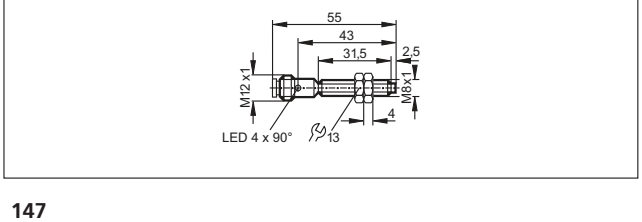

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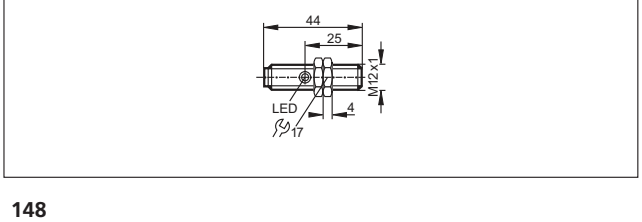

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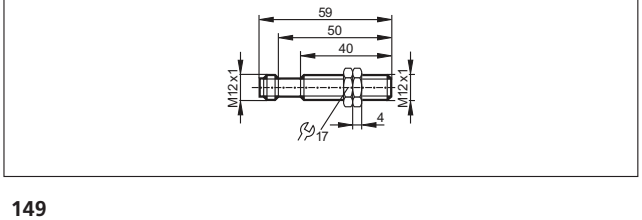

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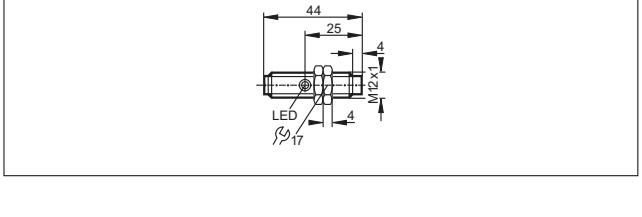

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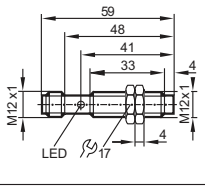

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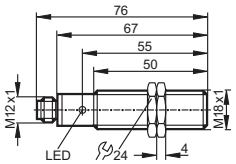

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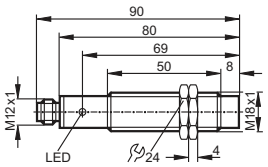

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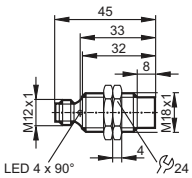

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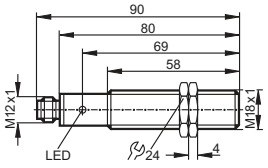

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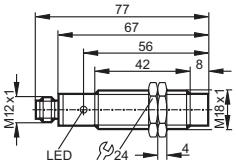

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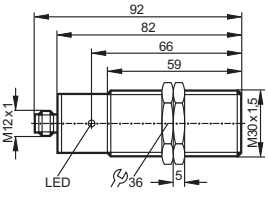

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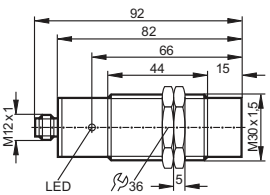

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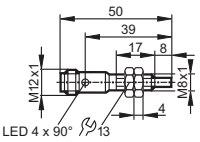

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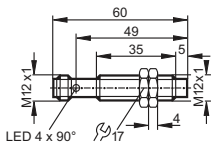

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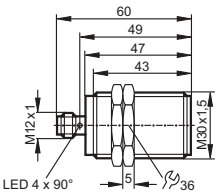

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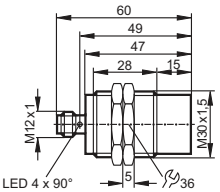

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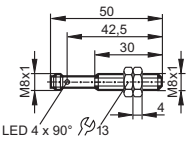

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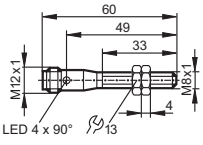

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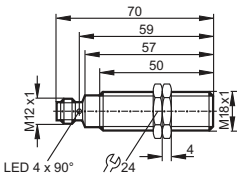

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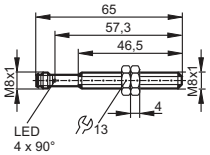

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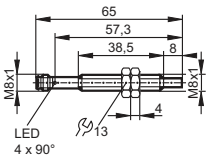

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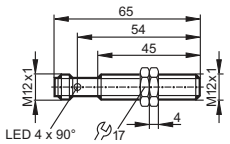

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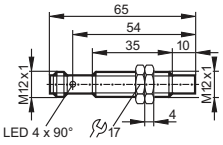

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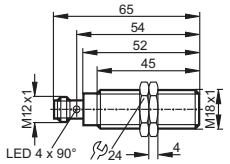

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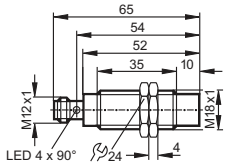

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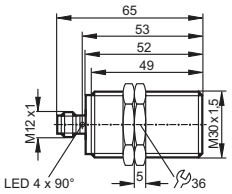

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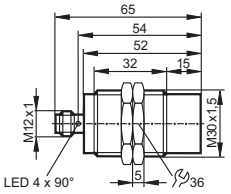

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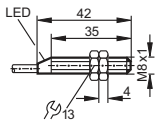

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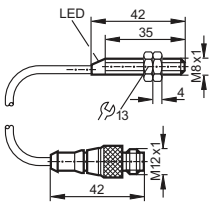

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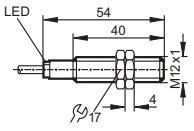

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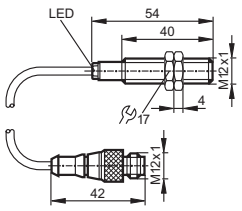

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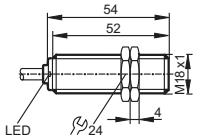

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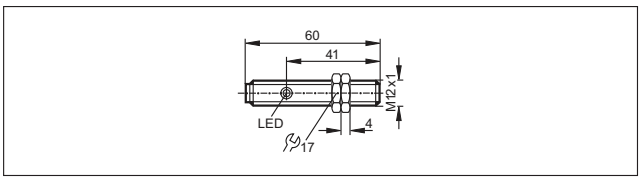

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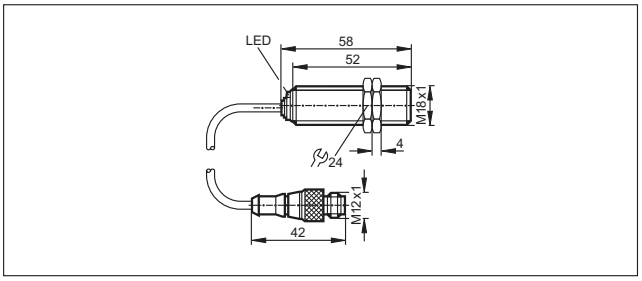

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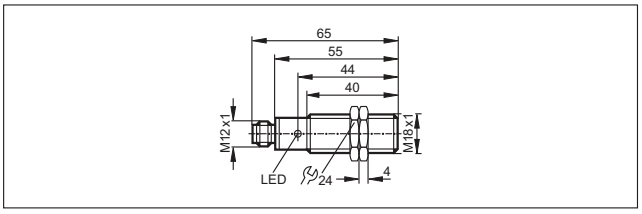

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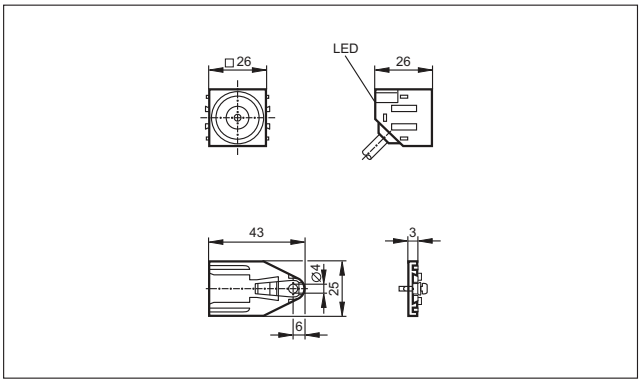

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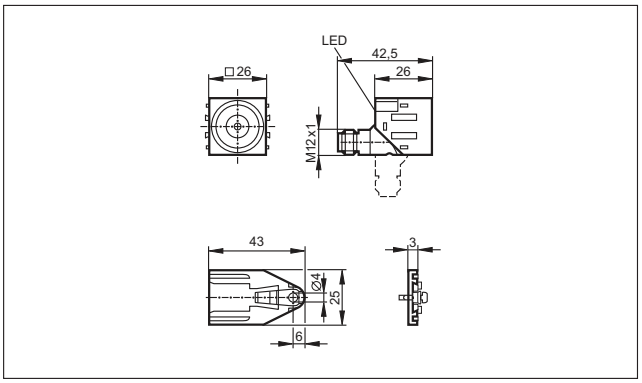

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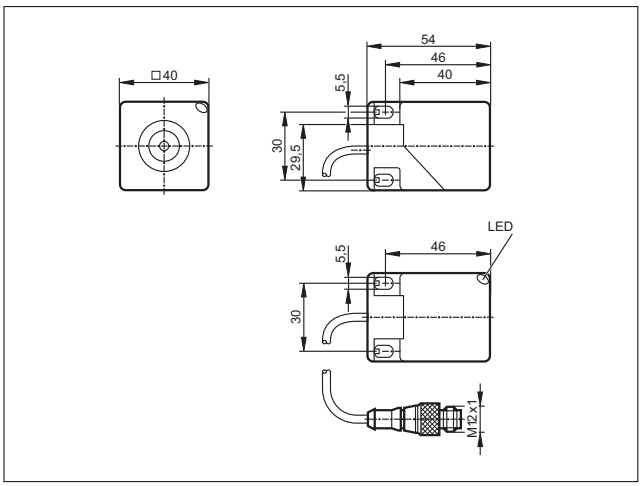

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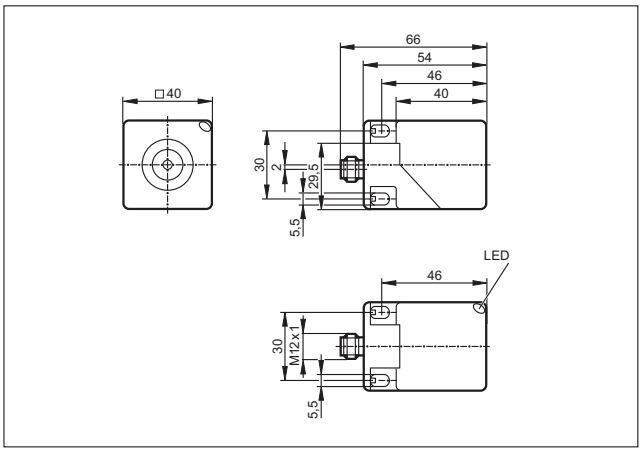

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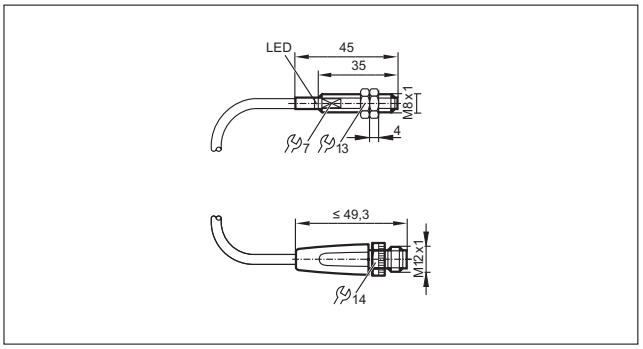

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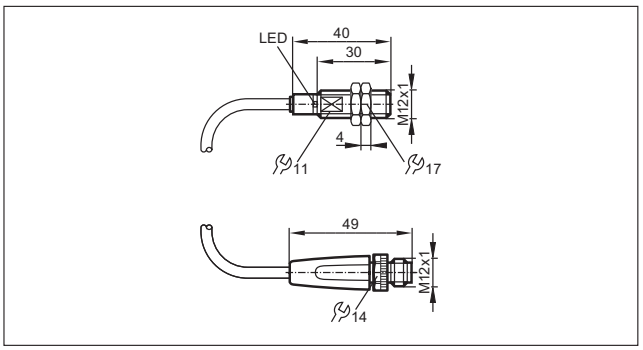

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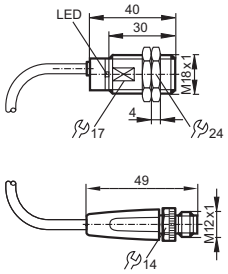

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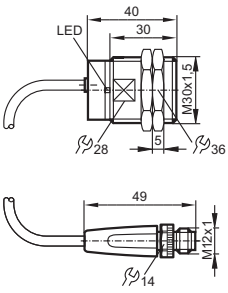

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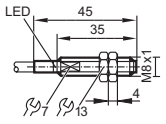

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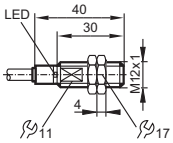

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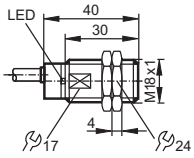

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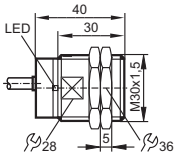

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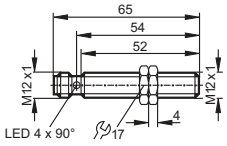

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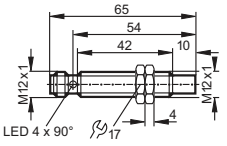

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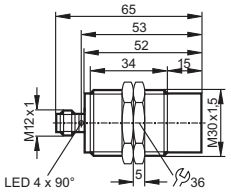

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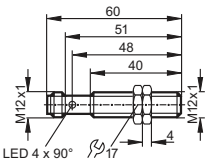

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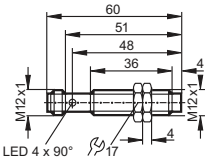

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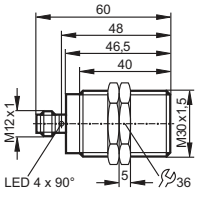

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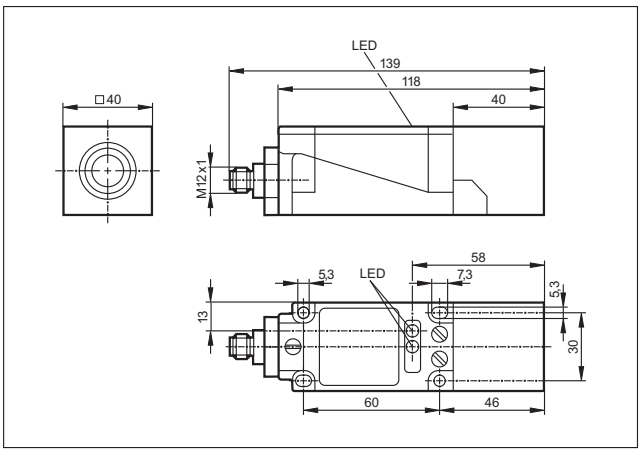

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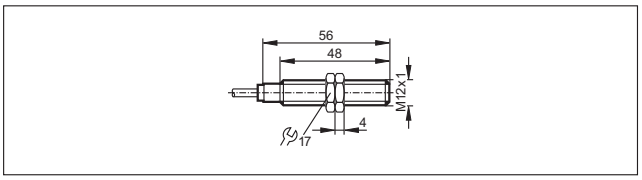

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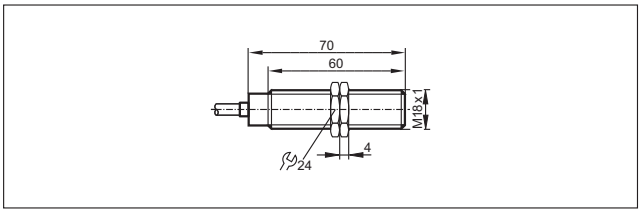

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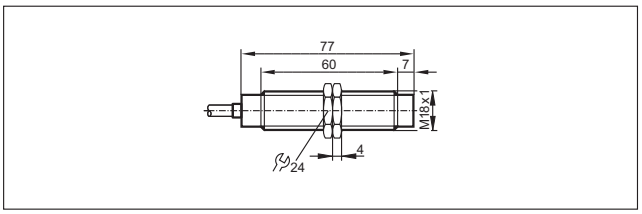

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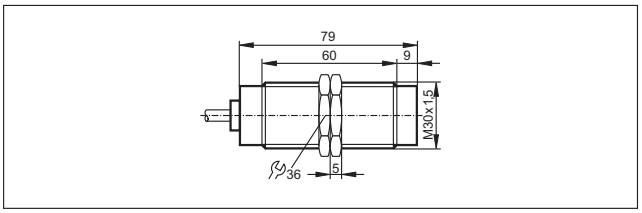

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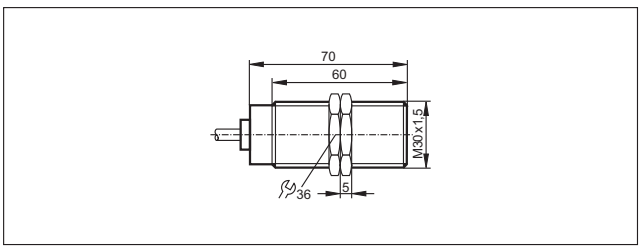

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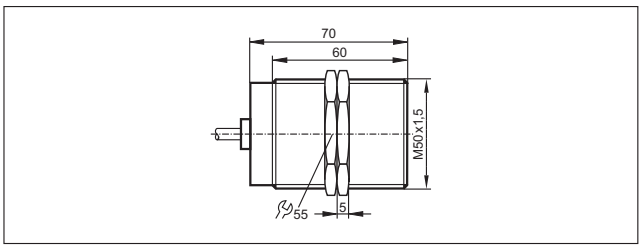

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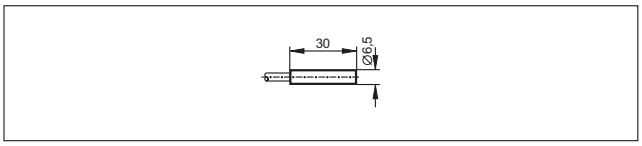

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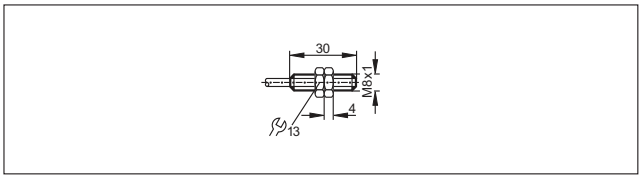

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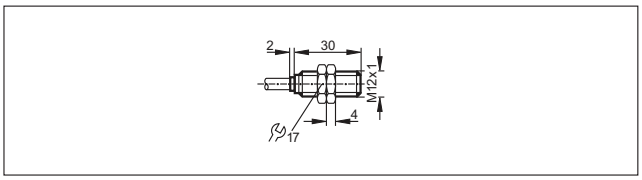

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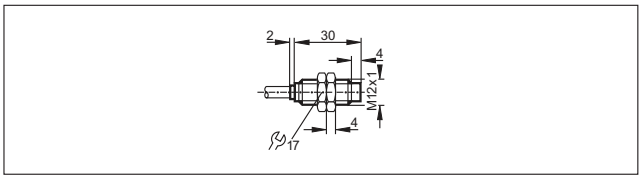

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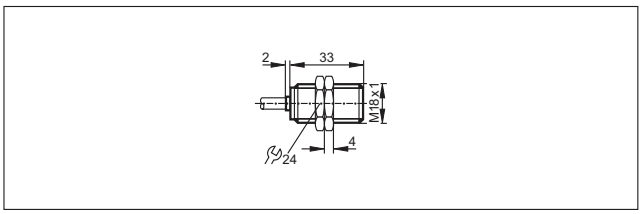

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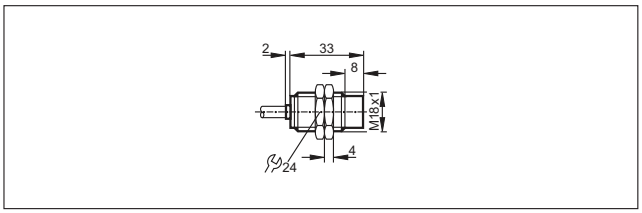

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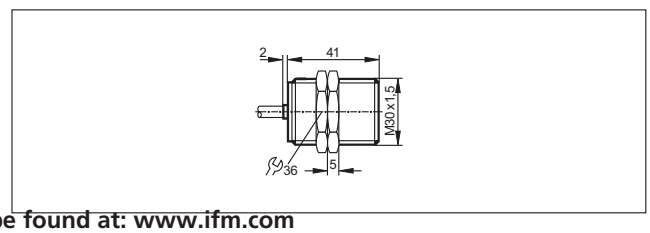

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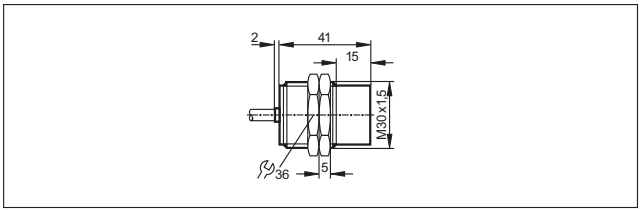

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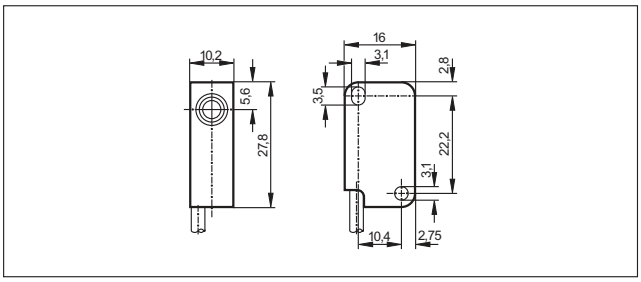

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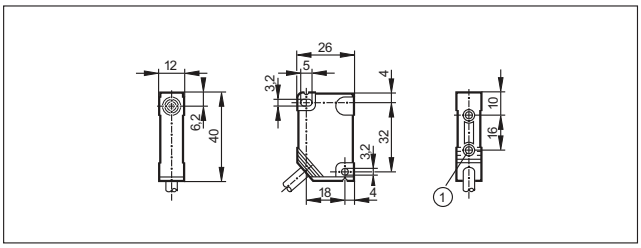
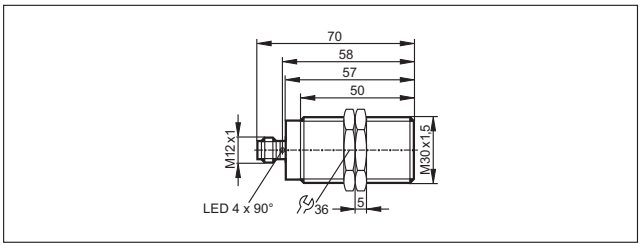


1: threaded insert M3, depth 5.8 mm, max. tightening torque 1.2 Nm (screw fixing class 8.8) when brass insert in contact with counterpart.

216



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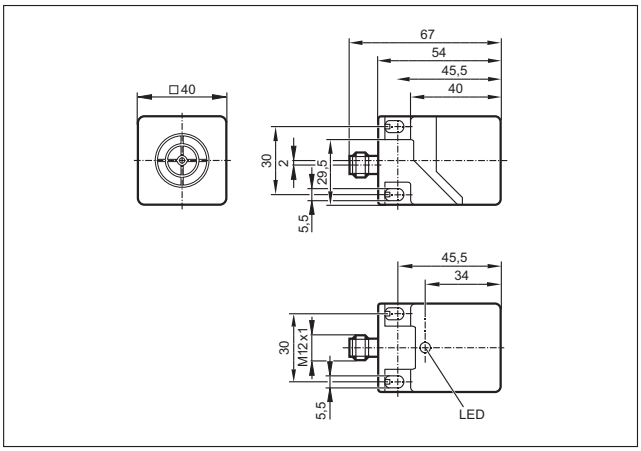

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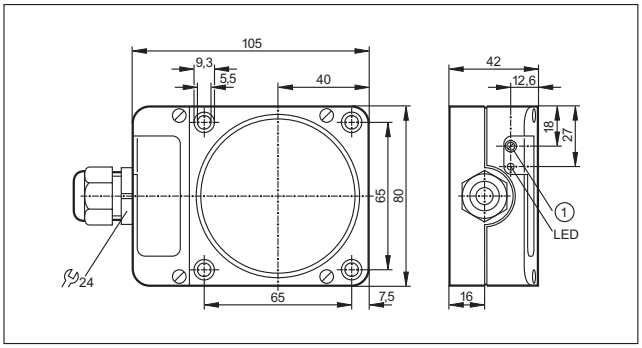

1: potentiometer

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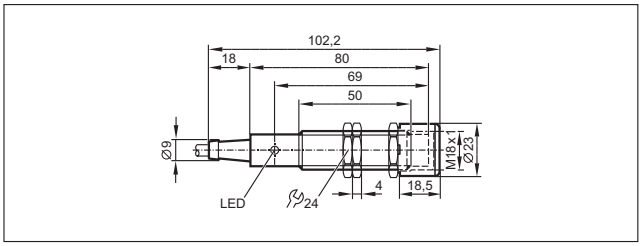

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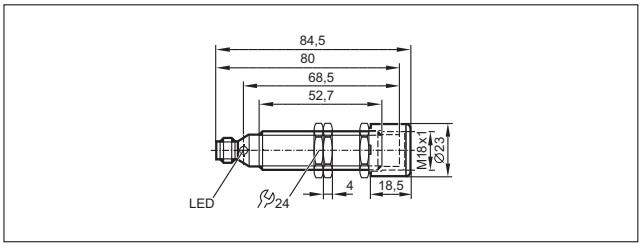

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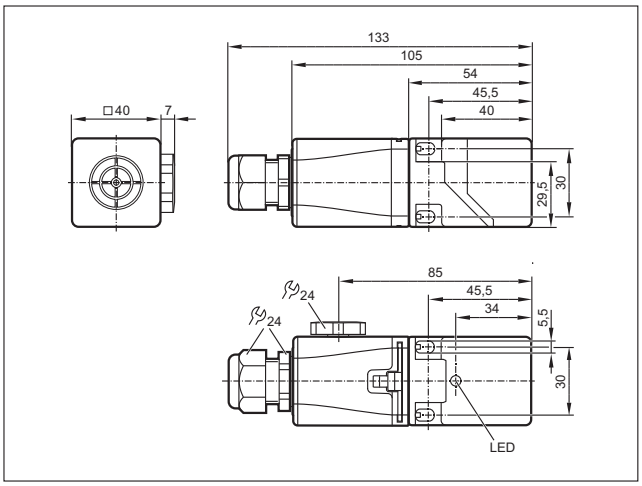

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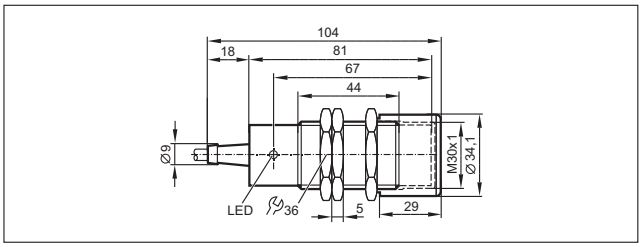
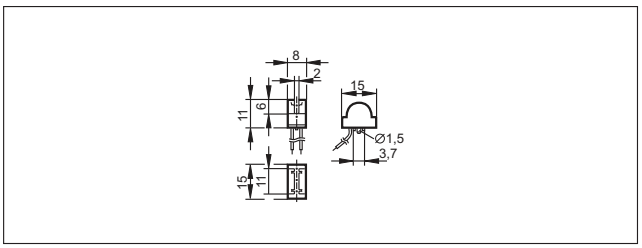


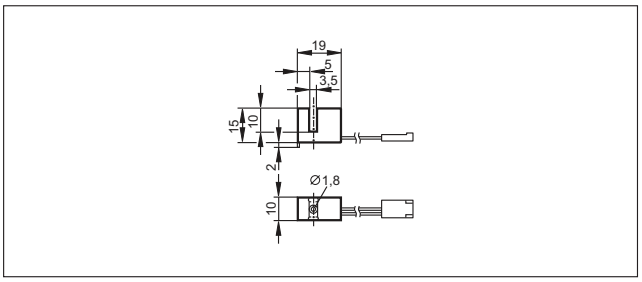
1: Sensor, 2: Sensor with protective cover

Scale drawings / drawing no. – CAD download: www.ifm.com

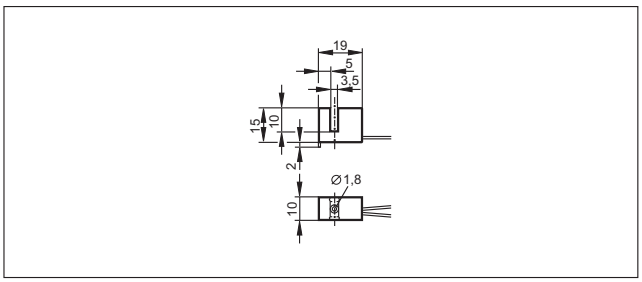
223



224



225



- **Extended parameter setting via IO-Link**
- **Versatile data processing via IO-Link**
- **High noise immunity guarantees high operational reliability**
- **Plastic or metal housings**
- **Assortment of mounting accessories**

Capacitive sensors

Capacitive sensors are used for the non-contact detection of any objects, commonly product rather than parts of the machine. In contrast to inductive sensors, capacitive sensors can detect non-metallic materials. They can also detect very small metal components at longer range than inductive sensors. Typical applications are in the wood, paper, glass, plastic, food and chemical industries. In a packaging system, capacitive sensors might monitor that the contents of a cardboard box is full, or check the presence of caps on bottles. Another example is the detection of sheets of glass on a roller conveyor.

Operating principle

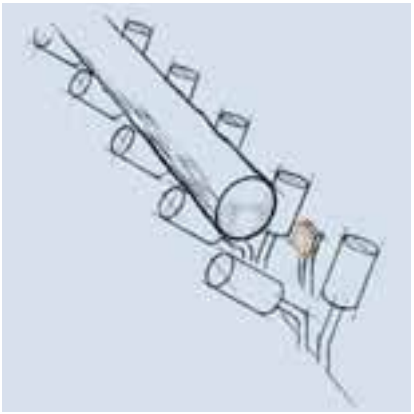
The capacitance between the active electrode of the sensor and the electrical earth potential is evaluated. An approaching object influences the oscillating field between these two capacitor plates and, consequently, the capacitance. This applies to metallic and non-metallic objects. The potentiometer or pushbutton allows the user to set the sensitivity. The ability of a capacitive sensor to ignore certain materials makes them especially useful for detecting levels through sightglasses or other low density materials.

Increased noise immunity

ifm electronic has developed innovative modifications to the basic sensing principle. The patented circuit concept efficiently meets the requirements of CE marking, for example making them insensitive to electromagnetic interference which can typically occur in industry.

New characteristics via IO-Link

IO-Link allows direct detection of the process value or switch-on/switch-off delays of the output. Parameters are set via IO-Link interface.



Not only metal: Capacitive sensors detect almost all materials, here for example a log in a saw mill.

System overview	Page
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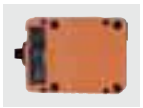
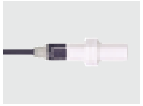
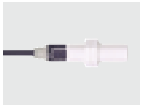
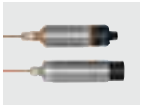
Sensors for level and position detection DC

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	M18 / L = 84	8 nf	PBT	10...36	IP 67	50	250	1	**KG5043**
Cable 2 m · Output function ⎍ / ⎍ · DC PNP/NPN · Wiring diagram no. 21									
	M18 / L = 84	8 nf	PBT	10...55	IP 67	50	400	1	**KG5047**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 18, 20									
	M12 / L = 60	4 f	High-grade st. steel	10...36	IP 65	50	100	2	**KF5001**
	M12 / L = 61	8 nf	High-grade st. steel	10...36	IP 65	50	100	3	**KF5002**
M12 connector · Output function ⎍ · DC NPN · Wiring diagram no. 3 · Connector groups 8, 9, 10, 18, 20									
	M12 / L = 60	4 f	High-grade st. steel	10...36	IP 65	50	100	2	**KF5013**
Terminals · Output function ⎍ · DC PNP · Wiring diagram no. 4									
	M18 / L = 110	8 nf	PBT	10...36	IP 65	50	250	4	**KG5041**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 5 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 93.8	8 nf	PBT	10...36	IP 67	50	250	5	**KG5057**
Terminals · Output function ⎍ / ⎍ · DC PNP/NPN · Wiring diagram no. 22									
	M18 / L = 110	8 nf	PBT	10...55	IP 65	50	400	4	**KG5040**
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	6	**KI5002**
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 6									
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	6	**KI5001**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC NPN · Wiring diagram no. 7									
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	6	**KI5015**
Cable 2 m · Output function ⎍ · DC NPN · Wiring diagram no. 8									
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	6	**KI5019**
Cable 2 m · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 23									
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	6	**KI5207**
connector (DIN EN 175301-803) · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 9 · Connector group 33									
	M30 / L = 92	15 nf	PBT	10...36	IP 65	40	250	7	**KI5038**
M12 connector · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20									
	M30 / L = 90	8 f	High-grade st. steel	10...36	IP 65 / IP 67	10	100	8	**KI5085**
	M30 / L = 90	15 nf	High-grade st. steel	10...36	IP 65 / IP 67	10	100	9	**KI5087**
M12 connector · Output function ⎍ / ⎍ · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 8, 9, 10, 11, 18, 20									
	M30 / L = 90	8 f	High-grade st. steel	10...36	IP 65 / IP 67	10	100	8	**KI5084**
	M30 / L = 90	15 nf	High-grade st. steel	10...36	IP 65 / IP 67	10	100	9	**KI5086**
Terminals · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 10									
	M30 / L = 125	15 nf	PBT	10...55	IP 65	40	250	10	**KI5023**
Terminals · Output function ⎍ / ⎍ · DC NPN · Wiring diagram no. 11									
	M30 / L = 125	15 nf	PBT	10...36	IP 65	40	250	10	**KI5024**

You can find wiring diagrams and scale drawings from page 157

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	120 x 80 x 30	60 nf	modified PPO	10...36	IP 65	10	250	11	**KD5022**
Cable 2 m · Output function ⎍ · DC NPN · Wiring diagram no. 7									
	120 x 80 x 30	60 nf	modified PPO	10...36	IP 65	10	250	11	**KD5024**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 25 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	105 x 80 x 40	60 nf	modified PPO	10...36	IP 65	10	250	12	**KD5039**
Terminals · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 26									
	105 x 80 x 40	60 nf	modified PPO	10...36	IP 65	10	250	13	**KD5018**
Cable 2 m · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 27									
	M18 / L = 77	8 nf	PP	10...36	IP 65 / IP 67	10	200	14	**KG5067**
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 12									
	M18 / L = 77	8 nf	PP	10...36	IP 65 / IP 67	10	200	14	**KG5069**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 87	8 nf	PBT	10...36	IP 65 / IP 67	10	200	15	**KG5071**
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 8, 9, 10, 11, 18, 20									
	M18 / L = 87	12 nf	PBT	10...36	IP 65 / IP 67	10	200	15	**KG5065**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20									
	M18 / L = 87	12 nf	PBT	10...36	IP 65 / IP 67	10	200	15	**KG5066**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 28 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	M30 / L = 116	nf	PPS	10...30	IP 67	10	200	16	**KN5121**
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 24 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 90	20 nf	PBT	10...36	IP 65 / IP 67	10	200	17	**KI5082**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M30 / L = 90	20 nf	PBT	10...36	IP 65 / IP 67	10	200	17	**KI5083**

f = flush / nf = non flush

Sensors for level and position detection AC/DC

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · AC/DC · Wiring diagram no. 13									
	M18 / L = 84	8 nf	PBT	20...250	IP 67	25 / 50	350 / 100	1	**KG0009***
Cable 2 m · Output function ⎍ · AC/DC · Wiring diagram no. 14									
	M18 / L = 84	8 nf	PBT	20...250	IP 67	25 / 50	350 / 100	1	**KG0010***
Terminals · Output function ⎍/⎍ · AC/DC · Wiring diagram no. 15									
	M18 / L = 110	8 nf	PBT	20...250	IP 65	25 / 50	350 / 100	4	**KG0008***
Cable 2 m · Output function ⎍ · AC/DC · Wiring diagram no. 13									
	M30 / L = 81	15 nf	PBT	20...250	IP 65	25 / 40	250	6	**KI0016***
Cable 2 m · Output function ⎍ · AC/DC · Wiring diagram no. 14									
	M30 / L = 81	15 nf	PBT	20...250	IP 65	25 / 40	250	6	**KI0020***

You can find wiring diagrams and scale drawings from page 157

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
connector (DIN EN 175301-803) · Output function ⎓ / ⏚ · AC/DC · Wiring diagram no. 16 · Connector group 33									
	M30 / L = 92	15 nf	PBT	20...250	IP 65	25 / 40	250	7	**KI0040***
Terminals · Output function ⎓ / ⏚ · AC/DC · Wiring diagram no. 15									
	M30 / L = 125	15 nf	PBT	20...250	IP 65	25 / 40	250	10	**KI0024***
Cable 2 m · Output function ⎓ · AC/DC · Wiring diagram no. 13									
	120 x 80 x 30	60 nf	modified PPO	20...250	IP 65	10	250	11	**KD0012***
Cable 2 m · Output function ⏚ · AC/DC · Wiring diagram no. 14									
	120 x 80 x 30	60 nf	modified PPO	20...250	IP 65	10	250	11	**KD0013***
Terminals · Output function ⎓ / ⏚ · AC/DC · Wiring diagram no. 29									
	105 x 80 x 40	60 nf	modified PPO	20...250	IP 65	10	250	13	**KD0009***
1/2" UNF-Connector · Output function ⎓ / ⏚ · AC/DC · Wiring diagram no. 17 · Connector group 29									
	M18 / L = 87	12 nf	PBT	20...250	IP 65 / IP 67	10	150	18	**KG0016***
	M30 / L = 90	20 nf	PBT	20...250	IP 65 / IP 67	10	150	19	**KI0054***

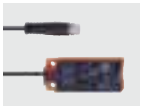
f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Sensors with IO-Link

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎓ / ⏚ · Automatic load detection PNP/NPN · Wiring diagram no. 27									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	20	**KQ6001**

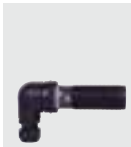
Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 12									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	20	**KQ6002**
Cable 10 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 12									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	21	**KQ6007**
Cable with connector 0.04 m · Output function ⎍/⎍ · Automatic load detection PNP/NPN · Wiring diagram no. 24 · Connector groups 4, 5									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	22	**KQ6003**
Cable with connector 0.04 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 4, 5									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	22	**KQ6004**
Cable with connector 0.04 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 1, 2, 3, 74, 80									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	23	**KQ6008**
Cable with connector 0.04 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 4, 5									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	23	**KQ6010**
Cable with connector 0.1 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 18, 20									
	20 x 14 x 48	12 nf	PBT	10...30	IP 65 / IP 67	10	100	24	**KQ6005**

f = flush / nf = non flush

Sensors with ATEX approval

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 18										
	M30 / L = 81	15 nf	PBT	8.2 DC	7.5...15	375	1	40	6	**KI5030**

You can find wiring diagrams and scale drawings from page 157

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Draw-ing no.	Order no.
Cable 6 m · Output function ⎍ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 18										
	M30 / L = 81	15 nf	PBT	8.2 DC	7.5...15	375.64	3	40	6	**KI5031**
Terminals · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 19										
	M30 / L = 150	15 nf	PBT	10...30 DC	–	–	–	10	25	**KI503A**
	M30 / L = 125	15 nf	PBT	10...30 DC	–	–	–	10	26	**KI505A**
Terminals · Output function ⎍ / ⎍ · AC/DC · Wiring diagram no. 30										
	M30 / L = 150	15 nf	PBT	20...250 DC / 30...250 AC	–	–	–	10	25	**KI000A***
	M30 / L = 125	15 nf	PBT	20...250 DC / 30...250 AC	–	–	–	10	26	**KI001A***
Cable 2 m · Output function ⎍ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 20										
	M34 / L = 92	15 nf	Brass	8.2 DC	7.5...15	375	1	40	27	**KX5001**
Cable 6 m · Output function ⎍ · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 20										
	M34 / L = 92	15 nf	Brass	8.2 DC	7.5...15	375.64	3	40	27	**KX5002**

f = flush / nf = non flush

*** Note for AC and AC/DC units**

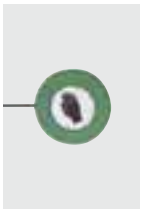
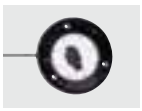
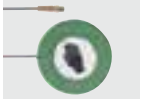
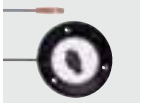
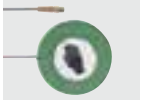
Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Switching amplifiers with ATEX approval

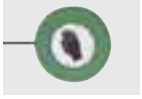
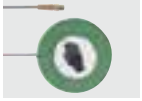
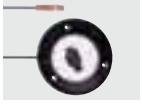
Type	U_b [V]	Power / current consumption [VA] / [mA]	f [Hz]	T_a [°C]	Output	Protection	Draw-ing no.	Order no.
	115	1.0 /	10	-20...60	relay (1 changeover contact)	IP 20	28	**N0030A**
	230	1.0 /	10	-20...60	relay (1 changeover contact)	IP 20	28	**N0031A**
	115	1.3 /	10	-20...60	relay (1 changeover contact per channel)	IP 20	28	**N0032A**
	230	1.3 /	10	-20...60	relay (1 changeover contact per channel)	IP 20	28	**N0033A**
	24	/ < 23	10	-20...60	relay (1 changeover contact)	IP 20	28	**N0530A**
	24	/ < 50	5000	-20...60	2 transistor outputs PNP (100 mA, short-circuit protection)	IP 20	28	**N0531A**
	24	/ < 50	5000	-20...60	2 outputs (optocoupler, bipolar, 100 mA, short-circuit protection)	IP 20	28	**N0532A**
	24	/ < 50	10	-20...60	relay (1 changeover contact per channel)	IP 20	28	**N0533A**
	24	/ < 50	5000	-20...60	2 transistor outputs PNP (100 mA, short-circuit protection)	IP 20	28	**N0534A**

You can find wiring diagrams and scale drawings from page 157

Dynamic capacitive touch sensors

Type	U_b [V]	I_{load} [mA]	Current consumption [mA]	Ambient temperature [°C]	Protection	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC PNP							
	24	500	30	-40...85	IP 69K	29	**KT5001**
	24	500	30	-40...85	IP 69K	29	**KT5009**
	24	500	30	-40...85	IP 69K	29	**KT5010**
Cable with connector 0.3 m · Output function ⎍ · DC PNP · Connector groups 4, 5, 76, 82							
	24	500	30	-40...85	IP 69K	29	**KT5002**
	24	500	30	-40...85	IP 69K	29	**KT5011**
Cable with connector 0.3 m · Output function ⎍ · DC NPN · Connector groups 4, 5, 76, 82							
	24	500	30	-40...85	IP 69K	29	**KT5007**

Static capacitive touch sensors

Type	U_b [V]	I_{load} [mA]	Current consumption [mA]	Ambient temperature [°C]	Protection	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC PNP							
	24	500	30	-40...85	IP 69K	29	**KT5005**
	24	500	30	-40...85	IP 69K	29	**KT5012**
Cable with connector 0.3 m · Output function ⎍ · DC PNP · Connector groups 4, 5, 76, 82							
	24	500	30	-40...85	IP 69K	29	**KT5006**
	24	500	30	-40...85	IP 69K	29	**KT5013**

Accessories

Type	Description	Order no.
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	**ZGS210**
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	**E30396**
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	**E30398**
	Coloured surround · for type KT · Housing materials: polycarbonate yellow	**E80372**
	Coloured surround · for type KT · Housing materials: polycarbonate green	**E80373**
	Coloured surround · for type KT · Housing materials: polycarbonate Red	**E80374**
	Coloured surround · for type KT · Housing materials: polycarbonate blue	**E80375**
	Coloured surround · for type KT · Housing materials: polycarbonate orange	**E80376**

Accessories mounting adapters

Type	Description	Order no.
	Mounting adapter · M18 x 1 - G ¾ · Housing materials: POM	**E43900**
	Mounting adapter · M18 x 1 - G 1 · Housing materials: POM	**E43904**
	Mounting adapter · M30 x 1.5 - G 1¼ · Housing materials: PVDF / EPDM	**E11036**
	Mounting adapter · M30 x 1.5 - G 1½ · Housing materials: PVDF / EPDM	**E11034**

You can find wiring diagrams and scale drawings from page 157

Type	Description	Order no.
	Mounting adapter · Ø 34 mm - G 1½ · Housing materials: POM	E11027
	Locknut · G ¾ · for mounting adapter · Housing materials: POM	E43902
	Locknut · G 1¼ · for mounting adapter · Housing materials: PVDF	E11030
	Locknut · G 1½ · for mounting adapter · Housing materials: PVDF	E11032
	Protective cover · G 1¼ · for mounting adapter · Housing materials: PES black transparent	E11078

Accessories mounting components

Type	Description	Order no.
	Mounting clamp · Ø 20 mm - Ø 18 mm · with reducing bush · for type M18 · Housing materials: PBT	E10076
	Mounting clamp · Ø 34 mm - Ø 30 mm · with reducing bush · for type M30 · Housing materials: PBT	E10077
	Angle bracket · for type M12 · Housing materials: stainless steel	E10735
	Angle bracket · for type M18 · Housing materials: stainless steel	E10736
	Angle bracket · for type M30 · Housing materials: stainless steel	E10737
	Mounting adapter for free-standing mounting · for type KQ5, KQ6 · Housing materials: adapter: PBT / inserts: Brass / screw: steel galvanised	E12153
	Mounting adapter · Pipe and tube installation KQ5 / KQ6 with cable ties · Fixing of the types KQ5 and KQ6 to pipes and tubes · Housing materials: Mounting adapter: PA 12 black	E12163
	Fixing strap · Length: 760 mm · for capacitive level sensors · for type KNQ, KQ5, KQ6 · Housing materials: PA	E10880

Type	Description	Order no.
	Mounting set · M30 x 1.5 / G ¼...G 1 · for capacitive sensors on rising pipes G ¼" - 1" · Housing materials: POM	**E11037**

Accessories mounting sets

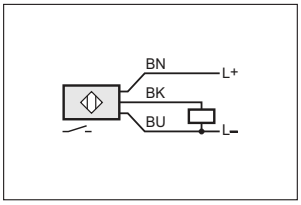
Type	Description	Order no.
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	**E20719**
	Mounting set · Ø 18.5 mm · Clamp mounting · aluminium profile · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20867**
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20869**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20873**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20874**
	Mounting set · Ø 30.2 mm · Clamp mounting · aluminium profile · for type II, KI, OID, OI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20875**
	Angle bracket · Clamp mounting · for type IW, OW, KQ5 · Housing materials: stainless steel 316Ti / 1.4571	**E20811**

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white
GN/YE	green/yellow

1



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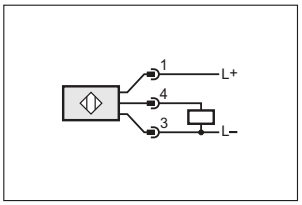

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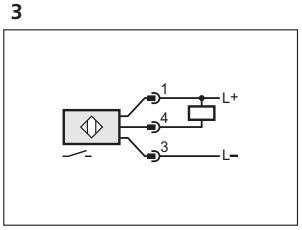

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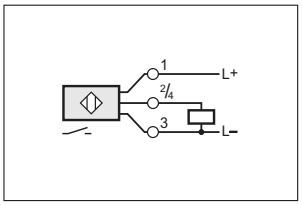

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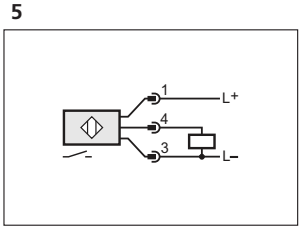

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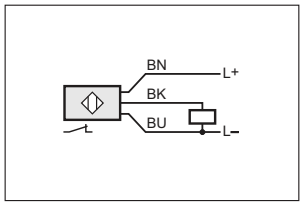

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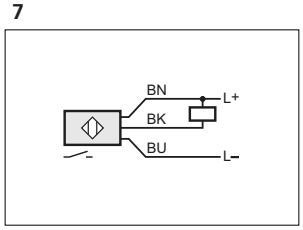
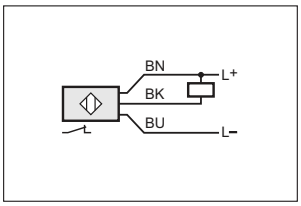


Wiring diagrams

8



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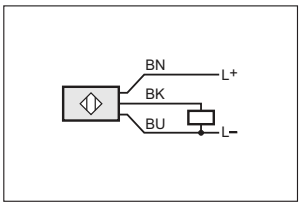

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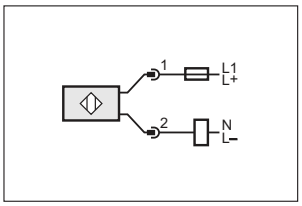

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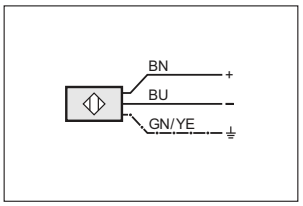

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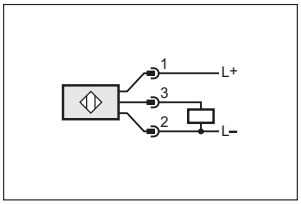

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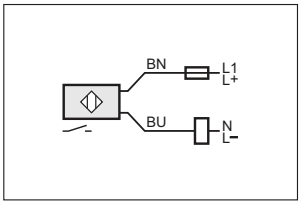

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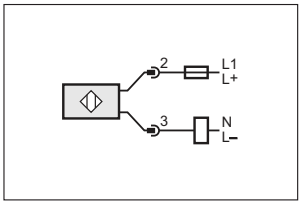

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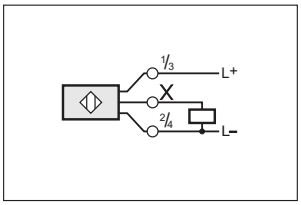

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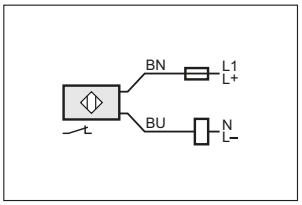

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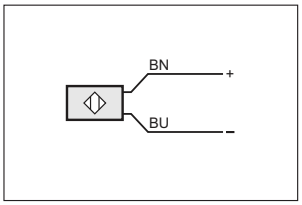

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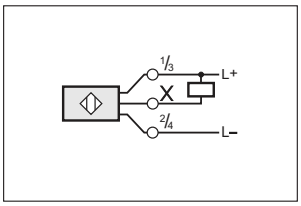

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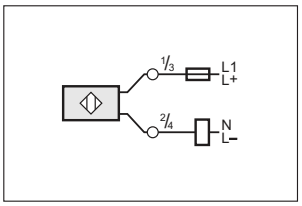

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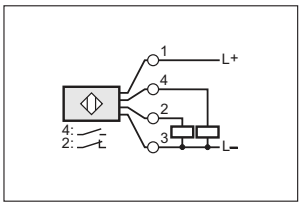

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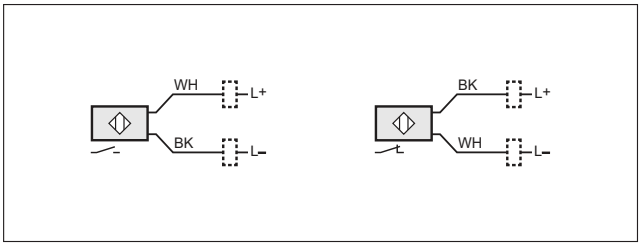

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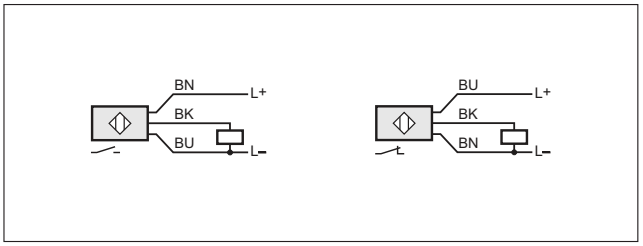

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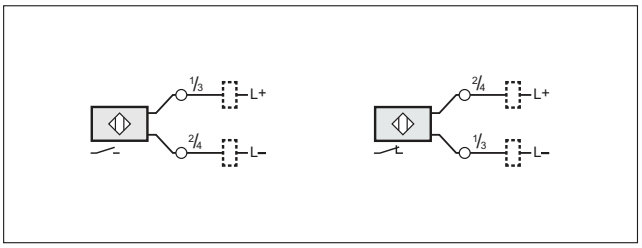

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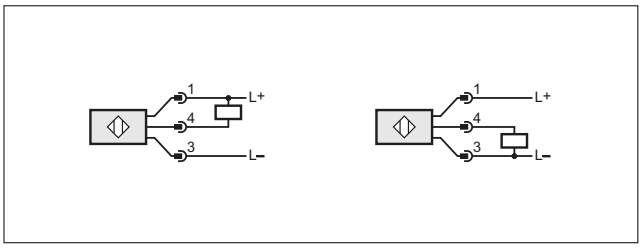
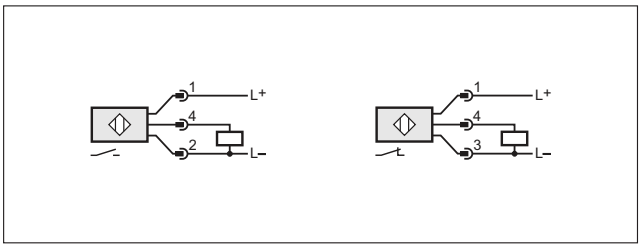


Wiring diagrams

25



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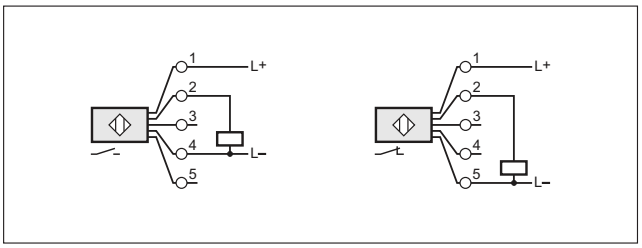

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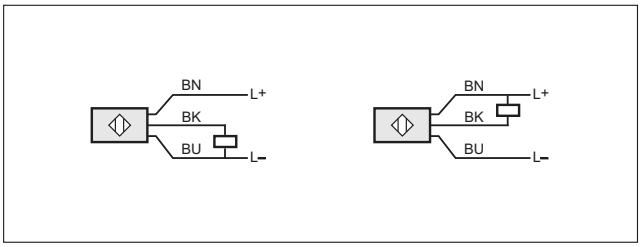

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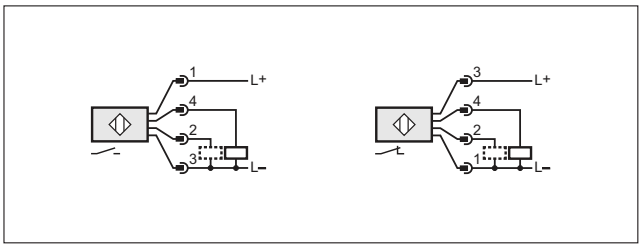
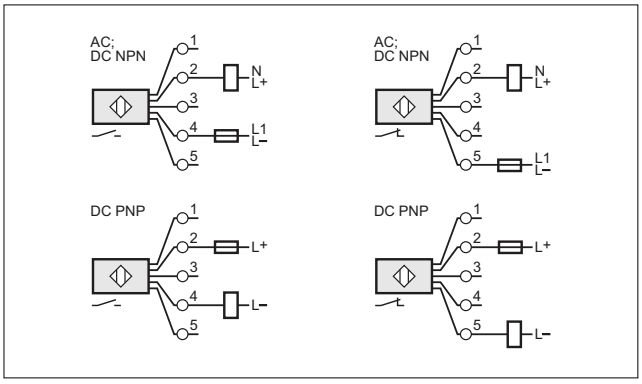


2: function check output / programming wire

29



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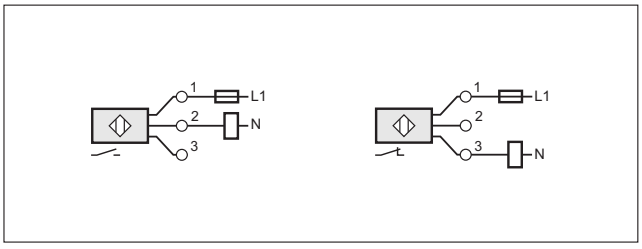

Scale drawings / drawing no. – CAD download: www.ifm.com

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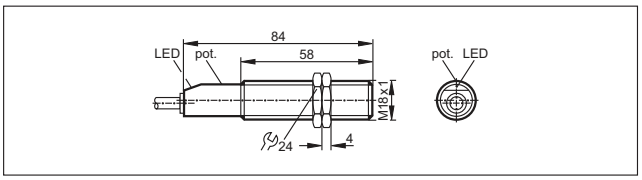

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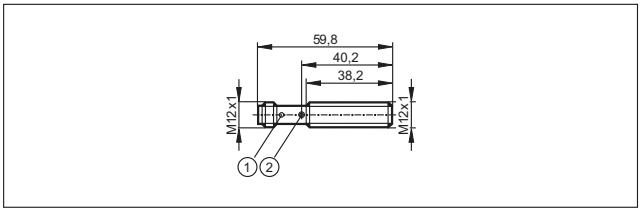
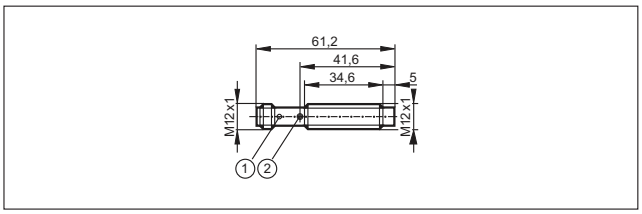


1: LED 4 x 90°, 2: potentiometer

3



1: LED 4 x 90°, 2: potentiometer

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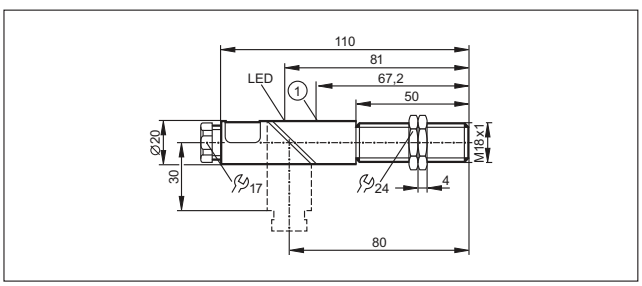

1: potentiometer

Scale drawings / drawing no. – CAD download: www.ifm.com

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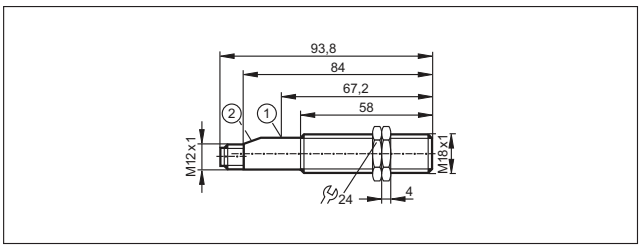

1: potentiometer, 2: LED

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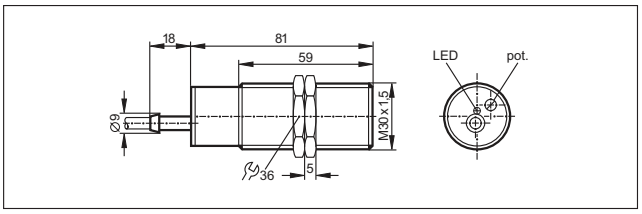

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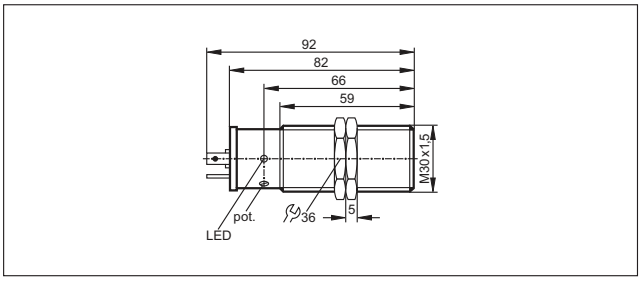

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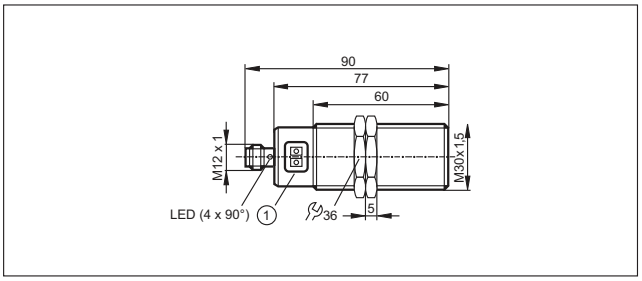
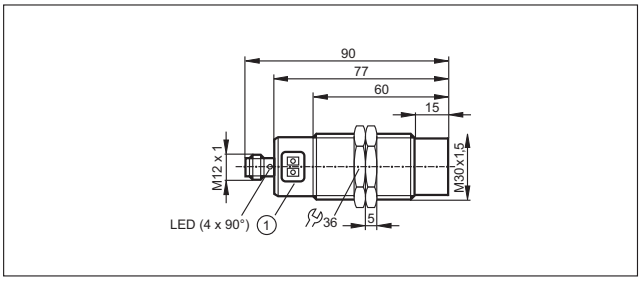


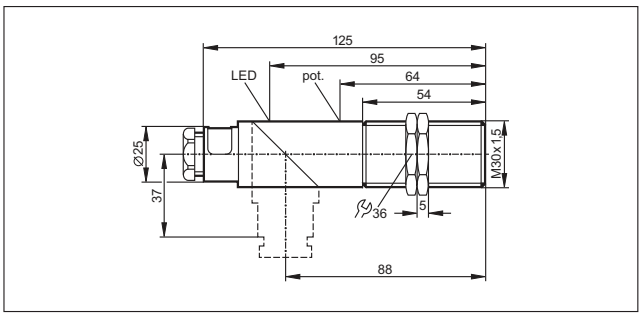
1: Programming buttons

9



1: Programming buttons

10



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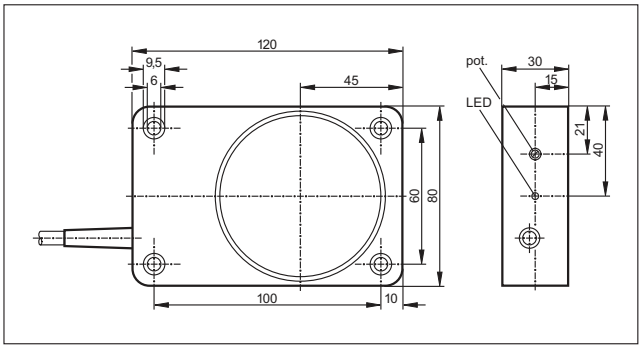

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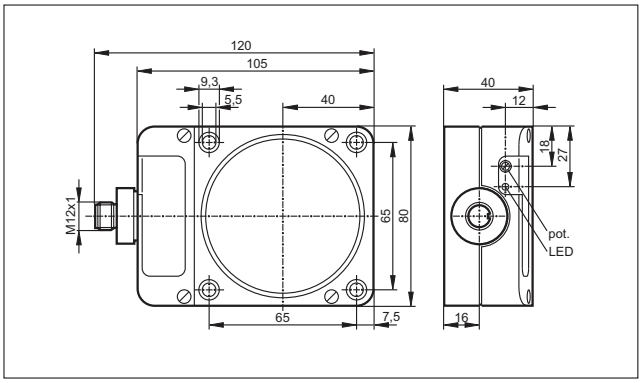

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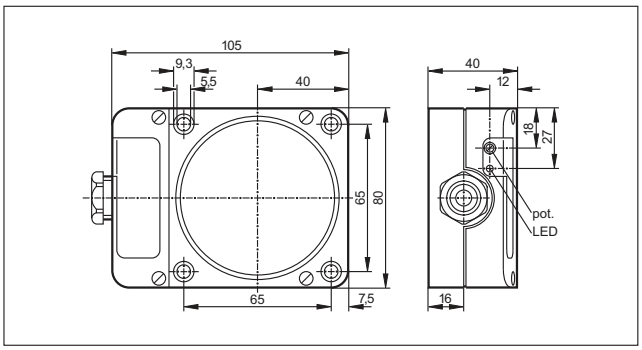

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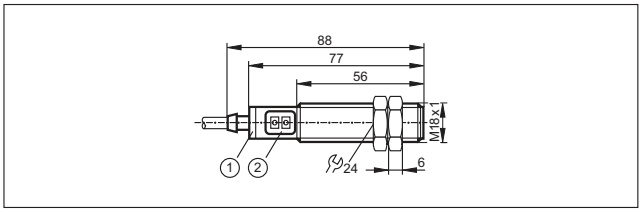

1: LED ring, 2: Programming buttons

Scale drawings / drawing no. – CAD download: www.ifm.com

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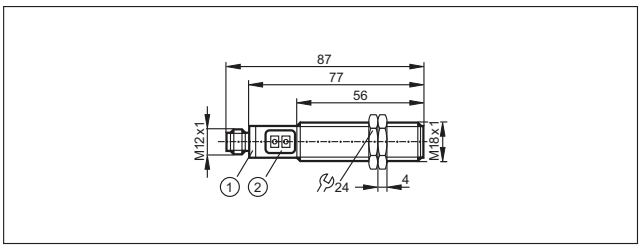
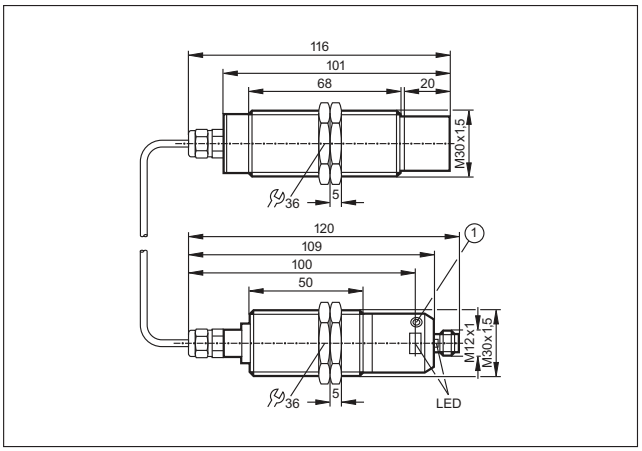


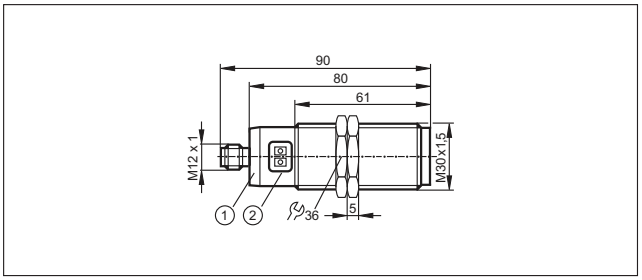
1: LED ring, 2: Programming buttons

16



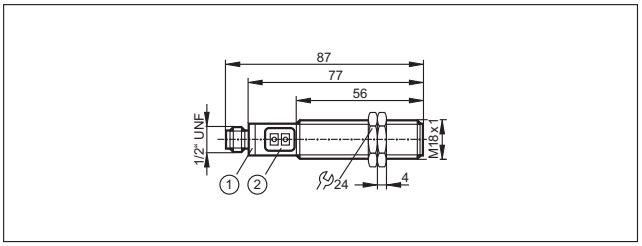
1: Programming button

17



1: LED ring, 2: Programming buttons

18



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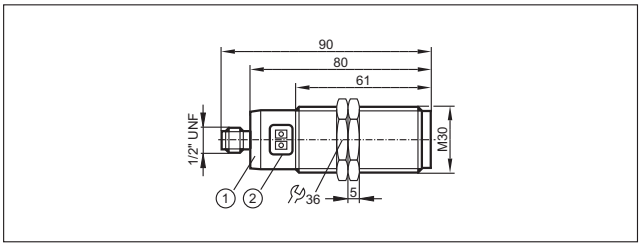
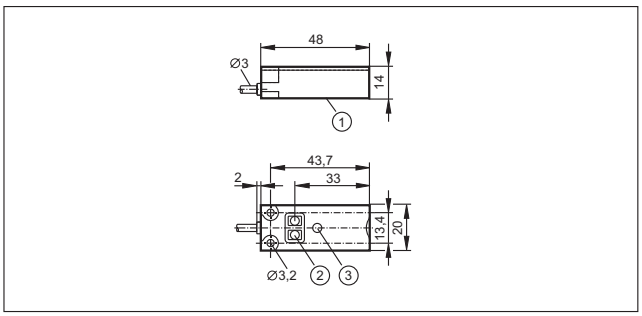


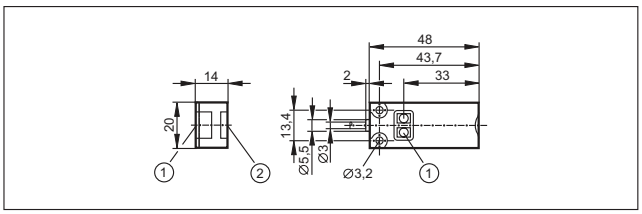
1: LED ring, 2: Programming buttons

20



1: sensing face, 2: Programming buttons, 3: LED

21



1: Programming buttons, 2: sensing face

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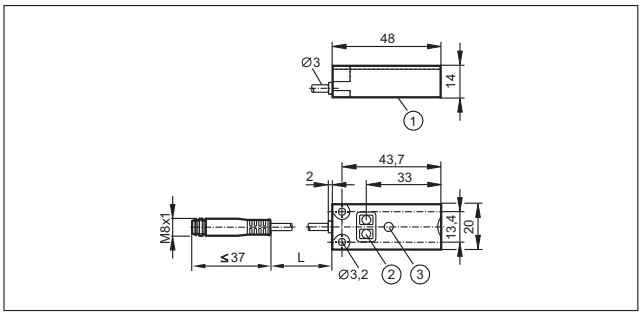

1: sensing face, 2: Programming buttons, 3: LED

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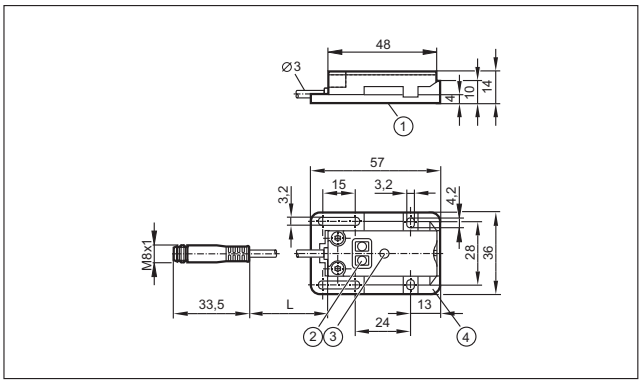

1: sensing face, 2: Programming buttons, 3: LED, 4: Mounting adapter E12153

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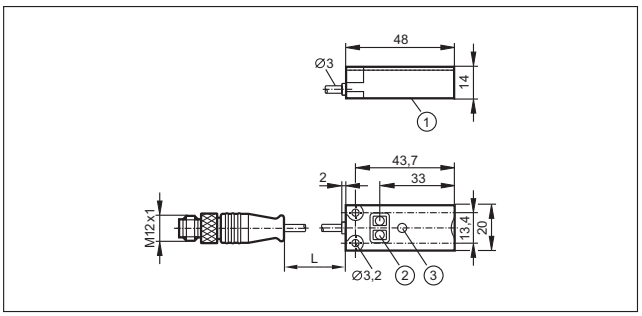
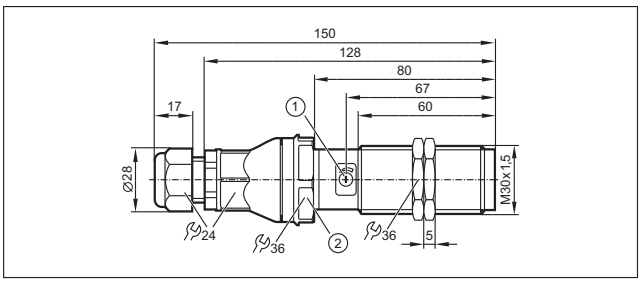


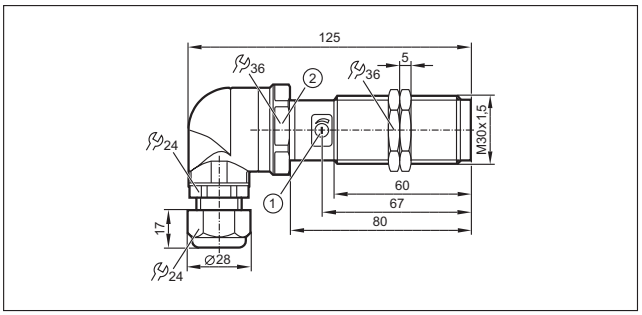
1: sensing face, 2: Programming buttons, 3: LED

25



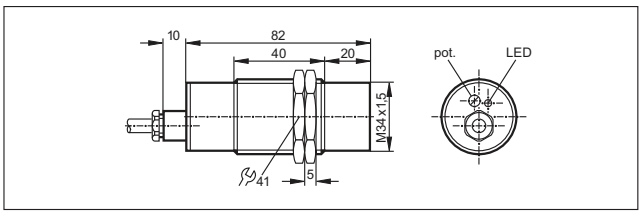
1: potentiometer, 2: tightening torque 10 Nm

26



1: potentiometer, 2: tightening torque 10 Nm

27



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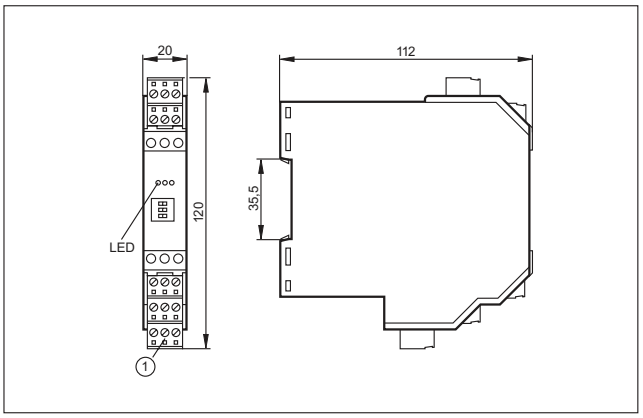
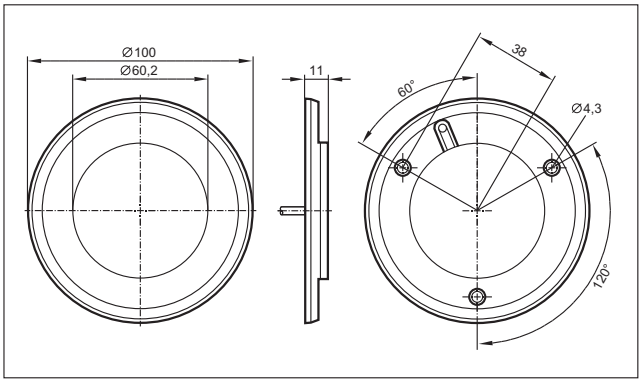
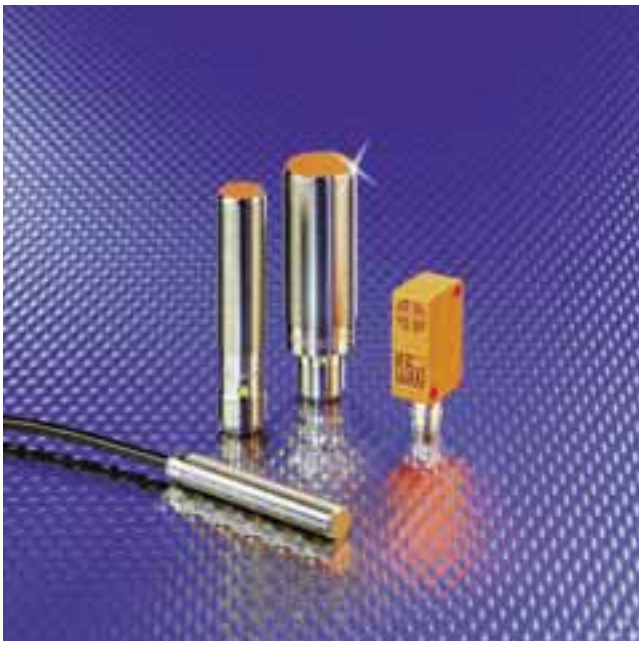


1: Combicon plug with screw terminals (optional)

29





- **Magnetic sensors for long sensing ranges**
- **Small designs with sensing ranges up to 100 mm**
- **Detection through non-ferrous metals**
- **Cylindrical and rectangular designs for demanding applications**
- **Tough all-steel housings and temperature range for universal use**

Magnetic sensors

Magnetic sensors come into their own where inductive sensors reach their limits. Compared to inductive sensors magnetic sensors have a considerably higher sensing range for the comparable housing sizes, yet can be used in environments where other long range detection techniques are simply not suitable.
Magnetic sensors are used for reliable and highly repeatable position detection in similar applications to inductive sensors, but are also very effective in more complex applications since magnetic fields penetrate all non-magnetisable materials. So the sensors can detect magnets through walls made of non-ferrous metal (stainless steel, aluminium), plastic or wood. This allows a sensor to be fitted outside, for example, a sensitive hygienic area.
In the food industry the magnetic sensor is often used in pigging systems. By means of magnetic sensors the exact position of the pig can be detected from the outside through the wall of the stainless steel pipe.

Operating principle

Magnetic sensors from ifm electronic use state-of-the-art GMR (Giant Magneto Resistive Effect) technology as used in computer hard drives. The measuring cell consists of resistors with several extremely fine, ferromagnetic and non-magnetic layers. Whereas in a conventional Wheatstone bridge circuit two screened and two unscreened GMR resistors are combined, a large signal proportional to the magnetic field is produced if a magnetic field is present. As from a defined threshold value an output signal is switched via a comparator. The strength of the magnet determines the sensing range.

Installation

Magnetic sensors can be mounted flush with all materials (even metals) without reduction in the sensing range. Depending on the orientation of the magnetic field the sensor can be damped from the front or from the side.

The sensor switches as soon as the magnet has reached the switch-on point. The direction of movement of the magnet is not important.

System overview	Page
Full metal sensors for industrial applications	166
Sensors for industrial applications	166 - 168
Full metal sensors for hygienic and wet areas	168
Sensors for hygienic and wet areas	168
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Accessories mounting components	169 - 170
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Full metal sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	1	**MFS211**
M12 connector · Output function ⎍ · DC NPN · Wiring diagram no. 2 · Connector groups 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	1	**MFS209**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 3 · Connector groups 123, 125, 150									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	1	**MFS210**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M18 / L = 60	70	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	2	**MGS204**
M12 connector · Output function ⎍ · DC NPN · Wiring diagram no. 2 · Connector groups 123, 125, 150									
	M18 / L = 60	70	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	2	**MGS205**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 3 · Connector groups 123, 125, 150									
	M18 / L = 60	70	High-grade st. steel	10...30	IP 65 / IP 67	5000	200	2	**MGS206**

Sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 4									
	M8 / L = 50	60	stainless steel (316L)	10...30	IP 67	5000	200	3	**ME5011**
	M12 / L = 50	60	High-grade st. steel	10...30	IP 67	5000	200	4	**MFS201**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · DC NPN · Wiring diagram no. 5									
	M8 / L = 40	60	stainless steel (316L)	10...30	IP 67	5000	200	5	**ME5015**
	M12 / L = 50	60	High-grade st. steel	10...30	IP 67	5000	200	4	**MFS202**
M8 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	M8 / L = 60	60	stainless steel (316L)	10...30	IP 67	5000	200	6	**ME5010**
M12 connector · Output function ⎍ · DC NPN · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 67	5000	200	1	**MFS203**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	stainless steel	10...30	IP 67	5000	200	1	**MF5004**
	M12 / L = 60	60	High-grade st. steel	10...30	IP 67	5000	200	1	**MFS200**
	M18 / L = 60	70	stainless steel	10...30	IP 67	5000	200	2	**MGS200**
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 4									
	M18 / L = 50	70	stainless steel	10...30	IP 67	5000	200	7	**MGS201**
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 6									
	M18 / L = 50	70	stainless steel	10...30	IP 67	5000	200	7	**MGS202**
Cable 2 m · Output function ⎍ · DC PNP · Wiring diagram no. 4									
	28 x 10 x 16	60	PBT	10...30	IP 67	5000	200	8	**MS5011**
M8 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	28 x 10 x 16	60	PBT	10...30	IP 67	5000	200	9	**MS5010**

You can find wiring diagrams and scale drawings from page 170

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable with connector 0.15 m · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	40 x 12 x 26	60	PBT	10...30	IP 67	–	200	10	**MN5200**

Full metal sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 65 / IP 68 / IP 69K	5000	100	1	**MFT202**
	Ø 12 / L = 60	60	High-grade st. steel	10...30	IP 65 / IP 68 / IP 69K	5000	100	11	**MFT204**
	M18 / L = 60	70	High-grade st. steel	10...30	IP 65 / IP 68 / IP 69K	5000	100	2	**MGT203**

Sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 123, 125, 126, 127, 150, 151									
	M12 / L = 60	60	High-grade st. steel	10...30	IP 68 / IP 69K	5000	200	1	**MFT200**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	M18 / L = 60	70	High-grade st. steel	10...30	IP 68 / IP 69K	5000	200	2	**MGT200**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 1 · Connector groups 123, 126									
	M18 / L = 60	100	High-grade st. steel	10...30	IP 68 / IP 69K	–	200	2	**MGT201**

Accessories damping magnets

Type	Description	Order no.
	Damping magnet · M 1.0 · Housing materials: Samarium cobalt	**E10749**
	Damping magnet · M 2.0 · Housing materials: AlNiCo	**E10750**
	Damping magnet · M 3.0 · Housing materials: Barium ferrite	**E10751**
	Damping magnet · M 4.0 · Housing materials: Barium ferrite	**E10752**
	Damping magnet · M 4.1 · Housing materials: Barium ferrite / stainless steel	**E11803**
	Damping magnet · M 5.0 · Housing materials: Barium ferrite	**E10753**
	Damping magnet · M 5.1 · Housing materials: Barium ferrite with plastic coating / steel	**E10754**

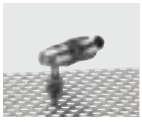
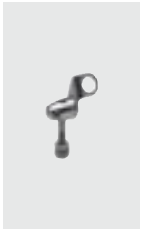
Accessories mounting components

Type	Description	Order no.
	Angle bracket · for type M8 · Housing materials: stainless steel	**E10734**
	Angle bracket · for type M12 · Housing materials: stainless steel	**E10735**
	Angle bracket · for type M18 · Housing materials: stainless steel	**E10736**
	Mounting clamp · Ø 8 mm · Housing materials: aluminium black anodised	**E10221**
	Mounting clamp · Ø 12 mm · with end stop · for type M12 · Housing materials: PC	**E11047**

You can find wiring diagrams and scale drawings from page 170

Type	Description	Order no.
	Mounting clamp · Ø 18 mm · with end stop · for type M18 · Housing materials: PC	E11048

Accessories mounting sets

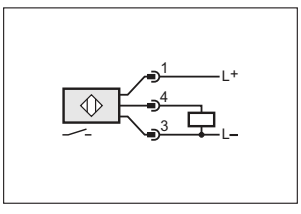
Type	Description	Order no.
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20718
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20719
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20869
	Mounting set · Ø 18.5 mm · Clamp mounting · Free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20870
	Mounting set · Ø 18.5 mm · Clamp mounting · aluminium profile · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	E20866
	Mounting set · Ø 18.5 mm · Clamp mounting · aluminium profile · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	E20867

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue

1



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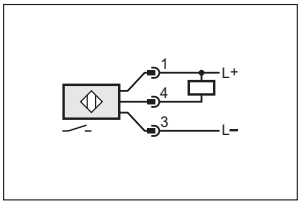

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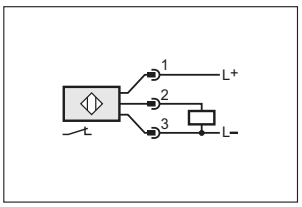

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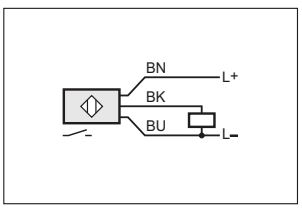

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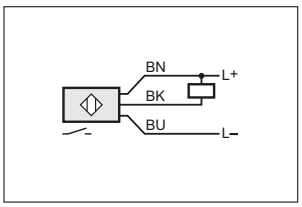

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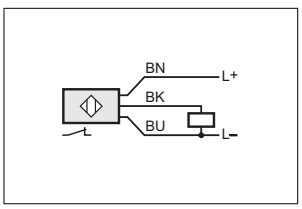
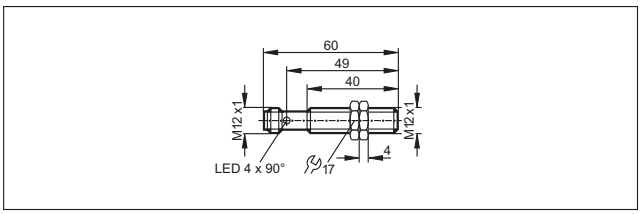


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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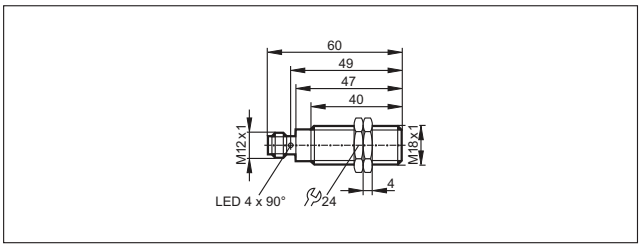

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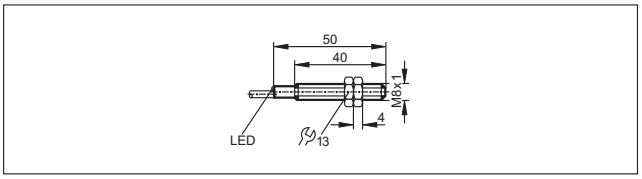

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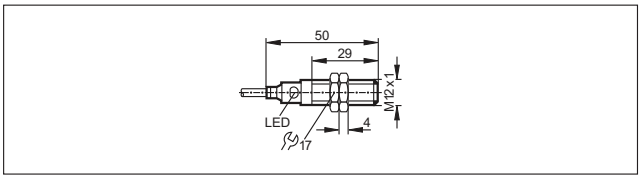

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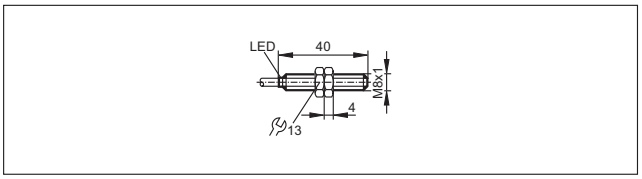

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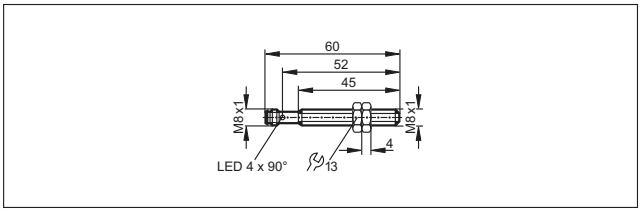
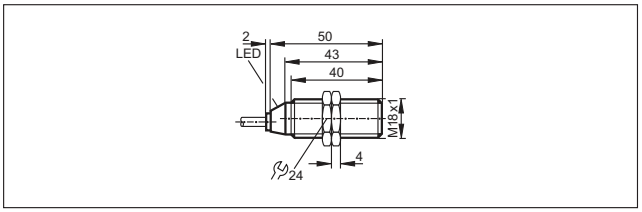


7



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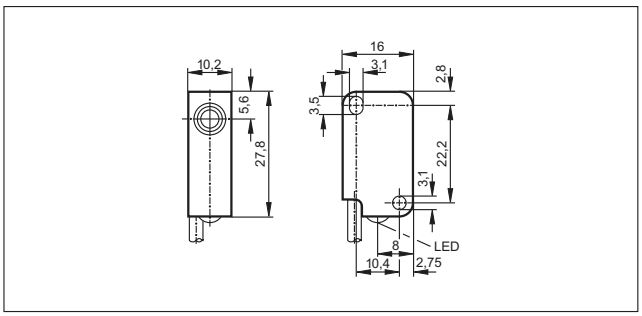

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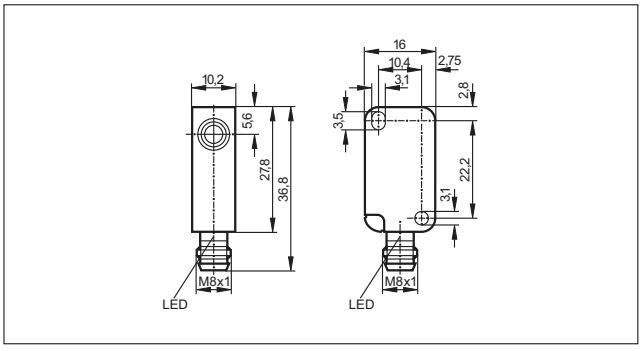

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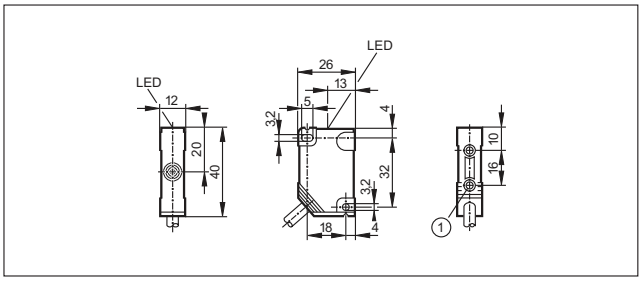
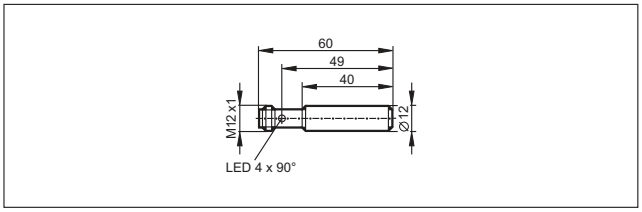


1: threaded insert M3, depth 5.8 mm, max. tightening torque 1.2 Nm (screw fixing class 8.8) when brass insert in contact with counterpart.

11



- **Solid-state sensors for pneumatic cylinder position**
- **Self-clamping fixture for easy adjustment and quick mounting**
- **Easily inserted into the slot from the top**
- **Versions for standard and wet areas**
- **Adapters for other common cylinder types and makes**

Cylinder sensors

Cylinder sensors are used for position detection of pistons in pneumatic cylinders. They are directly and robustly mounted into the cylinder T or C-slot. The ring magnet attached to the piston is sensed through the housing wall of non-magnetisable material (usually aluminium or stainless steel). ifm electronic offers standard T-slot and C-slot solutions using adapters for the most common cylinder types and manufacturers.

Operating principle

ifm electronic's cylinder sensors use state-of-the-art GMR or AMR technology as used in computer hard drives. A GMR element is made up of extremely thin magnetic layers, each separated by a nonmagnetic layer. Without external field they align in an antiparallel manner which results in a defined electrical resistance. If these layers are exposed to a magnetic field, the magnetic layers align in a parallel manner. This results in a large change in resistance that is converted into a switching signal by the internal electronics. An AMR element consists of thin ferromagnetic stripes. Electrical resistance is highest without external magnetic fields. The effect of a magnetic field reduces resistance. This change is converted into a switching signal by the internal electronics. This method enables exact measurement of even very small changes of the magnetic field where space is extremely limited. This results in a smaller hysteresis and a short travel distance. So, the sensors can be used wherever exact positioning is required (e.g. short-stroke cylinder).

Response sensitivity

The response sensitivity applies equally to either magnetic polarity and without external field influence. The magnetic flux density in most pneumatic cylinders is between 5 and 25 millitesla (mT). ifm electronic's cylinder sensors are factory set so that they reliably detect these magnetic fields.

Travel distance

The travel distance describes the section which is covered by the magnet in the sensing zone. It depends on the strength of the magnet. The short response times of the sensors allow very high travel speeds.

Position sensing: Cylinder sensors monitor the position of the piston in a pneumatic cylinder.

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T-slot sensors for industrial applications

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	1	**MK5101**
Cable 2 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	2	**MK5100**
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	200	-25...85	2	**MK5115**
Cable 2 m · Output function ⎍⎽ · 3-wire · DC NPN · Wiring diagram no. 3									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	2	**MK5114**
Cable 2 m · Output function ⎍⎽ · 2-wire · DC PNP/NPN · Wiring diagram no. 4									
	25 x 5 x 6.5	PA (polyamide)	10...30	4000	IP 65 / IP 67	100	-25...85	2	**MK5103**
Cable 6 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	200	-25...85	2	**MK5117**
Cable 10 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	2	**MK5124**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	200	-25...85	1	**MK5106**
Cable 0.3 m · with M8 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	3	**MK5102**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 1, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	1	**MK5112**

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 2-wire · DC PNP/NPN · Wiring diagram no. 6 · Connector groups 1, 3									
	25 x 5 x 6.5	PA (polyamide)	10...30	4000	IP 65 / IP 67	100	-25...85	1	**MK5104**
Cable 0.3 m · with M8 connector · Output function ⎍⎽ · 2-wire · DC PNP/NPN · Wiring diagram no. 6 · Connector groups 1, 3									
	25 x 5 x 6.5	PA (polyamide)	10...30	4000	IP 65 / IP 67	100	-25...85	3	**MK5105**
Cable 1 m · with M8 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	3	**MK5122**
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	4	**MK5107**
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67	200	-25...85	4	**MK5108**
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 2-wire · DC PNP/NPN · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	25 x 5 x 6.5	PA (polyamide)	10...30	4000	IP 65 / IP 67	100	-25...85	4	**MK5109**
M8 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	27.5 x 18 x 15.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	5	**MK5900**
M8 connector · Output function ⎍⎽ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 1, 2, 3, 74, 80									
	27.5 x 18 x 15.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	5	**MK5902**

T-slot reed sensors for industrial applications, 2-wire

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
M8 connector · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 7									
	27.5 x 18 x 15.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	100	-25...70	5	**MR0901***

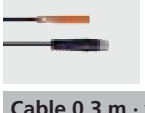
You can find wiring diagrams and scale drawings from page 186

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 8									
	30.5 x 5 x 6.5	PA (polyamide)	5...120	1000	IP 67	100	-25...70	6	**MR0100***
Cable 6 m · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 8									
	30.5 x 5 x 6.5	PA (polyamide)	5...120	1000	IP 67	100	-25...70	6	**MR0117***
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 7 · Connector groups 1, 3									
	30.5 x 5 x 6.5	PA (polyamide)	5...60	1000	IP 67	100	-25...70	7	**MR0101***
Cable 0.3 m · with M8 connector · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 7 · Connector groups 1, 3									
	30.5 x 5 x 6.5	PA (polyamide)	5...60	1000	IP 67	100	-25...70	8	**MR0102***
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 2-wire · AC/DC PNP/NPN · Wiring diagram no. 7 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	30.5 x 5 x 6.5	PA (polyamide)	5...60	1000	IP 67	100	-25...70	9	**MR0107***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 0,175 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

T-slot reed sensors for industrial applications, 3-wire

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
M8 connector · Output function ⎍⎽ · 3-wire · AC/DC PNP · Wiring diagram no. 9 · Connector group --									
	27.5 x 18 x 15.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	5	**MR0902***
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · AC/DC PNP · Wiring diagram no. 9 · Connector groups 1, 2, 3, 74, 80									
	30.5 x 5 x 6.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	7	**MR0119***
Cable 0.3 m · with M8 connector · Output function ⎍⎽ · 3-wire · AC/DC PNP · Wiring diagram no. 9 · Connector groups 1, 2, 3, 74, 80									
	30.5 x 5 x 6.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	8	**MR0120***

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎓ · 3-wire · AC/DC PNP · Wiring diagram no. 10									
	30.5 x 5 x 6.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	6	**MR0122***
Cable 6 m · Output function ⎓ · 3-wire · AC/DC PNP · Wiring diagram no. 10									
	30.5 x 5 x 6.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	6	**MR0123***
Cable 0.3 m · with M12 connector · Output function ⎓ · 3-wire · AC/DC PNP · Wiring diagram no. 9 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	30.5 x 5 x 6.5	PA (polyamide)	5...50	1000	IP 65 / IP 67	350 / 500	-25...70	9	**MR0121***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 0.75 A (fast blow, DC operation) Recommendation: check the unit for reliable function after a short circuit.

T-slot reed sensors with ATEX approval 1G/1D

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 6 m · Output function ⎓ · 2-wire · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 4									
	30.5 x 5 x 6.5	PA (polyamide)	–	–	IP 65 / IP 67	–	-25...70	6	**MR500A**

T-slot reed sensors with ATEX approval 3D/3G

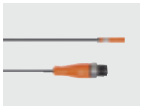
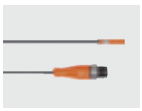
Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 6 m · Output function ⎓ · 2-wire · DC PNP/NPN · Wiring diagram no. 11									
	30.5 x 5 x 6.5	PA (polyamide)	5...30	–	IP 65 / IP 67	100	-20...60	6	**MR501A***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 0,175 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

You can find wiring diagrams and scale drawings from page 186

T-slot sensors for hygienic and wet areas

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	2	**MK5110**
Cable 6 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	2	**MK5128**
Cable 0.3 m · with M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	10	**MK5111**
Cable 0.3 m · with M12 connector · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	11	**MK5186**

T-slot sensors for short-stroke cylinders

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	12	**MK5140**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 12									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	12	**MK5156**
Cable 10 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	12	**MK5161**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 1, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	13	**MK5137**

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	13	**MK5138**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 13 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	13	**MK5155**
Cable 0.3 m · with M8 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	14	**MK5159**
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-25...85	15	**MK5139**

T-slot sensors for short-stroke cylinders for hygienic and wet areas

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	12	**MK5158**
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	11	**MK5157**

T-slot sensors with ATEX approval 1G/1D

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 6 m · Output function ⎍⎽ · 2-wire · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 4									
	25 x 5 x 6.5	PA (polyamide)	–	2000	IP 65 / IP 67	–	-25...70	12	**MK502A**

You can find wiring diagrams and scale drawings from page 186

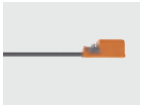
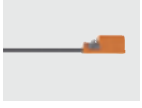
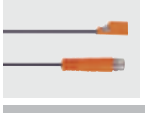
T-slot sensors with ATEX approval 3D/3G

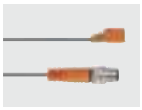
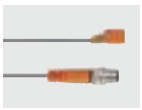
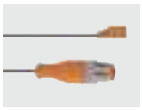
Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 6 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67	100	-20...60	12	**MK503A**

T-slot sensors with ATEX approval 3D

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 67	100	-25...60	2	**MK500A**
Cable 0.3 m · with M12 connector · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 147, 149									
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 67	100	-25...60	10	**MK501A**

Non flush C-slot sensors for industrial applications

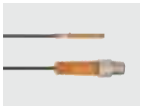
Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 2									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	16	**MK5300**
Cable 2 m · Output function ⎍⎽ · 3-wire · DC NPN · Wiring diagram no. 3									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	16	**MK5306**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	17	**MK5301**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍⎽ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 1, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	17	**MK5307**

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 0.3 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	18	**MK5302**
Cable 0.5 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	18	**MK5305**
Cable 0.3 m · with M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	19	**MK5304**

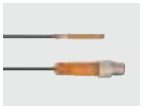
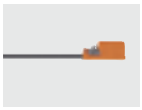
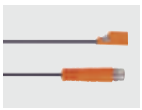
Flush C-slot sensors for industrial applications

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	20	**MK5312**
Cable 2 m · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 3									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	20	**MK5309**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	21	**MK5310**
Cable 0.3 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	22	**MK5311**
Cable 0.3 m · with M12 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	23	**MK5314**

You can find wiring diagrams and scale drawings from page 186

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire · DC NPN · Wiring diagram no. 5 · Connector groups 1, 3, 74, 80									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	21	**MK5308**
Cable 0.5 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	10000	IP 65 / IP 67	100	-25...85	22	**MK5315**

C-slot sensors for short-stroke cylinders

Type	Dimensions [mm]	Material	U_b [V]	f [Hz]	Protection	I_{load} [mA]	T_a [°C]	Drawing no.	Order no.
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	20	**MK5325**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	25.8 x 2.8 x 5	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	21	**MK5326**
Cable 0.3 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	26.1 x 2.8 x 5.5	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	24	**MK5328**
Cable 2 m · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 2									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	25	**MK5329**
Cable 0.3 m · with M8 connector (snap-fit) · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	26	**MK5330**
Cable 0.3 m · with M8 connector · Output function ⎍ · 3-wire · DC PNP · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80									
	17.5 x 2.8 x 7.7	PA (polyamide)	10...30	5000	IP 65 / IP 67	100	-25...85	27	**MK5331**

Fixing straps for clean line cylinders

Type	Description	Order no.
	Fixing strap for clean-line cylinders · Piston diameter 8...12 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11816
	Fixing strap for clean-line cylinders · Piston diameter 16...20 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11817
	Fixing strap for clean-line cylinders · Piston diameter 25...32 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11818
	Fixing strap for clean-line cylinders · Piston diameter 40 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11819
	Fixing strap for clean-line cylinders · Piston diameter 50 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11820
	Fixing strap for clean-line cylinders · Piston diameter 63 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11821
	Fixing strap for clean-line cylinders · Piston diameter 80 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11822
	Fixing strap for clean-line cylinders · Piston diameter 100 mm · for type MKT · Housing materials: adapter: PA / Fixing strap: stainless steel	E11823
	Fixing strap for clean-line cylinders · Piston diameter 10...16 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11975
	Fixing strap for clean-line cylinders · Piston diameter 20...25 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11976
	Fixing strap for clean-line cylinders · Piston diameter 32 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11977
	Fixing strap for clean-line cylinders · Piston diameter 40 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11978
	Fixing strap for clean-line cylinders · Piston diameter 50 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11979
	Fixing strap for clean-line cylinders · Piston diameter 63 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11980

You can find wiring diagrams and scale drawings from page 186

Type	Description	Order no.
	Fixing strap for clean-line cylinders · Piston diameter 80 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11981
	Fixing strap for clean-line cylinders · Piston diameter 100 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11982
	Adapter for clean-line cylinders · for types MKT (T-slot cylinder sensors) · Housing materials: PA	E11846
	Adapter for clean-line cylinders · for types MKT (T-slot cylinder sensors) · Housing materials: stainless steel	E11877

Clips

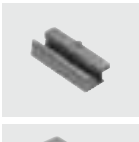
Type	Description	Order no.
	Clip · for types MKT (T-slot cylinder sensors) · Piston diameter 12 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E11961
	Clip · for types MKT (T-slot cylinder sensors) · Piston diameter 16 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E11958
	Clip · for types MKT (T-slot cylinder sensors) · Piston diameter 20 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E11959
	Clip · for types MKT and MKI (T-slot cylinder sensors) · Piston diameter 25 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E11960
	Clip · for types MKT (T-slot cylinder sensors) · Clamping range 44-45 mm · Piston diameter 40 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E12015
	Clip · for types MKT (T-slot cylinder sensors) · Clamping range 35-36 mm · Piston diameter 32 mm · Housing materials: POM / fixture: aluminium / screw: stainless steel	E12017

Adapters for tie rod and integrated profile

Type	Description	Order no.
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 5...11 mm · Housing materials: aluminium / screw: stainless steel	E11797

Type	Description	Order no.
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 9...15 mm · Housing materials: aluminium / screw: stainless steel	**E11799**
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 14...20 mm · Housing materials: aluminium / screw: stainless steel	**E11801**
	Adapter for tie rod cylinders (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · Clamping range 3...5 mm · Housing materials: aluminium / screw: stainless steel	**E11913**
	Adapter for tie rod cylinders (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · Clamping range 5...7 mm · Housing materials: aluminium / screw: stainless steel	**E11912**
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 5...11 mm · Housing materials: aluminium / screw: stainless steel	**E12231**
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 9...13.5 mm · Housing materials: aluminium / screw: stainless steel	**E12232**
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 9...17 mm · Housing materials: aluminium / screw: stainless steel	**E12233**
	Adapter for tie rod / integrated profile cylinders · for types MKT (T-slot cylinder sensors) · Clamping range 13...15 mm · Housing materials: aluminium / screw: stainless steel	**E12234**

Adapters for trapezoidal slot cylinders

Type	Description	Order no.
	Adapter for trapezoidal slot cylinders · for types MKT (T-slot cylinder sensors) · Housing materials: aluminium alloy / set screw: stainless steel	**E11796**
	Adapter for trapezoidal slot cylinders · for types MKT (T-slot cylinder sensors) · Housing materials: aluminium alloy / set screw: stainless steel	**E11957**
	Adapter for trapezoidal slot cylinders · for types MKT (T-slot cylinder sensors) · Housing materials: aluminium alloy / set screw: stainless steel	**E11988**

You can find wiring diagrams and scale drawings from page 186

Various adapters and memorisation blocks

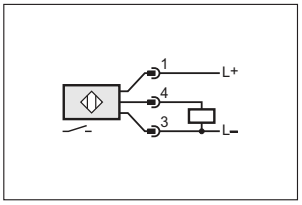
Type	Description	Order no.
	Adapter for Bosch Rexroth cylinders ICL series and Festo cylinders type CDN · for types MKT (T-slot cylinder sensors) · Housing materials: adapter: aluminium anodised / screw: stainless steel	**E12164**
	Adapter for Bosch-Rexroth cylinders PRA / PRB series (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · Housing materials: aluminium / screw: stainless steel	**E11892**
	Adapter for Bosch-Rexroth cylinders 523 series (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · L-slot · Housing materials: aluminium / screw: stainless steel	**E11894**
	Adapter for SMC cylinders ECDQ2 series (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · T-slot rail, flat · Housing materials: aluminium / screw: stainless steel	**E11890**
	Adapter for SMC cylinders CDQ2 series (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · T-slot rail, high · Housing materials: aluminium / screw: stainless steel	**E11891**
	Adapter for SMC cylinder CP95 · for types MKT (T-slot cylinder sensors) · Housing materials: stainless steel	**E11872**
	Adapter for Festo cylinders type DZH (or cylinders of the same dimensions) · for types MKT (T-slot cylinder sensors) · Housing materials: aluminium / screw: stainless steel	**E11895**
	T-slot adapter for C-slot sensor · for types MKC (C-slot cylinder sensor) for installation in T-slot cylinders · (height 5 mm) · Housing materials: diecast zinc / fixing element: stainless steel	**E11928**
	T-slot adapter for C-slot sensor · for types MKC (C-slot cylinder sensor) for installation in T-slot cylinders · (height 7.7 mm) · Housing materials: diecast zinc / fixing element: stainless steel	**E11914**
	T-slot cylinder memorisation block · for types MKT (T-slot cylinder sensors) · Housing materials: PA / stainless steel	**E11798**
	C-slot cylinder memorisation block · for types MKC (C-slot cylinder sensors) · Housing materials: PA / stainless steel	**E12004**

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue

1



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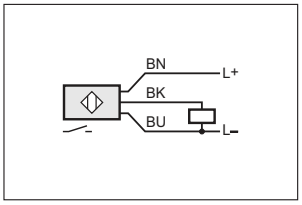

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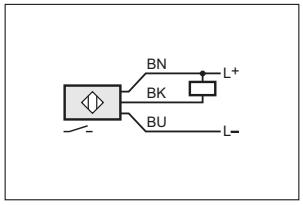
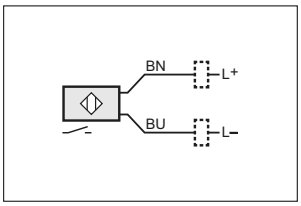


Product selectors and further information can be found at: www.ifm.com

Wiring diagrams

4



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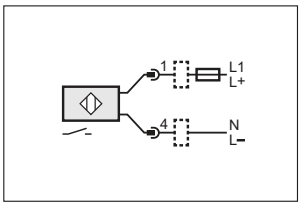

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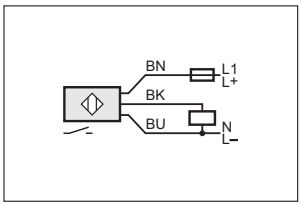

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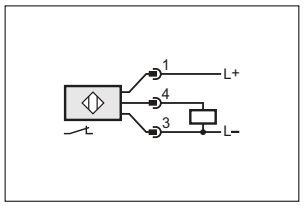

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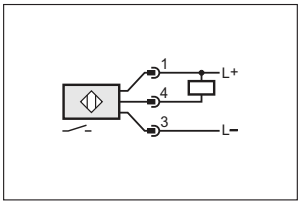

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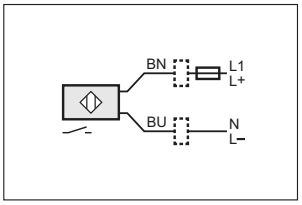

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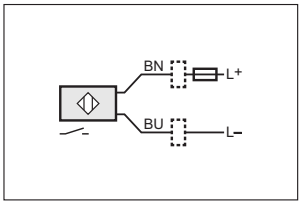

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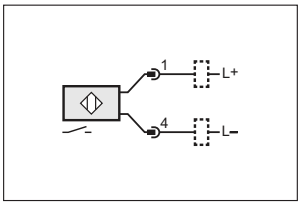

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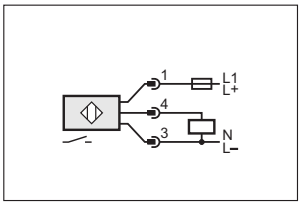
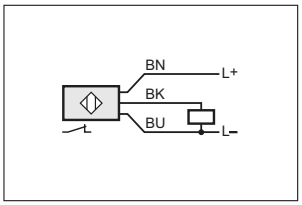


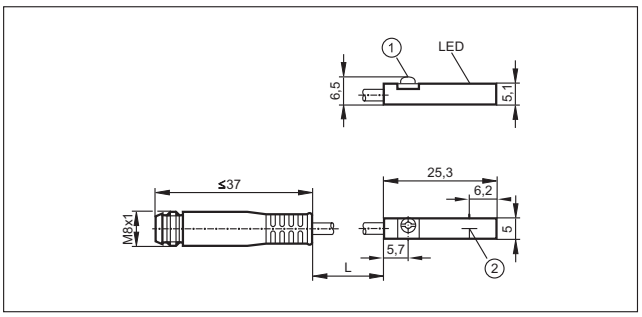
Note: miniature fuse to IEC60127-2 sheet 1, ≤ 0,175 A (fast acting)

12



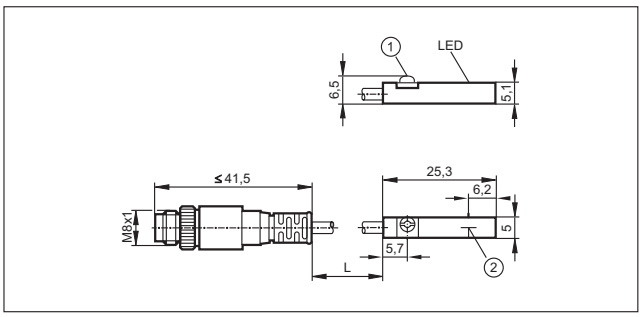
Scale drawings / drawing no. – CAD download: www.ifm.com

1



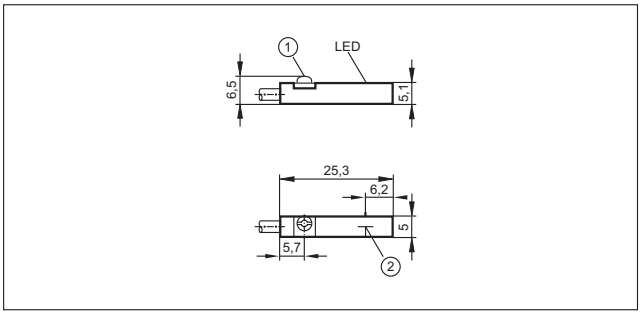
1: Fastening clamp, 2: sensing face

3



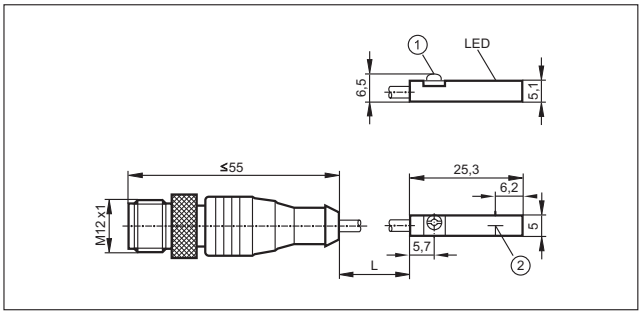
1: Fastening clamp, 2: sensing face

2



1: Fastening clamp, 2: sensing face

4



1: Fastening clamp, 2: sensing face

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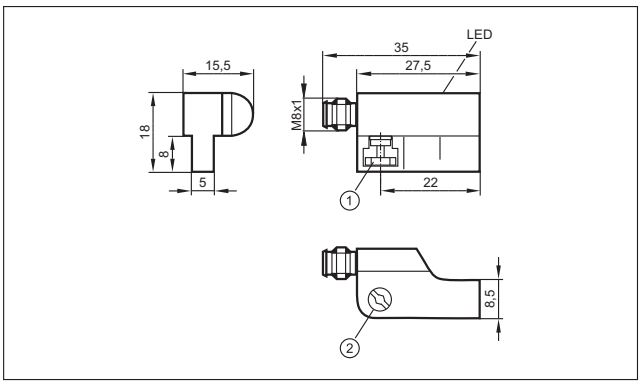
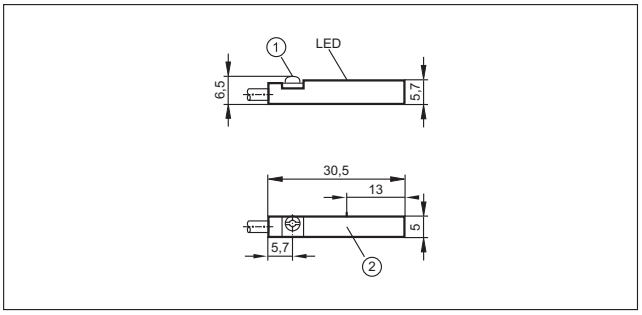
5



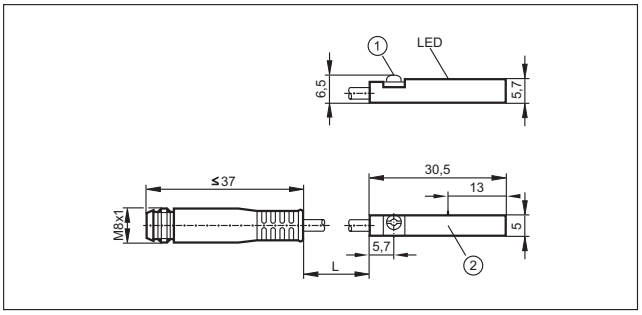
1: fixing element, 2: combined head screw for fixing element

6



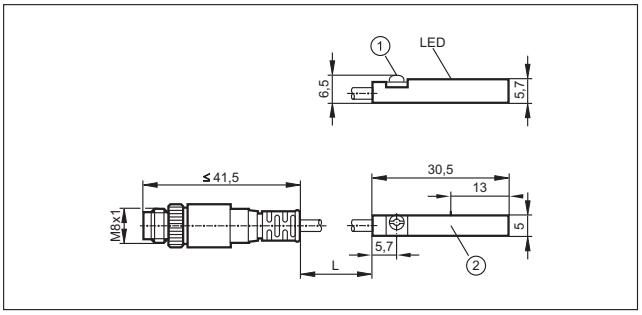
1: Fastening clamp, 2: sensing face

7



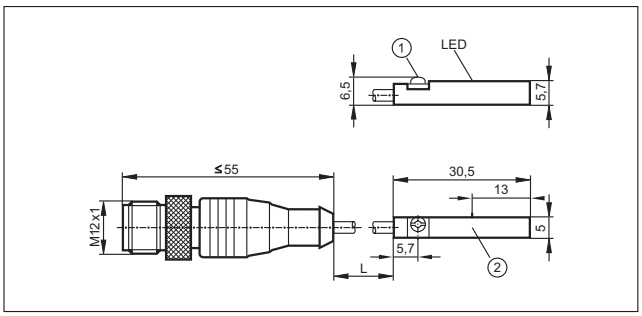
1: Fastening clamp, 2: sensing face

8



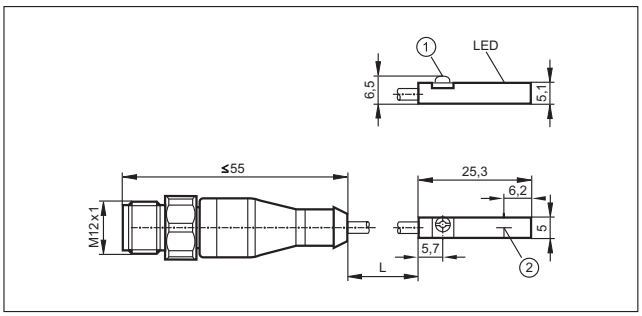
1: Fastening clamp, 2: sensing face

9



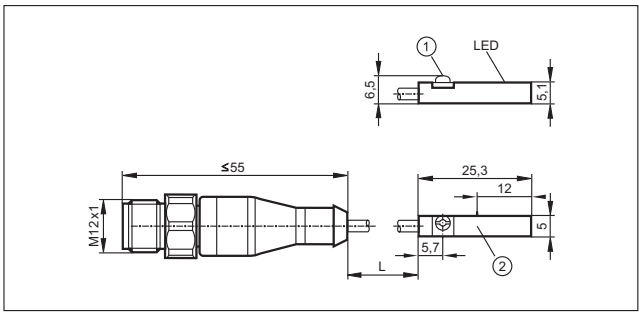
1: Fastening clamp, 2: sensing face

10



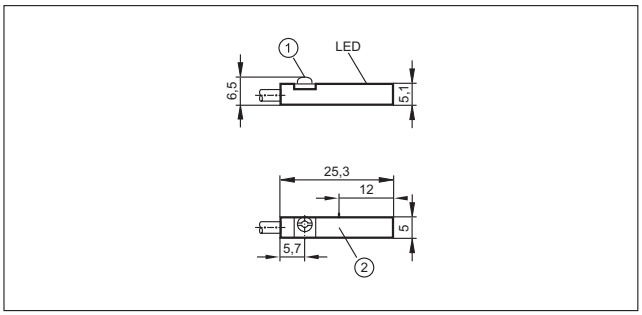
1: Fastening clamp, 2: sensing face

11



1: Fastening clamp, 2: sensing face

12



1: Fastening clamp, 2: sensing face

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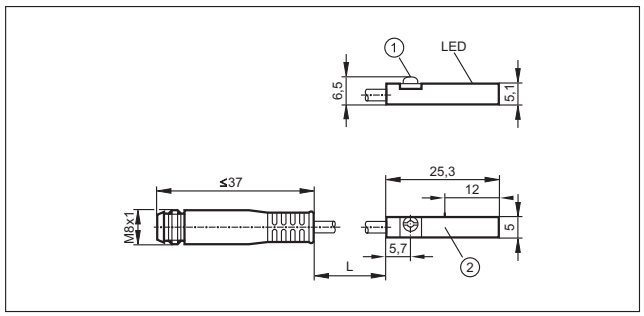
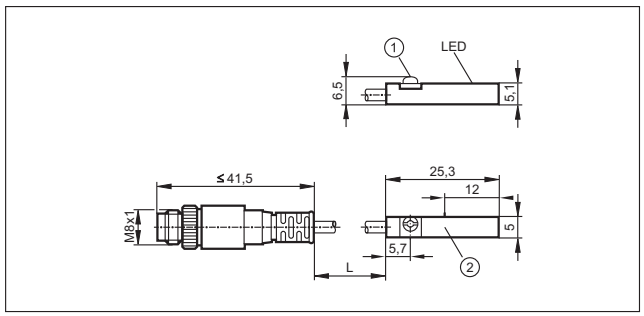
13



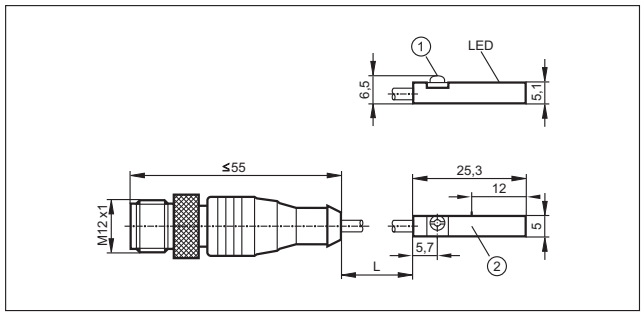
1: Fastening clamp, 2: sensing face

14



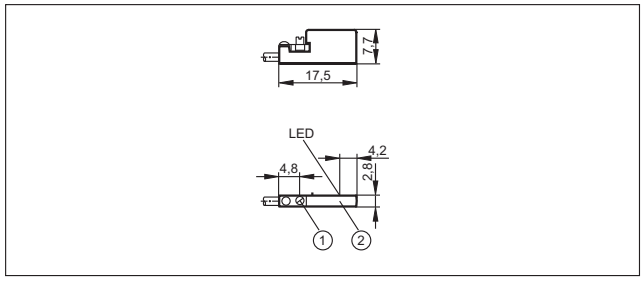
1: Fastening clamp, 2: sensing face

15



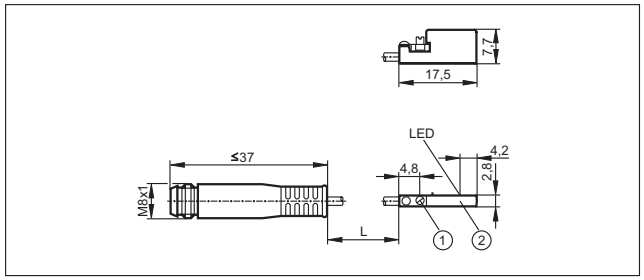
1: Fastening clamp, 2: sensing face

16



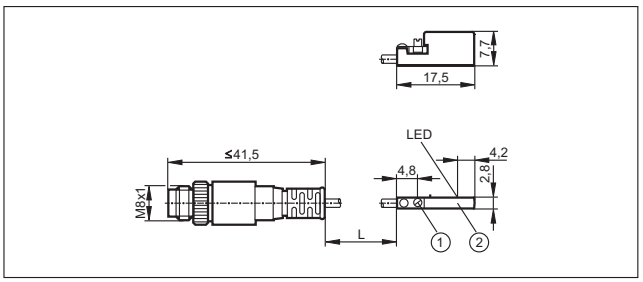
1: Fastening clamp, 2: sensing face

17



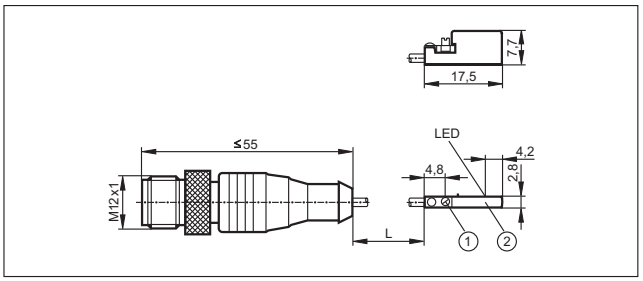
1: Fastening clamp, 2: sensing face

18



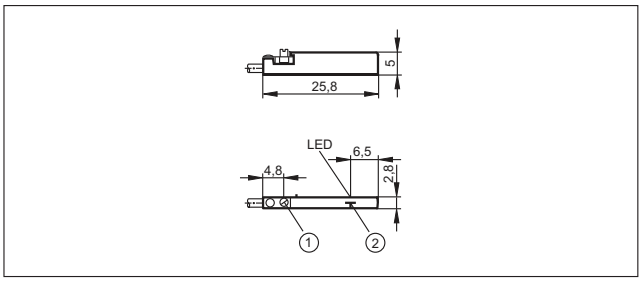
1: Fastening clamp, 2: sensing face

19



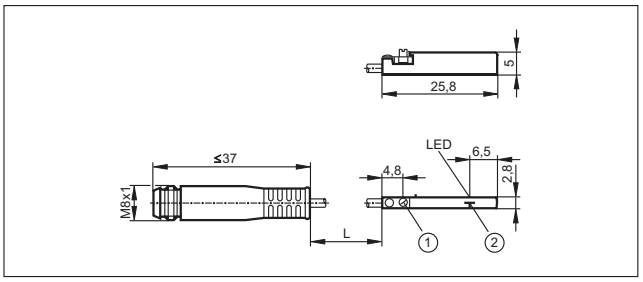
1: Fastening clamp, 2: sensing face

20



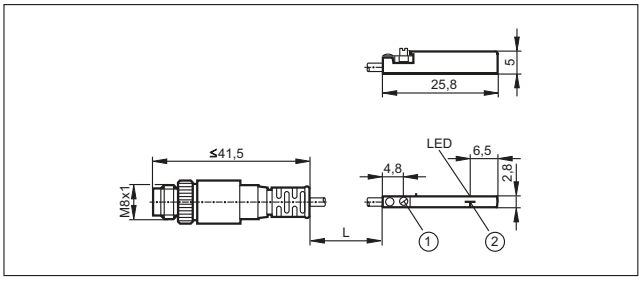
1: Fastening clamp, 2: sensing face

21



1: Fastening clamp, 2: sensing face

22



1: Fastening clamp, 2: sensing face

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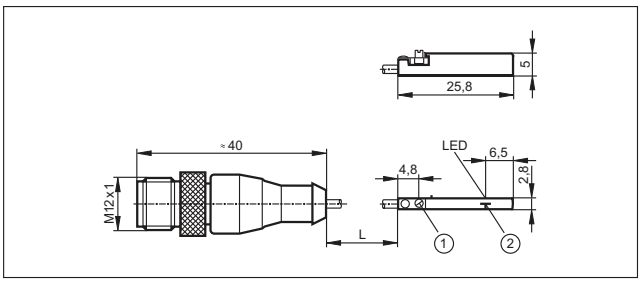
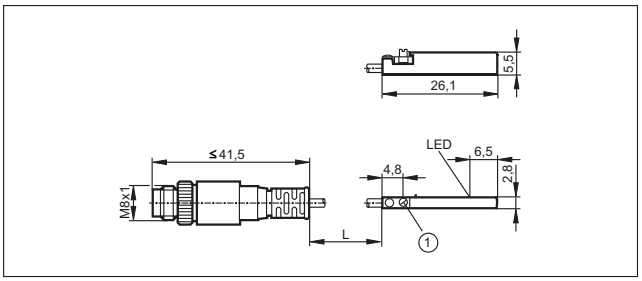
23



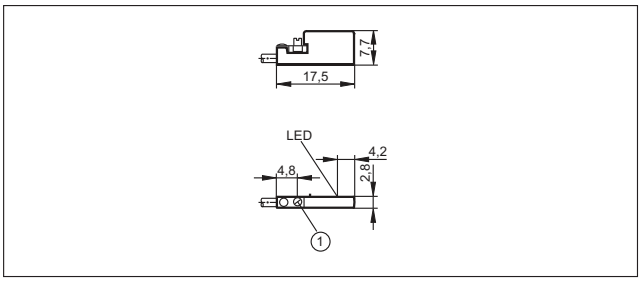
1: Fastening clamp, 2: sensing face

24



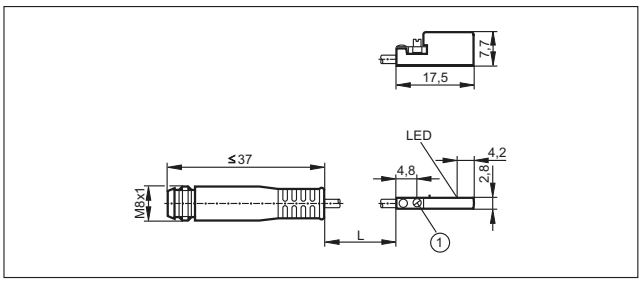
1: Fastening clamp

25



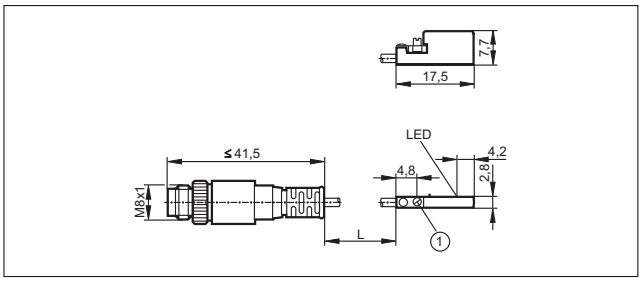
1: Fastening clamp

26



1: Fastening clamp

27



1: Fastening clamp

- **Photoelectric sensors for general industrial applications**
- **Versions for use in hygienic and wet areas**
- **High-power for long ranges and accurate background suppression**
- **Easy alignment with visible red light**
- **Extensive range of mounting accessories**

Photoelectric sensors

Compared to inductive, magnetic or capacitive sensors photoelectric sensors have a much higher sensing range and are used for the detection of products over longer distances, but will be more susceptible to the environment. The most important consideration when selecting all photoelectric sensors is contrast.

Through-beam sensors

A through-beam sensor has the longest range of all. The system consists of two separate components: a transmitter and a receiver. The beam is broken by the object resulting in the highest contrast and the highest power (low light loss, high excess gain). Adverse effects in the applications, such as dust in the air, dirt on the lenses, steam or mist do not immediately interfere with the system, so through-beam sensors will always be the most reliable.

Retro-reflective sensors

For a retro-reflective sensor the transmitter and receiver are incorporated into one housing and a prismatic reflector returns the transmitted light to the receiver. The resulting contrast level is high, but light losses mean distances less that for through-beam, but can still be quite considerable. The size and quality of the reflector greatly influences the performance of the sensor.

Diffuse reflection sensors

A diffuse reflection sensor is used for the direct detection of objects. Transmitter and receiver are incorporated into one housing. The transmitter emits light which is reflected by the object to be detected and seen by the receiver. This system evaluates the reflected light by an object, so the contrast between object present and no object present is greatly dependant on the installation. This results in much lower sensing ranges and greatly increased influence of the object surface, colour, shape, etc.

Diffuse reflection sensors with background suppression

These sensors are specifically designed to check the angle of light reflection to determine if it is from the object in the foreground, or from the background behind it. Modern electronic receiver chips can give excellent results.

Application sensors

Photoelectric sensors are normally fitted far from contamination. But if this is unavoidable in, say, a food environment, where all equipment must be cleaned, ifm has developed special versions able to withstand the harshest washdown and most aggressive cleaning agents.

The reflector reflects the light beam: For a retro-reflective sensor transmitter and receiver are integrated into one housing.

Artificial eyes: Photoelectric sensors are used to detect positions in automation technology.

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Cylindrical OF housing (M12) BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...36 DC · metal · IP67								
	Transmitter	4 m	Infrared	700	–	1	1	**OF5018**
	Receiver	4 m	Infrared	–	H/D PNP	29	1	**OF5019**
Through-beam sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	4 m	Infrared	700	–	2	2	**OF5021**
Through-beam sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Receiver	4 m	Infrared	–	H/D PNP	30	3	**OF5022**
Retro-reflective sensor · Cable 2 m · 10...36 DC · metal · IP67								
	Retro-reflective sensor	0.05...2 m	Infrared	140	H/D PNP	29	1	**OF5014**
	Polarisation filter	0.2...0.8 m	Red	70	H/D PNP	29	1	**OF5024**
	Retro-reflective sensor	0.05...2 m	Infrared	140	H/D NPN	31	1	**OF5050**
Retro-reflective sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Retro-reflective sensor	0.05...2 m	Infrared	140	H/D PNP	30	3	**OF5016**
	Polarisation filter	0.2...0.8 m	Red	70	H/D PNP	30	3	**OF5025**
Retro-reflective sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Retro-reflective sensor	0.05...2 m	Infrared	140	H/D NPN	32	3	**OF5051**
	Polarisation filter	0.2...0.8 m	Red	70	H/D NPN	32	3	**OF5062**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · Cable 2 m · 10...36 DC · metal · IP67								
	Diffuse reflection sensor	1...200 mm	Infrared	92	H/D PNP	29	1	**OF5010**
	Diffuse reflection sensor	1...200 mm	Infrared	92	H/D NPN	33	1	**OF5048**
	Diffuse reflection sensor	1...400 mm	Infrared	185	H/D PNP	29	1	**OF5026**
Diffuse reflection sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67								
	Diffuse reflection sensor	1...200 mm	Infrared	92	H/D PNP	29	1	**OF5032**
Diffuse reflection sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Diffuse reflection sensor	1...200 mm	Infrared	92	H/D PNP	30	3	**OF5012**
	Diffuse reflection sensor	1...400 mm	Infrared	185	H/D PNP	30	3	**OF5027**
Diffuse reflection sensor · M12 connector · 10...36 DC · metal · IP65 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Diffuse reflection sensor	1...200 mm	Infrared	92	H/D NPN	34	3	**OF5049**
	Diffuse reflection sensor	1...400 mm	Infrared	185	H/D NPN	34	3	**OF5060**

Cylindrical JA design (M12)

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Draw-ing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 3 · Connector groups 123, 125, 127, 150									
	M12 / L = 63	50 f	High-grade st. steel	10...30	IP 68	1600	100	4	**JAC201**
	M12 / L = 63	50 f	High-grade st. steel	10...30	IP 68 / IP 69K	1600	100	4	**JAT201**

f = flush / nf = non flush

Cylindrical housing OG (M18) BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	8 m	Red	600	–	2	5	**OGS100**
Through-beam sensor · M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	8 m	Red	–	D PNP	4	5	**OGE100**
	Receiver	8 m	Red	–	H PNP	5	5	**OGE101**
	Receiver	8 m	Red	–	D NPN	6	5	**OGE102**
	Receiver	8 m	Red	–	H NPN	6	5	**OGE103**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	20 m	Red	800	–	2	6	**OGS200**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	20 m	Red	–	D PNP	4	6	**OGE200**
	Receiver	20 m	Red	–	H PNP	5	6	**OGE201**
Through-beam sensor · Cable 2 m · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Transmitter	15 m	Infrared	2000	–	7	7	**OG0028**
	Receiver	15 m	Infrared	–	H AC/DC	8	7	**OG0029***
	Receiver	15 m	Infrared	–	D AC/DC	8	7	**OG0038***
Through-beam sensor · 1/2" connector · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67 · Connector group 29								
	Transmitter	15 m	Infrared	2000	–	9	8	**OG0030**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · 1/2" connector · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67 · Connector group 29								
	Receiver	15 m	Infrared	–	H AC/DC	10	8	**OG0031***
	Receiver	15 m	Infrared	–	D AC/DC	10	8	**OG0039***
Retro-reflective sensor · M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.05...2.5 m	Red	200	D PNP	4	5	**OGP100**
	Polarisation filter	0.05...2.5 m	Red	200	H PNP	5	5	**OGP101**
	Polarisation filter	0.05...2.5 m	Red	200	D NPN	6	5	**OGP102**
	Polarisation filter	0.05...2.5 m	Red	200	H NPN	6	5	**OGP103**
Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.03...4 m	Red	160	D PNP	4	6	**OGP200**
	Polarisation filter	0.03...4 m	Red	160	H PNP	5	6	**OGP201**
Retro-reflective sensor · Cable 2 m · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Polarisation filter	3 m	Red	262	H AC/DC	8	7	**OG0043***
	Polarisation filter	3 m	Red	262	D AC/DC	8	7	**OG0032***
Retro-reflective sensor · 1/2" connector · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67 · Connector group 29								
	Polarisation filter	3 m	Red	262	H AC/DC	10	8	**OG0044***
	Polarisation filter	3 m	Red	262	D AC/DC	10	8	**OG0033***
Diffuse reflection sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Diffuse reflection sensor	10...400 mm	Red	25	H PNP	4	9	**OGT100**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Diffuse reflection sensor	10...400 mm	Red	25	D PNP	4	9	**OGT101**
	Diffuse reflection sensor	10...400 mm	Red	25	H NPN	6	9	**OGT102**
	Diffuse reflection sensor	10...400 mm	Red	25	D NPN	6	9	**OGT103**
Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Diffuse reflection sensor	2...600 mm	Red	50	H PNP	4	10	**OGT200**
	Background suppression	15...250 mm	Red	21	H PNP	4	10	**OGH200**
Diffuse reflection sensor · Cable 2 m · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Diffuse reflection sensor	1...600 mm	Infrared	< 169	H AC/DC	8	7	**OG0034***
	Diffuse reflection sensor	1...600 mm	Infrared	< 169	D AC/DC	8	7	**OG0040***
Diffuse reflection sensor · Cable 0.377 m · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Diffuse reflection sensor	1...600 mm	Infrared	< 169	H AC/DC	8	7	**OG0047***
Diffuse reflection sensor · 1/2" connector · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67 · Connector group 29								
	Diffuse reflection sensor	1...600 mm	Infrared	< 169	H AC/DC	10	8	**OG0035***
	Diffuse reflection sensor	1...600 mm	Infrared	< 169	D AC/DC	10	8	**OG0041***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

You can find wiring diagrams and scale drawings from page 231

Cylindrical housing OG (M18) PerformanceLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...36 DC · high-grade stainless steel · IP67								
	Transmitter	25 m	Red	1000	–	1	11	**OGS501**
	Receiver	25 m	Red	–	H/D PNP	11	12	**OGE502**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	25 m	Red	1000	–	2	13	**OGS500**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	25 m	Red	–	H/D PNP	4	14	**OGE500**
Retro-reflective sensor · Cable 2 m · 10...36 DC · high-grade stainless steel · IP67								
	Polarisation filter	0.03...5 m	Red	200	H/D PNP	11	12	**OGP502**
Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.03...5 m	Red	200	H/D PNP	4	14	**OGP500**
Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Polarisation filter	0.03...5 m	Red	200	H/D NPN	6	14	**OGP503**
Diffuse reflection sensor · Cable 2 m · 10...36 DC · high-grade stainless steel · IP67								
	Background suppression	15...300 mm	Red	25	H/D PNP	11	12	**OGH501**
Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Diffuse reflection sensor	2...800 mm	Red	66	H/D PNP	4	14	**OGT500**
	Background suppression	15...300 mm	Red	25	H/D PNP	4	14	**OGH500**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	15...300 mm	Red	25	H/D NPN	6	14	**OGH504**
	Background suppression	15...300 mm	Red	25	H/D NPN	6	14	**OGH502**

Cylindrical housing OG (M18) WetLine for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K								
	Transmitter	20 m	Red	800	–	1	15	**OGS301**
	Receiver	20 m	Red	–	D PNP	11	15	**OGE302**
	Receiver	20 m	Red	–	H PNP	11	15	**OGE303**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector group 123								
	Transmitter	20 m	Red	800	–	2	6	**OGS300**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 123, 126								
	Receiver	20 m	Red	–	D PNP	4	6	**OGE300**
	Receiver	20 m	Red	–	H PNP	5	6	**OGE301**
Retro-reflective sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K								
	Polarisation filter	0.03...4 m	Red	160	D PNP	11	15	**OGP302**
	Polarisation filter	0.03...4 m	Red	160	H PNP	11	15	**OGP303**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 123, 126								
	Polarisation filter	0.03...4 m	Red	160	D PNP	4	6	**OGP300**
	Polarisation filter	0.03...4 m	Red	160	H PNP	5	6	**OGP301**
Diffuse reflection sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K								
	Background suppression	100 mm	Red	9	H PNP	11	16	**OGH306**
	Background suppression	100 mm	Red	9	D PNP	11	16	**OGH307**
	Background suppression	200 mm	Red	17	H PNP	11	16	**OGH308**
	Background suppression	200 mm	Red	17	D PNP	11	16	**OGH309**
	Background suppression	300 mm	Red	25	H PNP	11	16	**OGH310**
	Background suppression	300 mm	Red	25	D PNP	11	16	**OGH311**
Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 123, 126								
	Background suppression	100 mm	Red	9	H PNP	4	17	**OGH300**
	Background suppression	100 mm	Red	9	D PNP	4	17	**OGH301**
	Background suppression	200 mm	Red	17	H PNP	4	17	**OGH302**
	Background suppression	200 mm	Red	17	D PNP	4	17	**OGH303**
	Background suppression	300 mm	Red	25	H PNP	4	17	**OGH304**
	Background suppression	300 mm	Red	25	D PNP	4	17	**OGH305**

Cylindrical housing OG (M18) BasicLine with lateral sensing face

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP68 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	9 m	Red	< 3000	–	2	18	**OG5129**
	Receiver	9 m	Red	–	H PNP	12	18	**OG5127**
	Receiver	9 m	Red	–	D PNP	13	18	**OG5128**
Retro-reflective sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP68 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Polarisation filter	3 m	Red	< 96	H PNP	12	18	**OG5125**
	Polarisation filter	3 m	Red	< 96	D PNP	13	18	**OG5126**
Diffuse reflection sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP68 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	100 mm	Red	< 16	H PNP	12	19	**OG5123**
Diffuse reflection sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP68 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	200 mm	Red	< 28	H PNP	12	19	**OG5124**

Rectangular housing OG (M18)

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	20 m	Red	800	–	2	20	**OGS280**
	Receiver	20 m	Red	–	D NPN	14	20	**OGE282**
Through-beam sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	20 m	Red	–	D PNP	15	20	**OGE280**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	20 m	Red	–	H PNP	5	20	**OGE281**
Through-beam sensor · 1/2" connector · 20...250 AC (47...60 Hz) · metal · IP67 · Connector group 29								
	Transmitter	20 m	Red	800	–	16	21	**OGS080***
Through-beam sensor · 1/2" connector · 20...250 AC (47...63 Hz) · metal · IP67 · Connector group 29								
	Receiver	20 m	Red	–	D AC	17	21	**OGE080***
	Receiver	20 m	Red	–	H AC	17	21	**OGE081***
Retro-reflective sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.1...4 m	Red	160	D PNP	15	20	**OGP280**
	Polarisation filter	0.1...4 m	Red	160	H PNP	5	20	**OGP281**
Retro-reflective sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Polarisation filter	0.1...4 m	Red	160	D NPN	14	20	**OGP282**
	Polarisation filter	0.1...4 m	Red	160	H NPN	18	20	**OGP283**
Retro-reflective sensor · 1/2" connector · 20...250 AC (47...63 Hz) · metal · IP67 · Connector group 29								
	Polarisation filter	4 m	Red	160	D AC	17	21	**OGP080***
	Polarisation filter	4 m	Red	160	H AC	17	21	**OGP081***
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	100 mm	Red	7	H PNP	5	20	**OGH280**
	Background suppression	200 mm	Red	13	H PNP	5	20	**OGH281**

Product selectors and further information can be found at: www.ifm.com

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	15...200 mm	Red	13	H/D PNP	4	22	**OGH580**
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	100 mm	Red	7	H NPN	18	20	**OGH282**
	Background suppression	200 mm	Red	13	H NPN	18	20	**OGH283**
	Background suppression	15...200 mm	Red	13	H/D NPN	6	22	**OGH581**
Diffuse reflection sensor · 1/2" connector · 20...250 AC (47...63 Hz) · metal · IP67 · Connector group 29								
	Background suppression	100 mm	Red	11	H AC	17	21	**OGH080***
	Background suppression	100 mm	Red	11	D AC	17	21	**OGH081***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

OG series (M18) WetLine with rectangular housing for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	15 m	Red	–	D PNP	15	23	**OGE380**
	Receiver	15 m	Red	–	H PNP	5	23	**OGE381**
	Receiver	15 m	Red	–	D NPN	14	23	**OGE382**
Diffuse reflection sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	100 mm	Red	7	H PNP	5	23	**OGH380**

You can find wiring diagrams and scale drawings from page 231

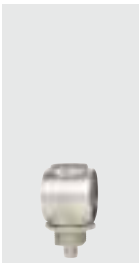
Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	200 mm	Red	13	H PNP	5	23	**OGH381**
	Background suppression	100 mm	Red	7	H NPN	18	23	**OGH382**
	Background suppression	200 mm	Red	13	H NPN	18	23	**OGH383**
Through-beam sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	15 m	Red	800	–	2	23	**OGS380**

OID design (M30) with PMD time-of-flight principle

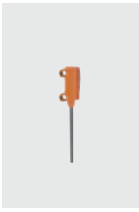
Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP65 / IP67 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	19	24	**OID200**
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	19	24	**OID201**

Cylindrical OI housing (M30)

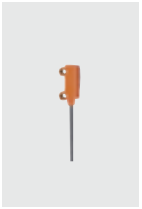
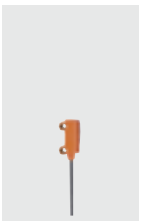
Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	600 mm	Red	30	H PNP	5	25	**OIH280**
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	600 mm	Red	30	H NPN	18	25	**OIH282**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	50...800 mm	Red	55	H PNP	5	25	**OIH580**
Diffuse reflection sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	50...800 mm	Red	55	H NPN	18	25	**OIH582**
Retro-reflective sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.1...15 m	Red	100 x 130	D PNP	15	25	**OIP280**
	Polarisation filter	0.1...15 m	Red	100 x 130	H PNP	5	25	**OIP281**
	Polarisation filter	0.1...15 m	Red	100 x 130	D NPN	14	25	**OIP282**
	Polarisation filter	0.1...15 m	Red	100 x 130	H NPN	18	25	**OIP283**

Rectangular housing OH BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Transmitter	1.2 m	Red	10	–	1	26	**OH5001**
	Receiver	1.2 m	Red	–	D PNP	20	26	**OH5002**
Through-beam sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 3, 74, 80								
	Transmitter	1.2 m	Red	10	–	2	26	**OH5020**
Through-beam sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Receiver	1.2 m	Red	–	D PNP	15	26	**OH5015**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Transmitter	1.2 m	Red	10	–	2	26	**OH5012**
	Receiver	1.2 m	Red	–	D PNP	15	26	**OH5003**
Retro-reflective sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Polarisation filter	0.8 m	Red	10	D PNP	20	27	**OH5010**
Retro-reflective sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Polarisation filter	0.8 m	Red	10	D PNP	15	27	**OH5019**
Retro-reflective sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	0.8 m	Red	10	D PNP	15	27	**OH5011**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Background suppression	1...15 mm	Red	2.5	H PNP	21	28	**OH5008**
	Background suppression	1...30 mm	Red	4.5	H PNP	21	28	**OH5006**
	Diffuse reflection sensor	2...50 mm	Red	3.5	H PNP	21	28	**OH5004**
Diffuse reflection sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Diffuse reflection sensor	2...50 mm	Red	3.5	H PNP	5	28	**OH5016**
	Background suppression	1...15 mm	Red	2.5	H PNP	5	28	**OH5018**
	Background suppression	1...30 mm	Red	4.5	H PNP	5	28	**OH5017**
Diffuse reflection sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Diffuse reflection sensor	2...50 mm	Red	3.5	H PNP	5	28	**OH5005**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Background suppression	1...15 mm	Red	2.5	H PNP	5	28	**OH5009**
	Background suppression	1...30 mm	Red	4.5	H PNP	5	28	**OH5007**

Rectangular housing O7 BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP65 · Connector groups 1, 3, 74, 80								
	Transmitter	0...1.5 m	Red	90	–	2	29	**O7S200**
Through-beam sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP65 · Connector groups 1, 2, 3, 74, 80								
	Receiver	0...1.5 m	Red	–	D PNP	15	30	**O7E200**
	Receiver	0...1.5 m	Red	–	H PNP	5	30	**O7E201**
	Receiver	0...1.5 m	Red	–	D NPN	14	30	**O7E202**
	Receiver	0...1.5 m	Red	–	H NPN	18	30	**O7E203**
Retro-reflective sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP65 · Connector groups 1, 2, 3, 74, 80								
	Polarisation filter	0.03...1 m	Red	55	D PNP	15	31	**O7P200**
	Polarisation filter	0.03...1 m	Red	55	H PNP	5	31	**O7P201**
	Polarisation filter	0.03...1 m	Red	55	D NPN	14	31	**O7P202**
	Polarisation filter	0.03...1 m	Red	55	H NPN	18	31	**O7P203**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · Cable 0.2 m · with M8 connector · 10...30 DC · plastics · IP65 · Connector groups 1, 2, 3, 74, 80								
	Background suppression	1...30 mm	Red	2.5	H PNP	5	32	**O7H200**
	Background suppression	1...30 mm	Red	2.5	D PNP	15	32	**O7H201**
	Background suppression	1...30 mm	Red	2.5	H NPN	18	32	**O7H206**
	Background suppression	1...30 mm	Red	2.5	D NPN	14	32	**O7H207**
	Background suppression	0...50 mm	Red	2.5	H PNP	5	32	**O7H202**
	Background suppression	0...50 mm	Red	2.5	H NPN	18	32	**O7H208**
	Background suppression	0...50 mm	Red	2.5	D NPN	14	32	**O7H209**
	Background suppression	0...50 mm	Red	2.5	D PNP	15	32	**O7H203**
	Background suppression	0...100 mm	Red	7	H PNP	5	32	**O7H204**
	Background suppression	0...100 mm	Red	7	D PNP	15	32	**O7H205**
	Background suppression	0...100 mm	Red	7	H NPN	18	32	**O7H210**
	Background suppression	0...100 mm	Red	7	D NPN	14	32	**O7H211**

Rectangular housing OJ BasicLine, lateral sensing face

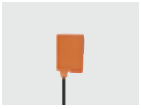
Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 3, 74, 80								
	Transmitter	0...10 m	Red	< 1000	–	2	33	**OJS200**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Receiver	10 m	–	–	D PNP	4	33	**OJE200**
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Retro-reflective sensor	1.8 m	Red	64	D PNP	4	33	**OJR200**
	Polarisation filter	1.8 m	Red	64	D PNP	4	33	**OJP200**
Diffuse reflection sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 1, 2, 3, 74, 80								
	Background suppression	100 mm	Red	< 13	H PNP	4	34	**OJH200**

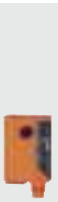
Rectangular housing OJ PerformanceLine, lateral sensing face

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Transmitter	10 m	Red	1000	–	1	35	**OJ5033**
	Receiver	10 m	Red	–	H/D PNP	22	35	**OJ5034**
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Transmitter	10 m	Red	1000	–	2	36	**OJ5030**
	Receiver	10 m	Red	–	H/D PNP	23	36	**OJ5031**
	Receiver	10 m	Red	–	H/D NPN	24	36	**OJ5032**
	Transmitter	10 m	Red	1000	–	2	37	**OJ5130**
	Receiver	10 m	Red	–	H/D PNP	23	37	**OJ5131**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Polarisation filter	0...2 m	Red	64	H/D PNP	22	35	**OJ5028**
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	36	**OJ5026**
	Polarisation filter	0...2 m	Red	64	H/D NPN	24	36	**OJ5027**
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	37	**OJ5126**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	22	38	**OJ5024**
Diffuse reflection sensor · Cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	39	**OJ5078**
Diffuse reflection sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	40	**OJ5022**
	Diffuse reflection sensor	1...600 mm	Red	60	H/D NPN	24	40	**OJ5023**
	Diffuse reflection sensor	1...1000 mm	Infrared	150	H/D PNP	23	40	**OJ5071**
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	41	**OJ5048**
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	42	**OJ5122**
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	43	**OJ5148**

Rectangular housing OJ PerformanceLine, front sensing face

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Transmitter	10 m	Red	1000	–	1	44	**OJ5011**
	Receiver	10 m	Red	–	H/D PNP	22	44	**OJ5012**
Through-beam sensor · Cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	10 m	Red	1000	–	2	44	**OJ5065**
Through-beam sensor · Cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Receiver	10 m	Red	–	H/D PNP	23	44	**OJ5067**
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Transmitter	10 m	Red	1000	–	2	45	**OJ5008**
	Receiver	10 m	Red	–	H/D PNP	23	45	**OJ5009**
	Receiver	10 m	Red	–	H/D NPN	24	45	**OJ5010**
	Transmitter	10 m	Red	1000	–	2	46	**OJ5108**
	Receiver	10 m	Red	–	H/D PNP	23	46	**OJ5109**
Retro-reflective sensor · Cable 2 m · 10...30 DC · plastics · IP67								
	Polarisation filter	0...2 m	Red	64	H/D PNP	22	44	**OJ5006**
Retro-reflective sensor · Cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	44	**OJ5063**
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	44	**OJ5062**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	45	**OJ5004**
	Polarisation filter	0...2 m	Red	64	H/D NPN	24	45	**OJ5005**
	Polarisation filter	0...2 m	Red	64	H/D PNP	23	46	**OJ5104**
Diffuse reflection sensor · Cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	47	**OJ5061**
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	47	**OJ5060**
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	48	**OJ5069**
Diffuse reflection sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	49	**OJ5000**
	Diffuse reflection sensor	1...600 mm	Red	60	H/D NPN	24	49	**OJ5001**
	Diffuse reflection sensor	1...1000 mm	Infrared	150	H/D PNP	23	49	**OJ5070**
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	50	**OJ5044**
	Diffuse reflection sensor	1...600 mm	Red	60	H/D PNP	23	51	**OJ5100**
	Background suppression	15...400 mm	Red	< 18	H/D PNP	23	52	**OJ5144**

Rectangular housing O6 PerformanceLine, WetLine for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Receiver	10 m	Red	–	H/D PNP	11	53	**O6E300**
Through-beam sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector groups 123, 126								
	Receiver	10 m	Red	–	H/D PNP	4	53	**O6E301**
Through-beam sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Receiver	10 m	Red	–	H/D NPN	25	53	**O6E304**
Through-beam sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector group 123								
	Receiver	10 m	Red	–	H/D NPN	6	53	**O6E305**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Background suppression	2...200 mm	Red	8	H/D PNP	11	53	**O6H300**
Diffuse reflection sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector groups 123, 126								
	Background suppression	2...200 mm	Red	8	H/D PNP	4	53	**O6H301**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Background suppression	2...200 mm	Red	8	H/D NPN	25	53	**O6H304**
Diffuse reflection sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector group 123								
	Background suppression	2...200 mm	Red	8	H/D NPN	6	53	**O6H305**
Retro-reflective sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Polarisation filter	0.05...5 m	Red	150	H/D PNP	11	53	**O6P300**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector groups 123, 126								
	Polarisation filter	0.05...5 m	Red	150	H/D PNP	4	53	**O6P301**
Retro-reflective sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Polarisation filter	0.05...5 m	Red	150	H/D NPN	25	53	**O6P304**
Retro-reflective sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector group 123								
	Polarisation filter	0.05...5 m	Red	150	H/D NPN	6	53	**O6P305**
Through-beam sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Transmitter	10 m	Red	300	–	1	54	**O6S300**
Through-beam sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector group 123								
	Transmitter	10 m	Red	300	–	2	54	**O6S301**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Diffuse reflection sensor	5...500 mm	Red	15	H/D PNP	11	53	**O6T300**
Diffuse reflection sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector groups 123, 126								
	Diffuse reflection sensor	5...500 mm	Red	15	H/D PNP	4	53	**O6T301**
Diffuse reflection sensor · Cable 2 m · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K								
	Diffuse reflection sensor	5...500 mm	Red	15	H/D NPN	25	53	**O6T304**
Diffuse reflection sensor · Cable 0.3 m · with M12 connector · 10...30 DC · high-grade stainless steel · IP65 / IP67 ; IP68 / IP69K · Connector group 123								
	Diffuse reflection sensor	5...500 mm	Red	15	H/D NPN	6	53	**O6T305**

Rectangular housing O5 BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	20 m	Red	500	–	2	55	**O5S200**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	20 m	Red	–	D PNP	15	55	**O5E200**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.1...7 m	Red	175	D PNP	15	56	**O5P200**
	Polarisation filter	0.1...7 m	Red	175	H PNP	26	56	**O5P201**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	50...1400 mm	Red	50	H PNP	5	57	**O5H200**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	50...1400 mm	Red	50	H NPN	18	57	**O5H201**

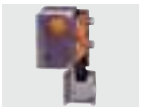
Rectangular housing O5 PerformanceLine

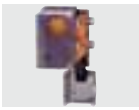
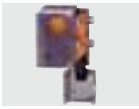
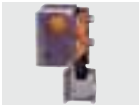
Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Transmitter	25 m	Red	625	–	1	58	**O5S501**
	Receiver	25 m	Red	–	H/D PNP	11	59	**O5E501**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	25 m	Red	625	–	2	55	**O5S500**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	25 m	Red	–	H/D PNP	4	60	**O5E500**
	Receiver	25 m	Red	–	H/D NPN	6	60	**O5E502**
Retro-reflective sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Polarisation filter	0.075...10 m	Red	250	H/D PNP	11	61	**O5P501**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.075...10 m	Red	250	H/D PNP	4	62	**O5P500**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Polarisation filter	0.075...10 m	Red	250	H/D NPN	6	62	**O5P502**
Diffuse reflection sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Background suppression	50...1800 mm	Red	50	H/D PNP	11	61	**O5H503**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	50...1800 mm	Red	50	H/D PNP	4	62	**O5H500**
	Background suppression	60...700 mm	Red	35	H/D PNP	4	62	**O5H501**
	Background suppression	50...1800 mm	Red	50	H/D NPN	6	62	**O5H504**

Rectangular housing O5 PerformanceLine with ATEX approval 3D

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 147, 149								
	Transmitter	25 m	Red	625	–	2	63	**O5S51A**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 147, 149								
	Receiver	25 m	Red	–	H/D PNP	4	63	**O5E51A**
Retro-reflective sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 147, 149								
	Polarisation filter	0.075...10 m	Red	250	H/D PNP	4	63	**O5P51A**
Diffuse reflection sensor · M12 connector · 10...30 DC · plastics · IP65 · Connector groups 147, 149								
	Background suppression	50...1800 mm	Red	50	H/D PNP	4	63	**O5H51A**

Rectangular housing O5D with PMD time-of-flight principle

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP65 / IP67 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	19	64	**O5D100**
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	19	64	**O5D101**

Rectangular housing OL BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Terminals · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Transmitter	25 m	Infrared	< 2500	–	27	65	**OL0006**
	Receiver	25 m	Infrared	–	H/D Relay	28	65	**OL0007**

You can find wiring diagrams and scale drawings from page 231

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · Terminals · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Polarisation filter	0.3...5 m	Red	250	H/D Relay	28	66	**OL0004***
Diffuse reflection sensor · Terminals · 20...250 AC/DC (47...63 Hz AC) · plastics · IP67								
	Diffuse reflection sensor	1...1000 mm	Infrared	< 300	H/D Relay	28	65	**OL0005***
	Diffuse reflection sensor	1...800 mm	Infrared	< 80	H/D Relay	28	65	**OL0009***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Rectangular housing O4 BasicLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	0...50 m	Red	1000	–	2	67	**O4S200**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	0...50 m	Red	–	D PNP	15	68	**O4E200**
	Receiver	0...50 m	Red	–	H PNP	5	68	**O4E201**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.3...18 m	Red	500	D PNP	15	69	**O4P200**
	Polarisation filter	0.3...18 m	Red	500	H PNP	5	69	**O4P201**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	100...2000 mm	Red	100	H PNP	5	70	**O4H200**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP65 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	100...2000 mm	Red	100	D PNP	15	70	**O4H201**

Rectangular housing O4 PerformanceLine

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Transmitter	80 m	Red	2400	–	1	71	**O4S501**
	Receiver	80 m	Red	–	H/D PNP	11	72	**O4E501**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	80 m	Red	2400	–	2	67	**O4S500**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	80 m	Red	–	H/D PNP	4	73	**O4E500**
Retro-reflective sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Polarisation filter	0.3...22 m	Red	660	H/D PNP	11	74	**O4P501**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.3...22 m	Red	660	H/D PNP	4	75	**O4P500**
Diffuse reflection sensor · Cable 2 m · 10...36 DC · plastics · IP67								
	Background suppression	100...2600 mm	Red	50	H/D PNP	11	76	**O4H501**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	100...2600 mm	Red	50	H/D PNP	4	77	**O4H500**

You can find wiring diagrams and scale drawings from page 231

Prismatic reflectors, reflective tape and fixing components

Type	Description	Order no.
	Prismatic reflector · Ø 20 mm · round · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20003**
	Prismatic reflector · Ø 25 mm · round · fixing by screw · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20953**
	Prismatic reflector · Ø 35 mm · round · fixing by screw · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20954**
	Prismatic reflector · Ø 42 mm · round · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20004**
	Prismatic reflector · Ø 50 mm · round · fixing by screw · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20956**
	Prismatic reflector · Ø 80 mm · round · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20005**
	Prismatic reflector · 18 x 40 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E21115**
	Prismatic reflector · 45 x 28 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20452**
	Prismatic reflector · 48 x 48 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: front plate: PMMA / base: ABS	**E20744**
	Prismatic reflector · 93 x 45 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20453**
	Prismatic reflector · 95 x 95 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E20454**
	Prismatic reflector · 18 x 18 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: Solidchem	**E21267**
	Prismatic reflector · 56 x 38 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: Solidchem	**E21268**
	Prismatic reflector · 48 x 48 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: Solidchem	**E21269**

Type	Description	Order no.
	Prismatic reflector · 96 x 96 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: Solidchem	**E21270**
	Mounting set · for reflector · Clamp mounting · Rod mounting Ø 30 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: aluminium transparent anodised	**E21007**
	Mounting set · for reflector · Ø 25 mm · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20903**
	Mounting set · for reflector · Ø 35 mm · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20907**
	Mounting set · for reflector · Ø 50 mm · Clamp mounting · Free-standing M10 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20911**
	Mounting set · for reflector · Ø 80 mm · Clamp mounting · free-standing M12 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20914**
	Mounting set · for reflector · Ø 80 mm · Clamp mounting · free-standing M12 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20915**
	Angle bracket · for reflector · 50 x 50 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571	**E20724**
	Reflective tape · TS-02 · 50 x 1000 mm · For red light and infrared light retro-reflective sensors · Housing materials: plastics	**E21015**

Accessories OF design (M12)

Type	Description	Order no.
	angle support · 90° · for type OF · Housing materials: housing: ABS / lens: PC	**E20590**
	Angle bracket · Ø 12 mm · with end stop · Mounting clamp · Clamp mounting · for type IF, KF, OF · Housing materials: fixture: stainless steel / Mounting clamp: PC black	**E21144**
	Mounting set · Ø 12.2 mm · Clamp mounting · rod mounting Ø 10 mm · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E21200**
	Mounting set · Ø 12.2 mm · Clamp mounting · rod mounting Ø 10 mm · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E21201**

You can find wiring diagrams and scale drawings from page 231

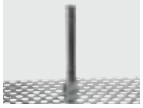
Type	Description	Order no.
	Mounting set · Ø 12.2 mm · Clamp mounting · rod mounting Ø 10 mm · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21202
	Mounting set · Ø 12.2 mm · Clamp mounting · rod mounting Ø 10 mm · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E21203

Accessories OG design (M18)

Type	Description	Order no.
	Angle bracket · for type M18 · Housing materials: stainless steel	E10736
	Angle bracket · Ø 18 mm · with end stop · Mounting clamp · Clamp mounting · for type OG, IG, KG · Housing materials: fixture: stainless steel / Mounting clamp: PC black	E21145
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20720
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20721
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21206
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21207

Accessories OI design (M30)

Type	Description	Order no.
	Angle bracket · for type M30 · Housing materials: stainless steel	E10737
	Mounting clamp · Ø 30 mm · with end stop · for type M30 · Housing materials: PC	E11049
	Mounting clamp · Ø 34 mm - Ø 30 mm · with reducing bush · for type M30 · Housing materials: PBT	E10077

Type	Description	Order no.
	Mounting set · Ø 30.2 mm · Clamp mounting · aluminium profile · for type II, KI, OID, OI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20875**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20873**
	Mounting set · Ø 30.2 mm · Clamp mounting · free-standing M12 · for type OI, II, KI · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E20874**
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E20938**
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	**E20951**
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	**E30398**
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	**E30396**
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	**ZGS210**

Accessories OH housing

Type	Description	Order no.
	Angle bracket · for free-standing mounting · for type OH · Housing materials: Angle bracket: stainless steel 316Ti / 1.4571	**E21057**
	Mounting set · for type OH · Housing materials: ABS	**E21056**

Accessories O7 housing

Type	Description	Order no.
	Mounting set · O7 · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel / clamp: stainless steel / screw: stainless steel / nut: stainless steel	**E21237**

You can find wiring diagrams and scale drawings from page 231

Type	Description	Order no.
	Mounting set · O7 · Free-standing mounting · free-standing · Housing materials: fixture: stainless steel / screws: stainless steel	E21238
	Mounting set · O7 · Free-standing mounting · with fine adjustment · free-standing · Housing materials: fixture: stainless steel / Spring: spring steel / screws: stainless steel	E21239
	Mounting set · O7 · ball joint · free-standing · Housing materials: fixture: diecast zinc / mounting base: diecast zinc / screws: stainless steel	E21240

Accessories OJ housing

Type	Description	Order no.
	Angle bracket · for type OJ · Housing materials: high-grade stainless steel	E20984
	Basic clip · OJ · Housing materials: high-grade stainless steel	E20965
	Basic clip · OJ · Housing materials: diecast zinc	E20964
	Swivel-mount clip · for type OJ · Housing materials: diecast zinc	E20974
	Mounting set · OJ · for side lens · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E20968
	Mounting set · OJ · for side lens · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20969
	Mounting set · OJ · for side lens · rod mounting Ø 10 mm · Housing materials: clamp: diecast zinc / fixture: stainless steel 316Ti / 1.4571	E21095
	Mounting set · OJ · for side lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21222
	Mounting set · OJ · for side lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20973
	Mounting set · OJ · for front lens · Clamp mounting · free-standing M8 · Housing materials: clamp: diecast zinc / fixture: stainless steel 316Ti / 1.4571	E20966

Type	Description	Order no.
	Mounting set · OJ · for front lens · Clamp mounting · rod mounting Ø 10 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	**E20970**
	Mounting set · OJ · for front lens · Clamp mounting · rod mounting · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	**E21221**

Accessories for O6 design

Type	Description	Order no.
	Angle bracket · O6 · for type O6 · Housing materials: stainless steel 316Ti / 1.4571	**E21271**
	Mounting set · O6 · Clamp mounting · rod mounting Ø 10 mm · for type O6 · Housing materials: stainless steel 316Ti / 1.4571	**E21272**
	Protective cover · O6 · for type O6 · Housing materials: stainless steel 316Ti / 1.4571	**E21273**

Accessories O5 housing

Type	Description	Order no.
	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	**E21087**
	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	**E21085**
	Angle bracket · O5, O4 · for mounting O5, O4 sensors instead of OL sensors · Dovetail clamp · Housing materials: Dovetail clamp: AlMgSi0.5 / fixture: AlMg3	**E21122**
	Dovetail clamp · for type DTS, O4, O5 · Housing materials: AlMgSi0.5	**E21088**
	Mounting brackets Mounting on the back of the unit · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	**E21086**
	Mounting sleeve · O5 · for mounting O5 sensors instead of OC sensors · Housing materials: AlZnMgCu1.5 F51/52	**E21114**

You can find wiring diagrams and scale drawings from page 231

Type	Description	Order no.
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O5 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	E21223
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21210
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O5, O5D · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21211
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O5, O5D · Housing materials: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	E21212
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 14 mm · for type O5 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E21142
	Mounting set · Clamp mounting · With protective cover · Free-standing M10 · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21084
	Mounting set · Clamp mounting · Free-standing M10 · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21083
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	E30398
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	E30396
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	ZGS210

Accessories OL housing

Type	Description	Order no.
	Angle bracket · for type OL · Housing materials: stainless steel	E20788
	Angle bracket · With protective cover · for type OL · Housing materials: stainless steel	E20789
	Mounting set · Clamp mounting · free-standing M12 · for type OL · Housing materials: fixture: stainless steel / clamp: diecast zinc	E20792

Type	Description	Order no.
	Mounting set · OL · Clamp mounting · rod mounting Ø 40 mm · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: aluminium transparent anodised	E21012
	Mounting set · Clamp mounting · With protective cover · free-standing M12 · for type OL · Housing materials: fixture: stainless steel / clamp: diecast zinc	E20793
	Mounting set · Clamp mounting · With protective cover · free-standing M12 · for type OL · Housing materials: clamp: stainless steel / fixture: stainless steel 316Ti / 1.4571	E20877

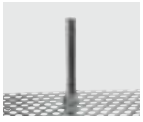
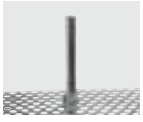
Accessories O4 housing

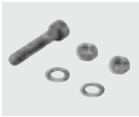
Type	Description	Order no.
	Angle bracket · O1D, O4 · for type O1D, O4 · Housing materials: stainless steel 316L / 1.4404	E21120
	Angle bracket · O4 · for type O4 · Housing materials: stainless steel 316L / 1.4404	E21117
	Angle bracket · O5, O4 · for mounting O5, O4 sensors instead of OL sensors · Dovetail clamp · Housing materials: Dovetail clamp: AlMgSi0.5 / fixture: AlMg3	E21122
	Dovetail clamp · for type DTS, O4, O5 · Housing materials: AlMgSi0.5	E21088
	Mounting brackets Mounting on the back of the unit · O4 · for type O4 · Housing materials: stainless steel 316Ti / 1.4571	E21116
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: diecast zinc	E21215
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: high-grade stainless steel	E21216
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: diecast zinc	E21217
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: high-grade stainless steel	E21218
	Mounting set · O4 · Clamp mounting · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: diecast zinc	E21118

You can find wiring diagrams and scale drawings from page 231

Type	Description	Order no.
	Mounting set · O4 · Clamp mounting · With protective cover · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: diecast zinc	E21119
	Mounting set · O4 · Clamp mounting · for type O4 · Housing materials: stainless steel 316L / 1.4404 / clamp: diecast zinc	E21118

Accessories for system components

Type	Description	Order no.
	clamp · Ø 10 mm; M8 · free-standing M8 · Housing materials: clamp: diecast zinc	E20843
	clamp · Ø 10 mm; M8 · free-standing M8 · Housing materials: clamp: stainless steel 316Ti / 1.4571	E20844
	clamp · Ø 12 mm; M10 · Free-standing M10 · Housing materials: clamp: diecast zinc	E20716
	clamp · Ø 12 mm · rod mounting Ø 12 mm · Housing materials: clamp: diecast zinc	E20717
	clamp · Ø 12 mm · rod mounting Ø 12 mm · Housing materials: clamp: stainless steel	E21110
	clamp · Ø 14 mm; M12 · free-standing M12 · Housing materials: clamp: diecast zinc	E20796
	mounting rod · Ø 10 / M8 · Length: 150 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21081
	mounting rod · Ø 10 / M8 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	E80310
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20938
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	E20940
	Head cap screw · M8 x 40 mm · ISO 4762 (DIN 912) · free-standing M8 · Housing materials: screw: steel galvanised	E21204

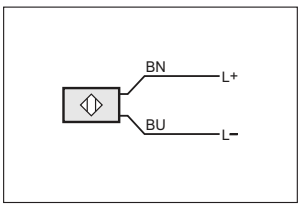
Type	Description	Order no.
	Head cap screw · M8 x 40 mm · ISO 4762 (DIN 912) · free-standing M8 · Housing materials: screw: high-grade stainless steel	**E21205**
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: steel galvanised	**E21208**
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: high-grade stainless steel	**E21209**
	Head cap screw · M10 x 120 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: steel galvanised	**E21213**
	Head cap screw · M10 x 120 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: high-grade stainless steel	**E21214**
	Cube · M8 · aluminium profile · Housing materials: diecast zinc	**E20950**
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	**E20951**
	Protective bracket for free-standing and rod mounting · Ø 18 mm · Clamp mounting · Housing materials: stainless steel 316L / 1.4404	**E21125**
	Protective bracket for free-standing and rod mounting · Ø 18 mm · with end stop · Mounting clamp · Clamp mounting · Housing materials: Mounting clamp: PC black / Angle bracket: stainless steel 316L / 1.4404	**E21126**

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white

1



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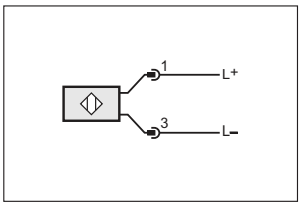

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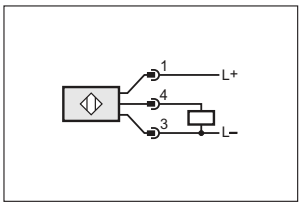

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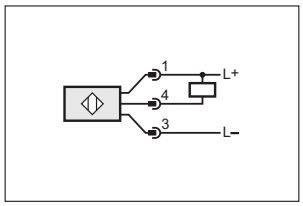

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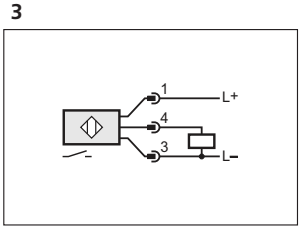

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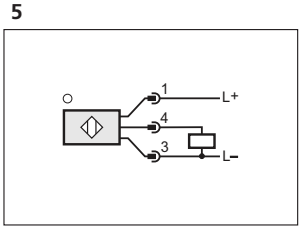

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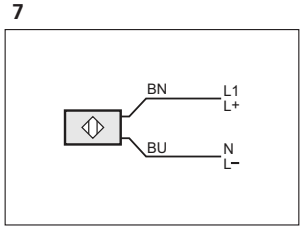
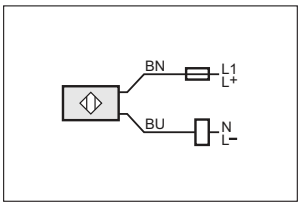


Wiring diagrams

8



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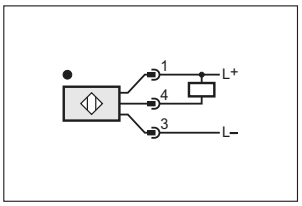

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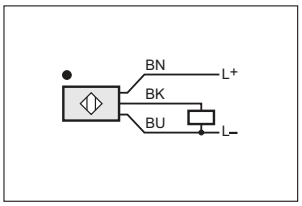

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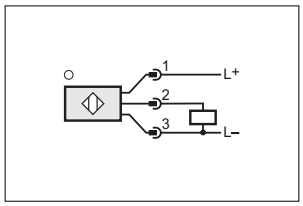

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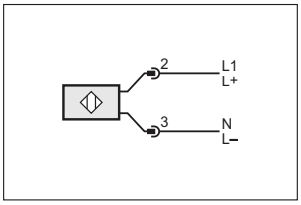

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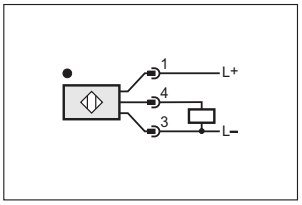

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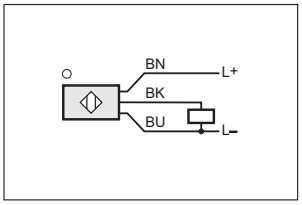

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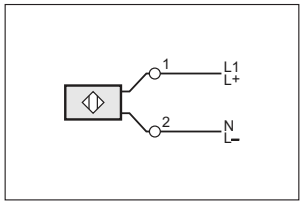

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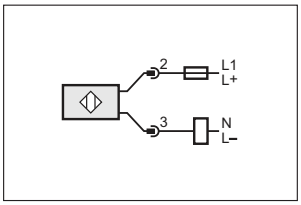

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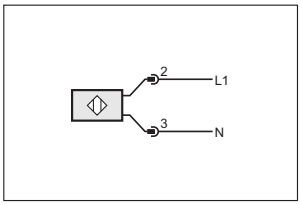

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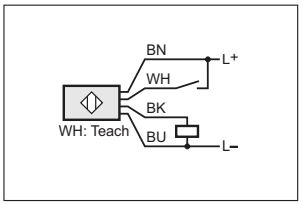

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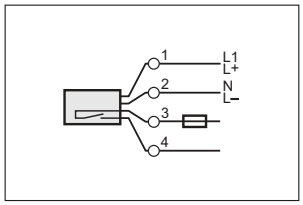

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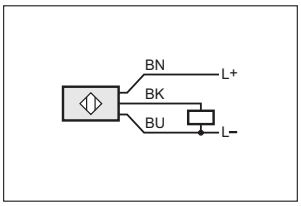

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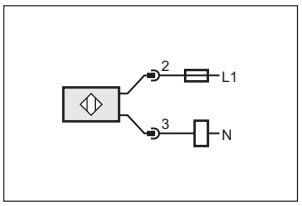

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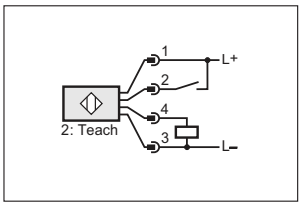

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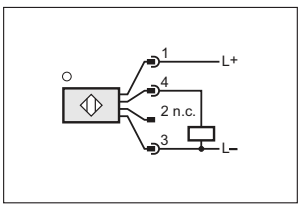

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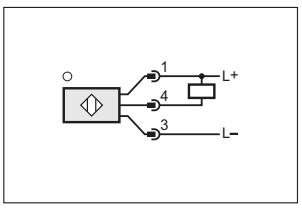

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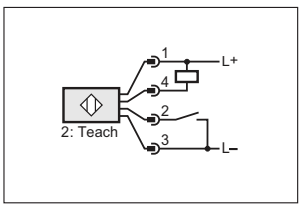

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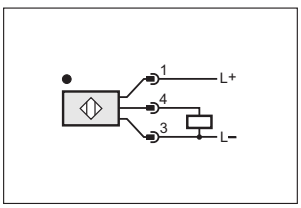

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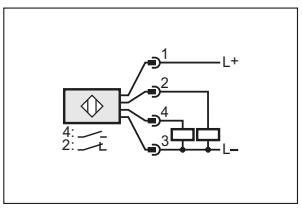

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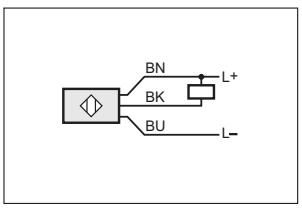

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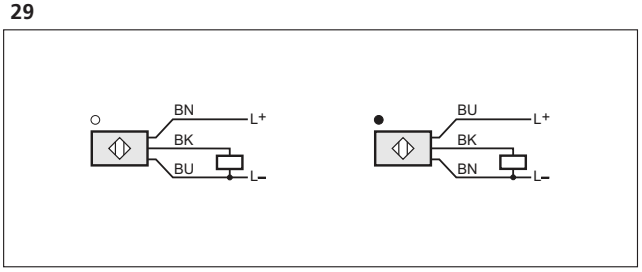

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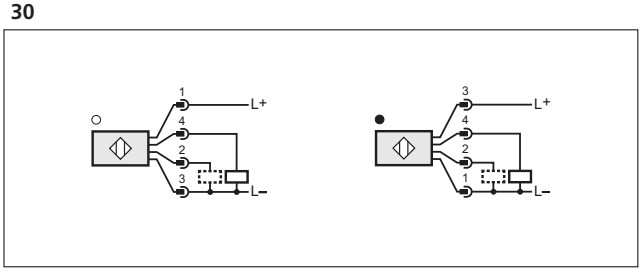

2: function check

Wiring diagrams

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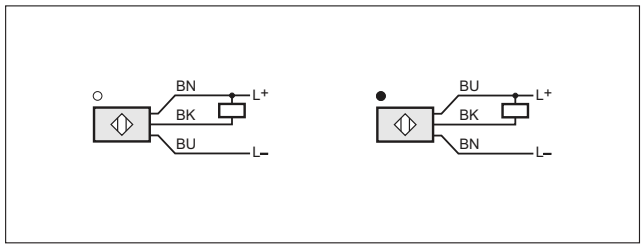

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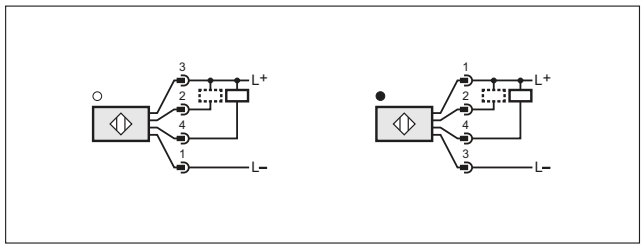

2: function check

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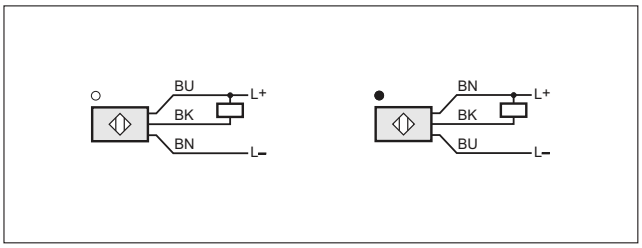

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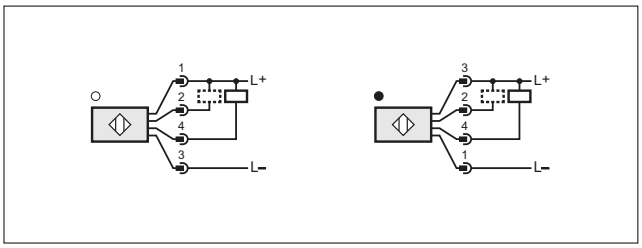

2: function check

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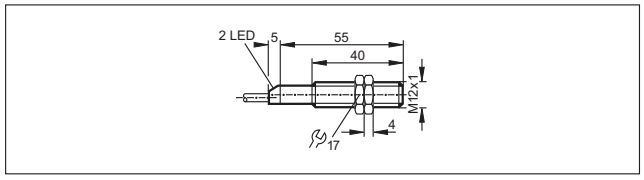

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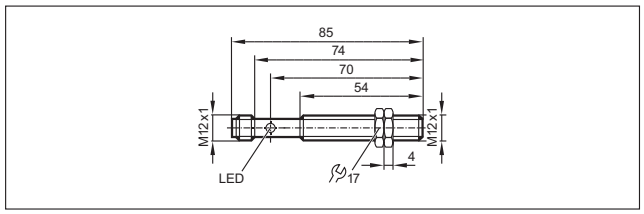

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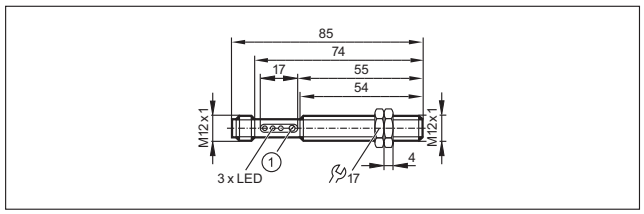

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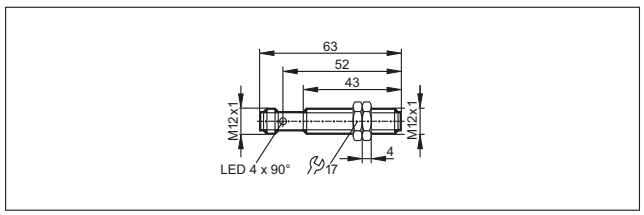

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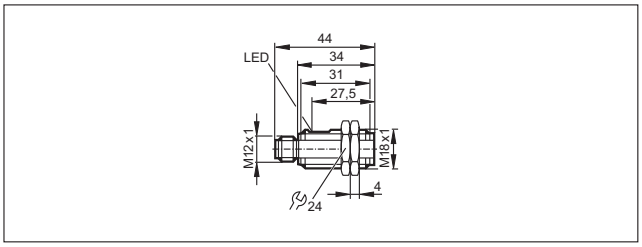

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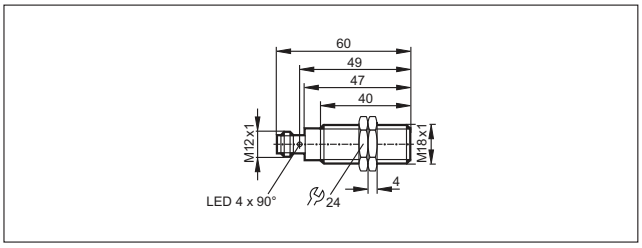

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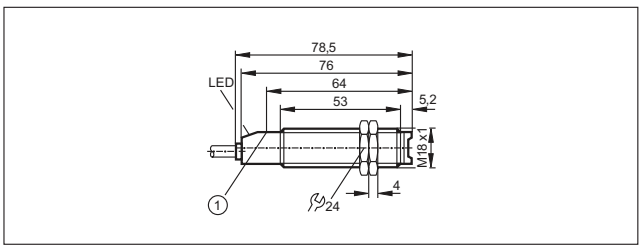

1: pushbutton

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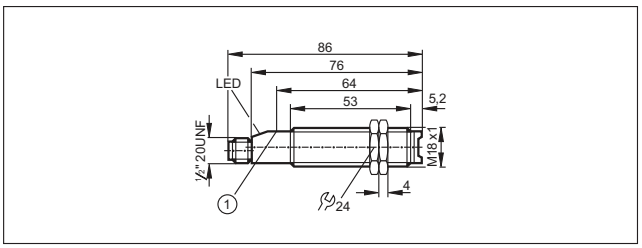

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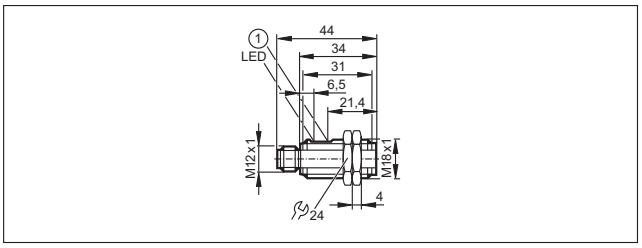

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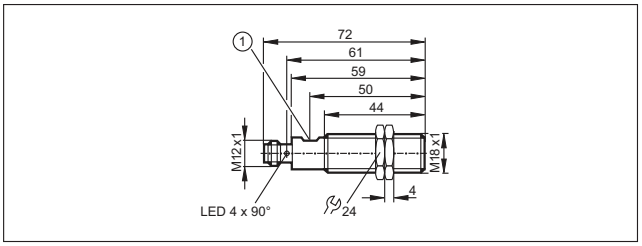

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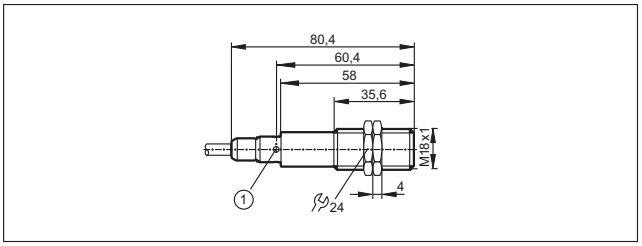

1: LED 4 x 90°

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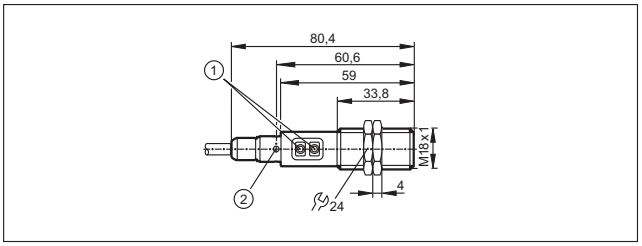

1: Programming buttons, 2: LED 4 x 90°

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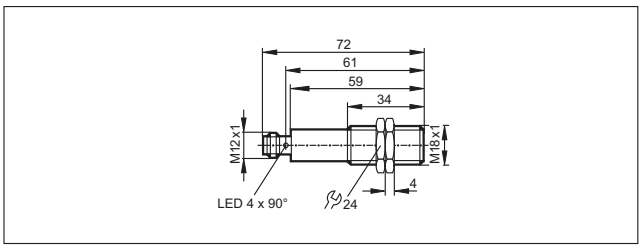

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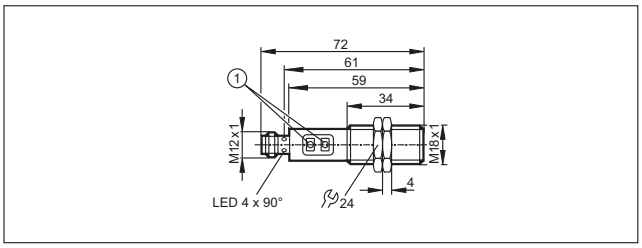

1: Programming buttons

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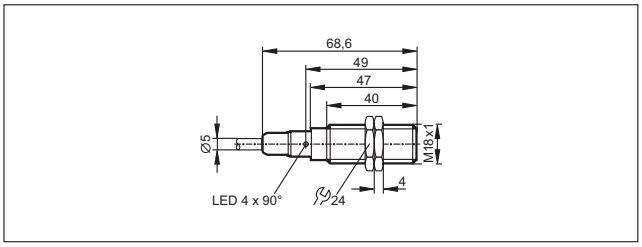

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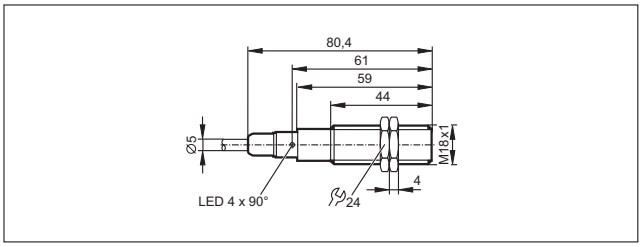

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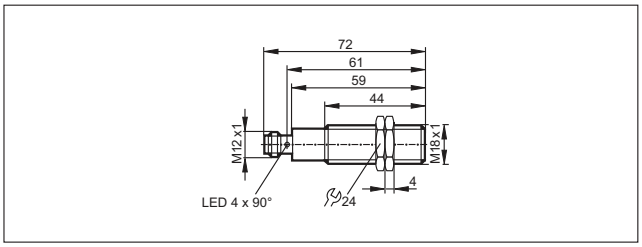

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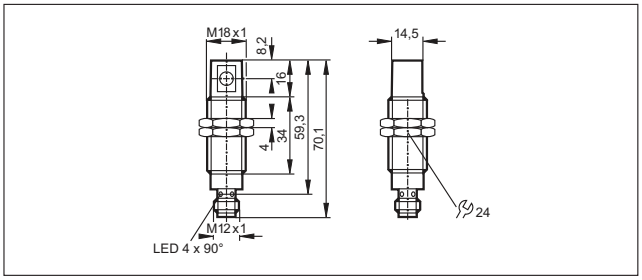

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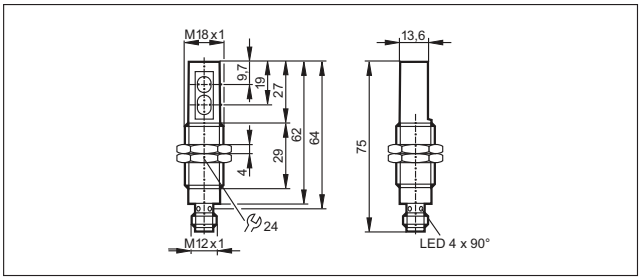

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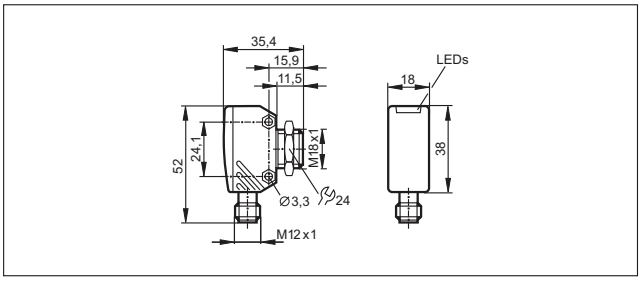

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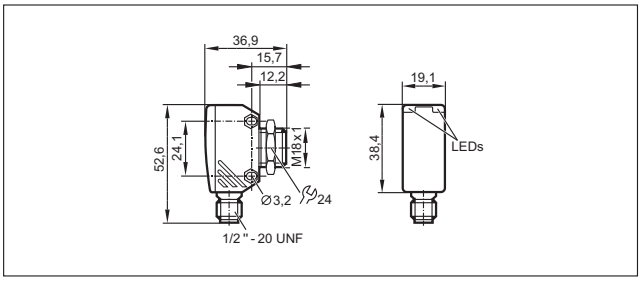

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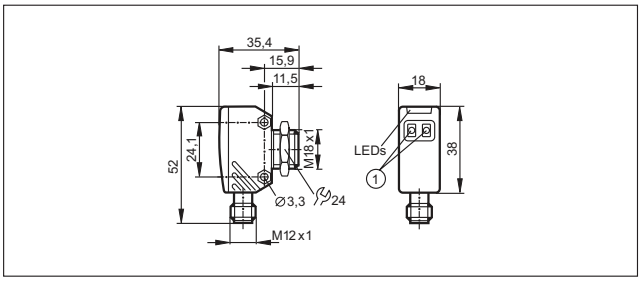

1: setting pushbuttons

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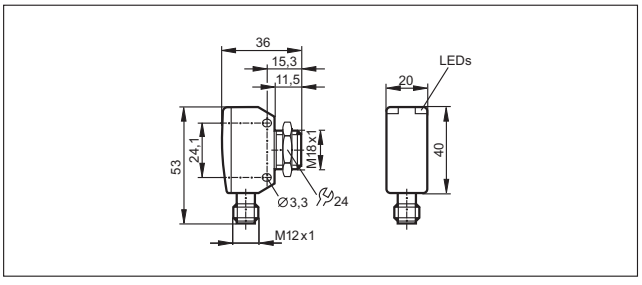

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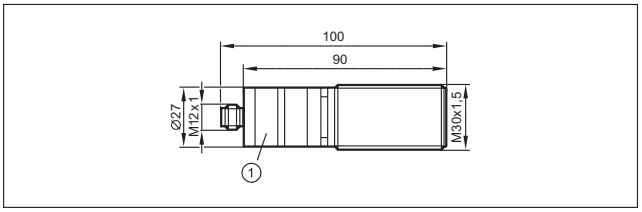

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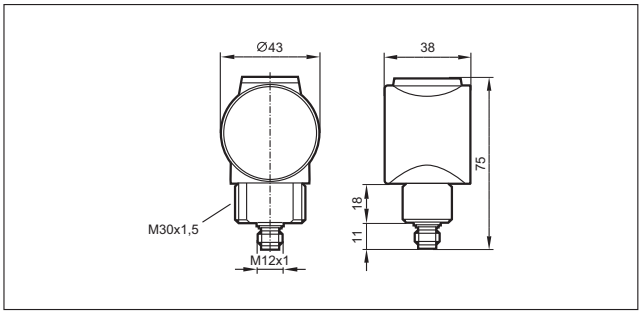

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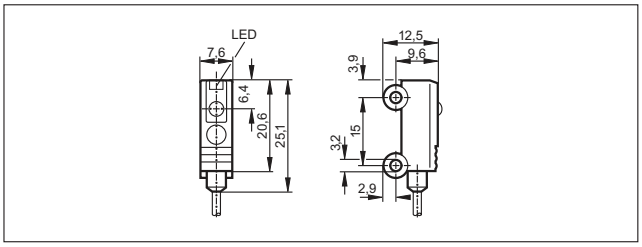

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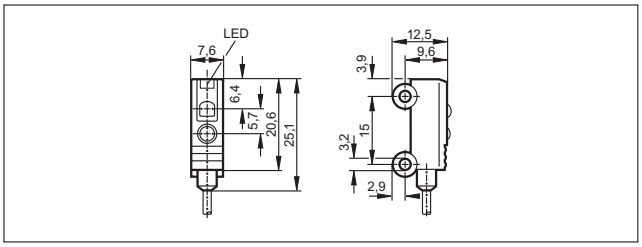

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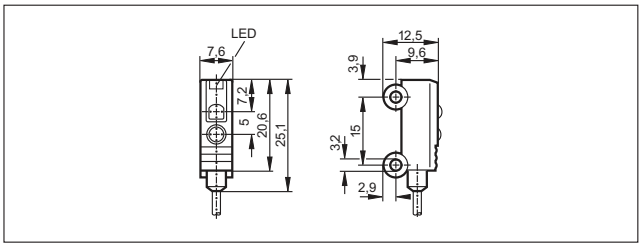

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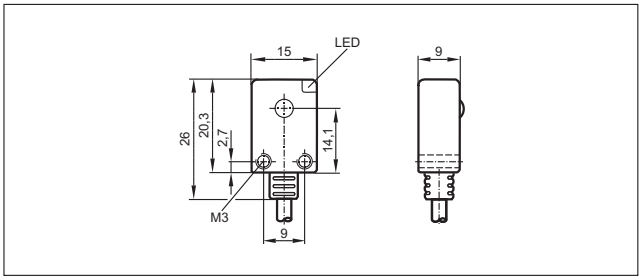

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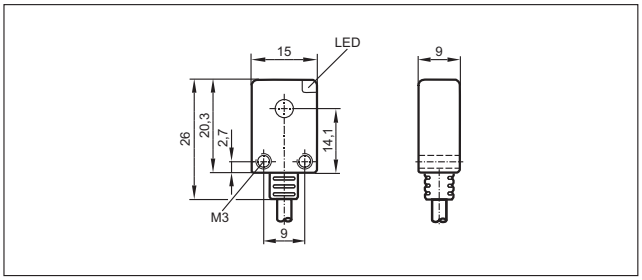

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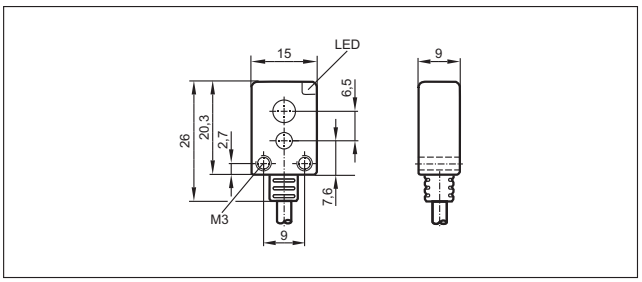

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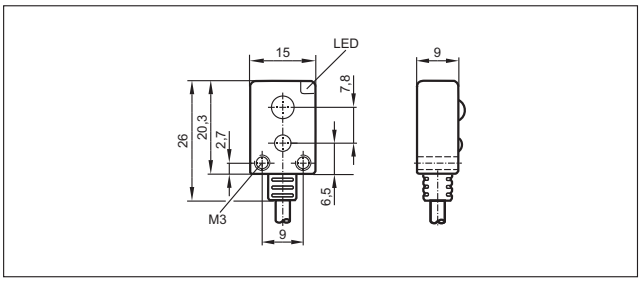

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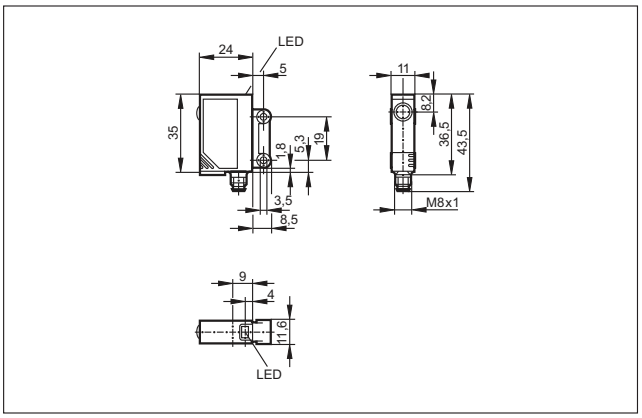

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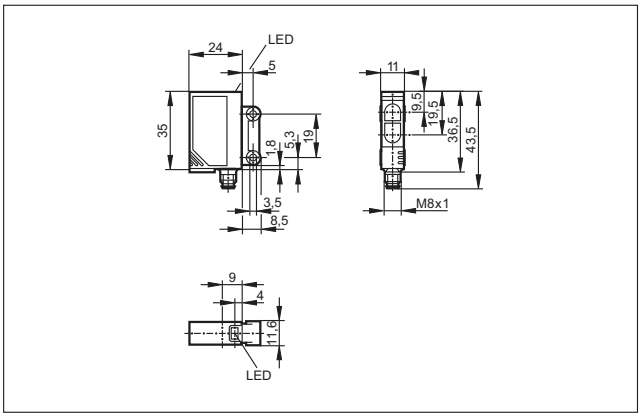

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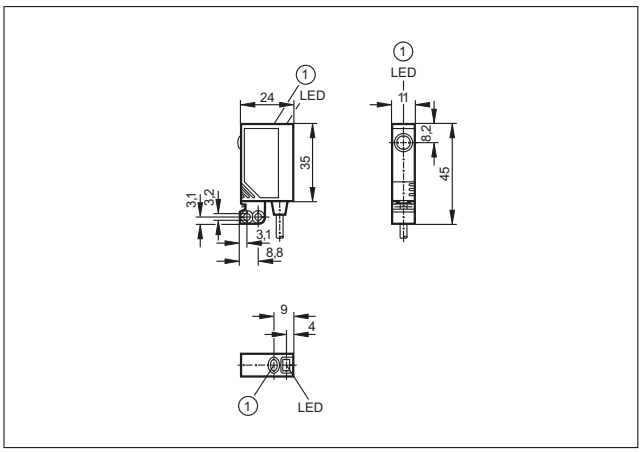

1: pushbutton

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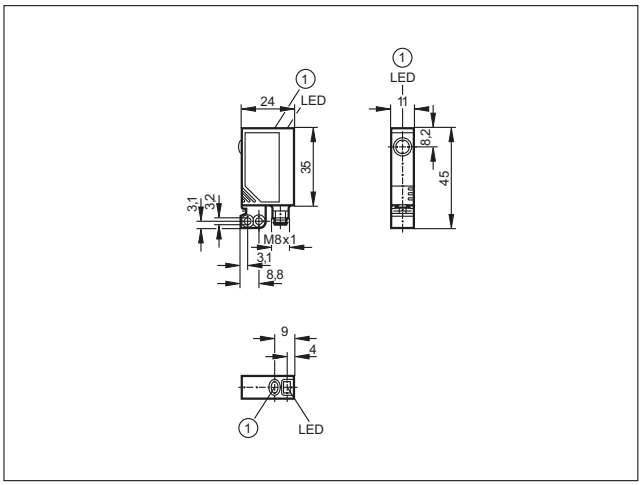

1: pushbutton

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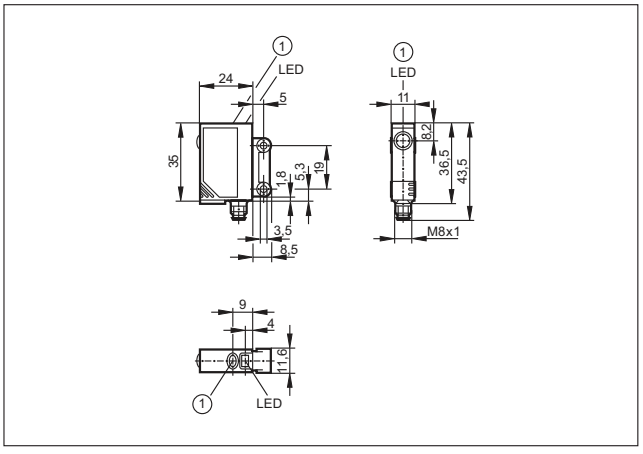

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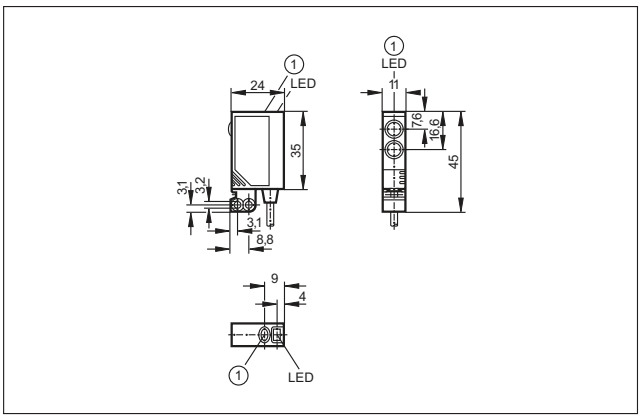
Scale drawings / drawing no. – CAD download: www.ifm.com

38



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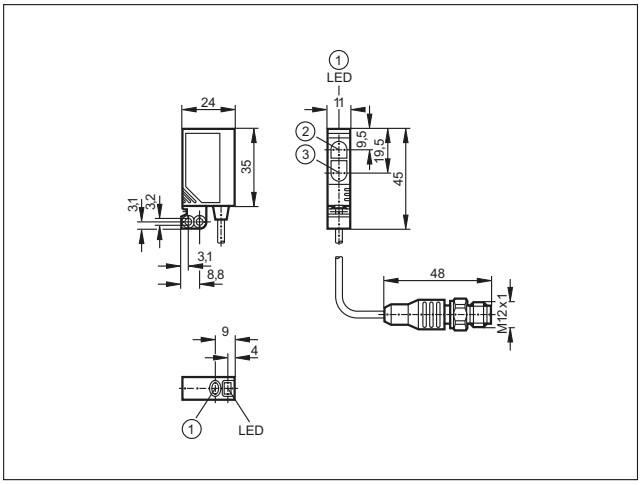
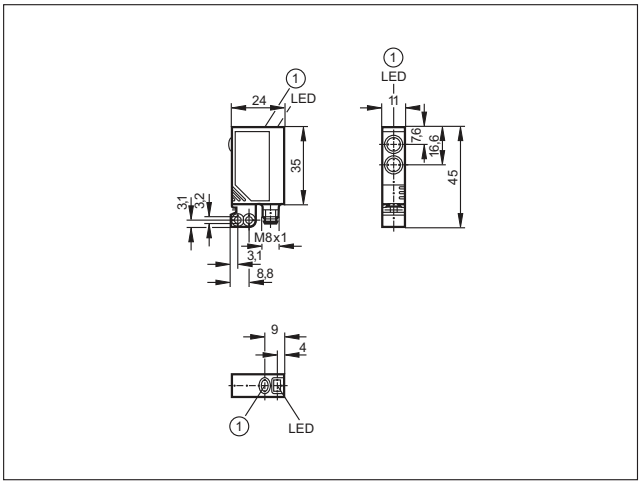


1: pushbutton, 2: Receiver, 3: Transmitter

40



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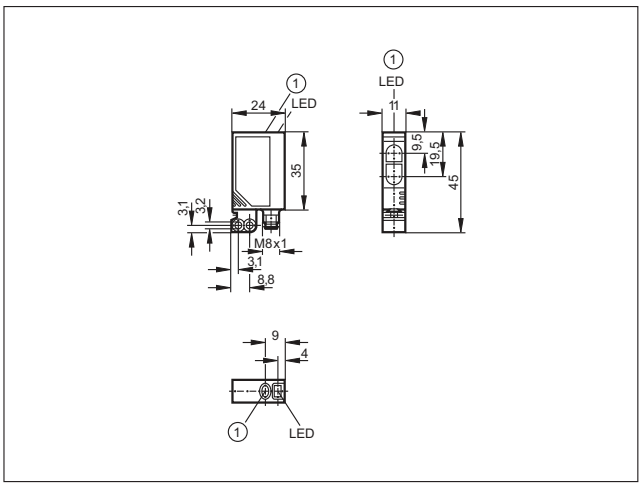

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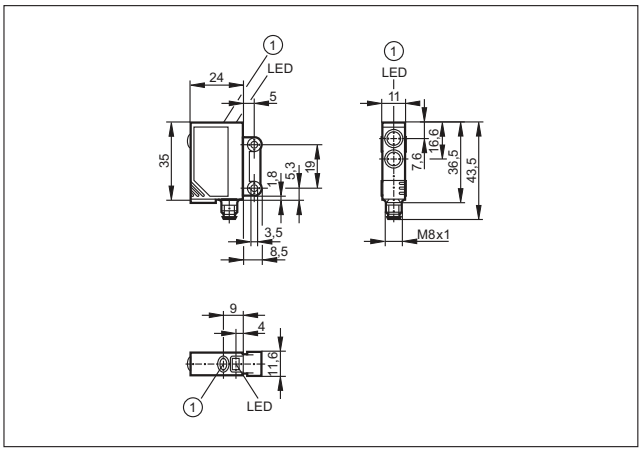

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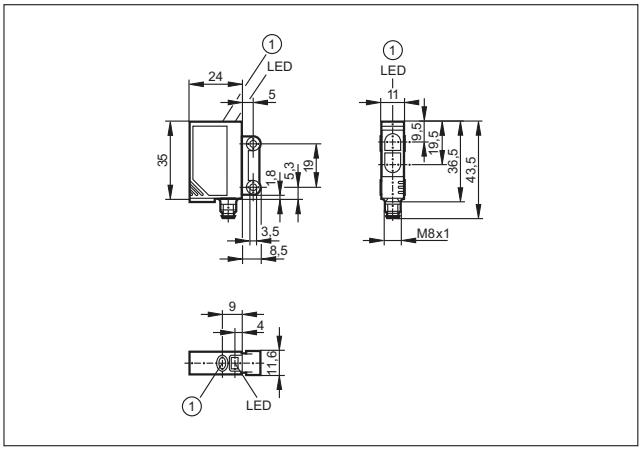

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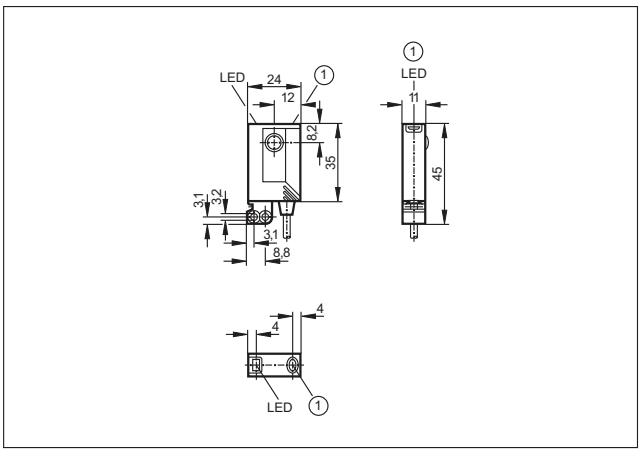

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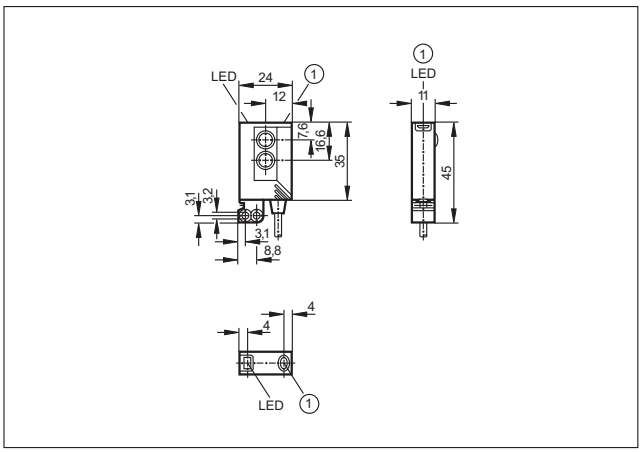

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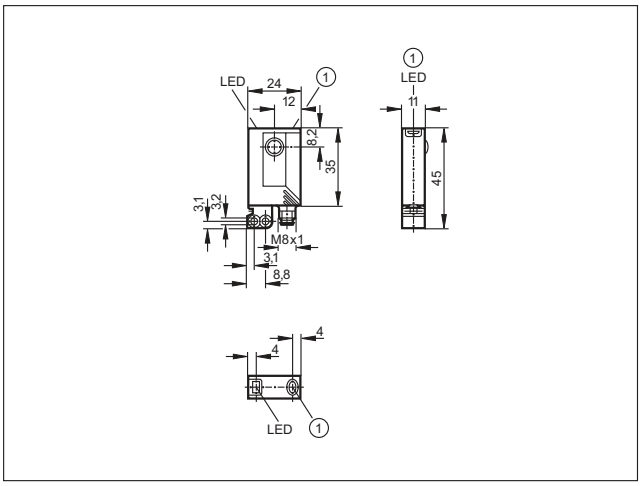

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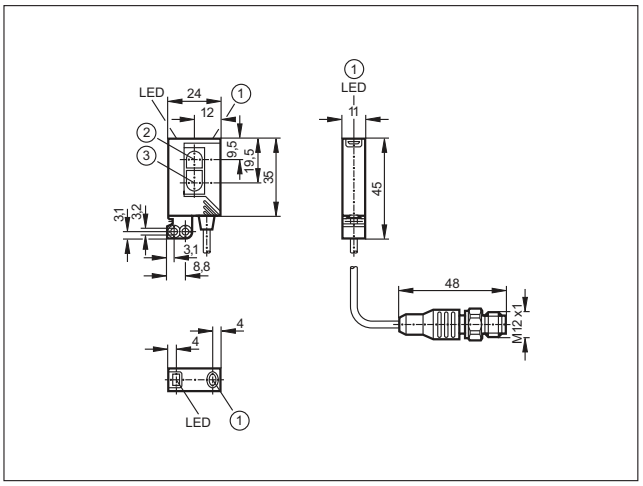
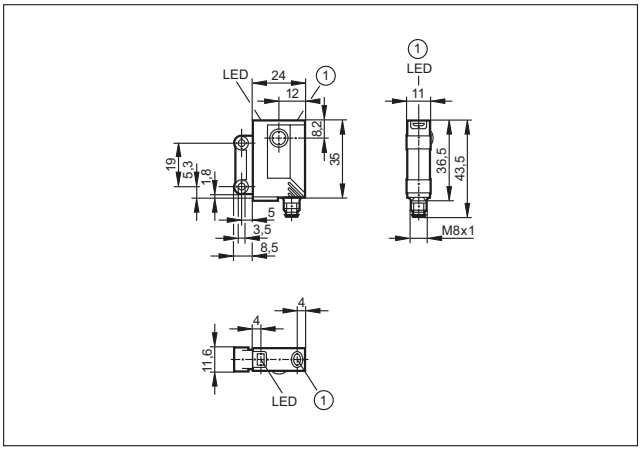


1: pushbutton, 2: Receiver, 3: Transmitter

46



1: pushbutton

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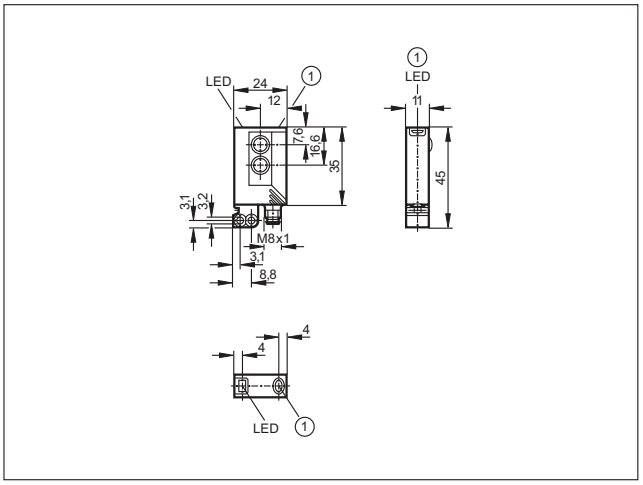

1: pushbutton

Scale drawings / drawing no. – CAD download: www.ifm.com

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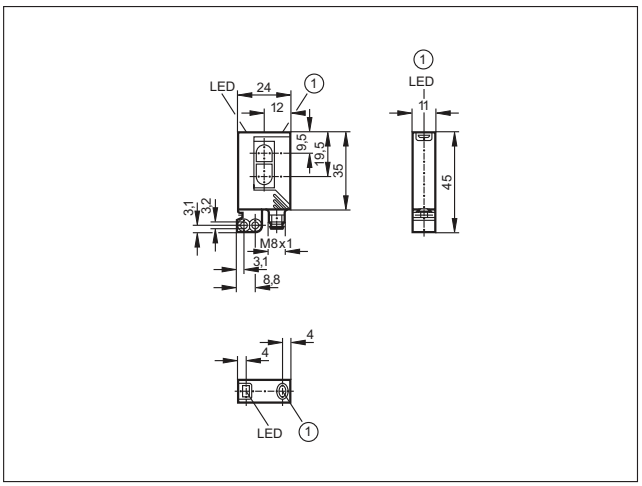

1: pushbutton

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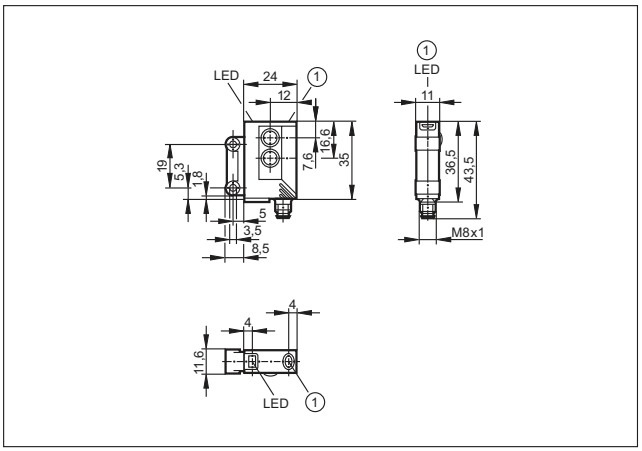

1: pushbutton

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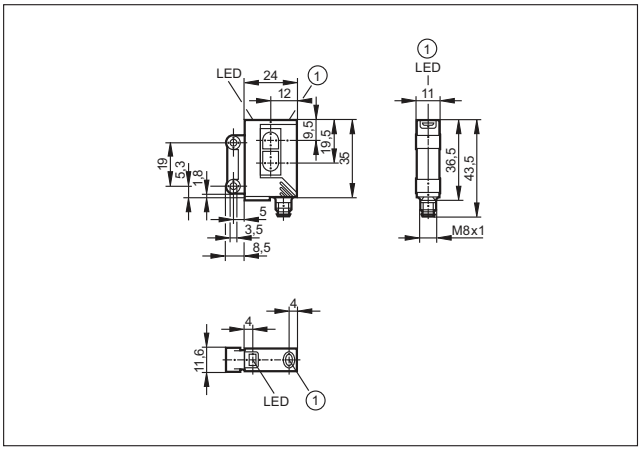

1: pushbutton

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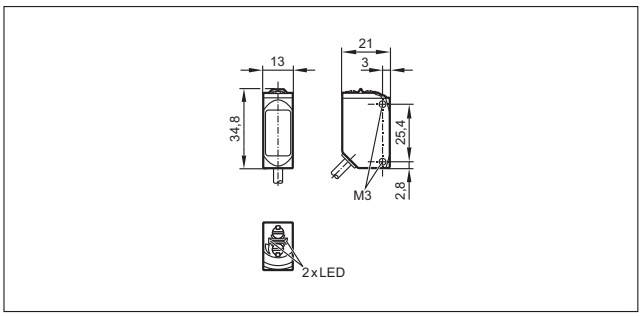

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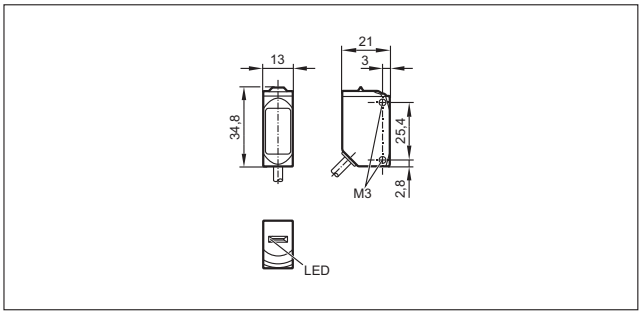

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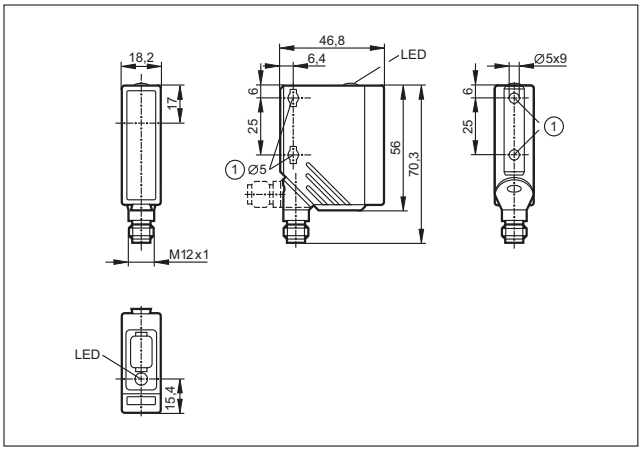
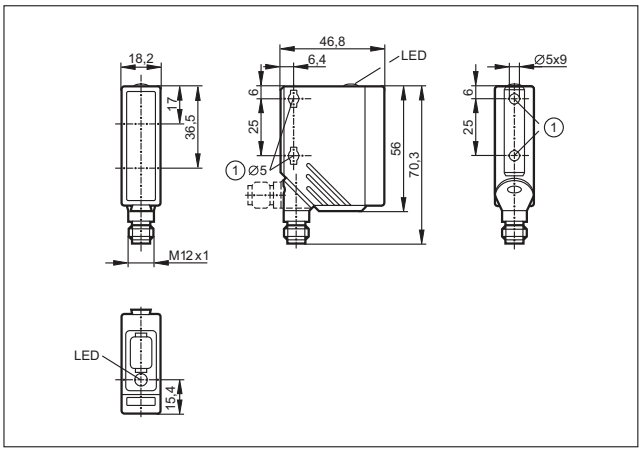


1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

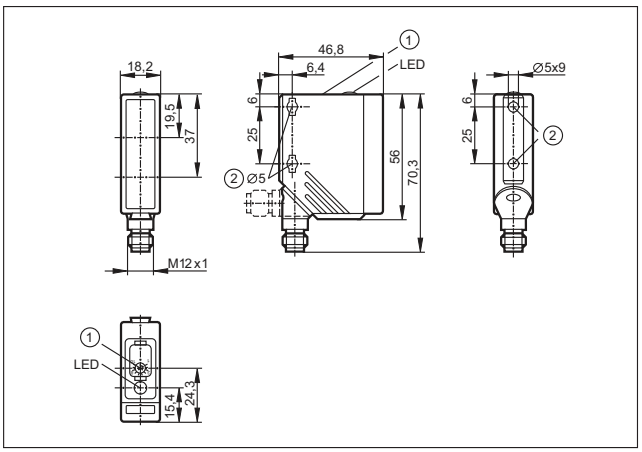
56



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

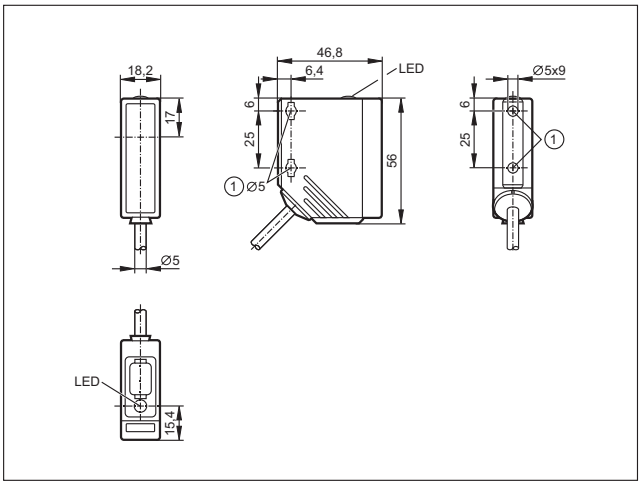
Scale drawings / drawing no. – CAD download: www.ifm.com

57



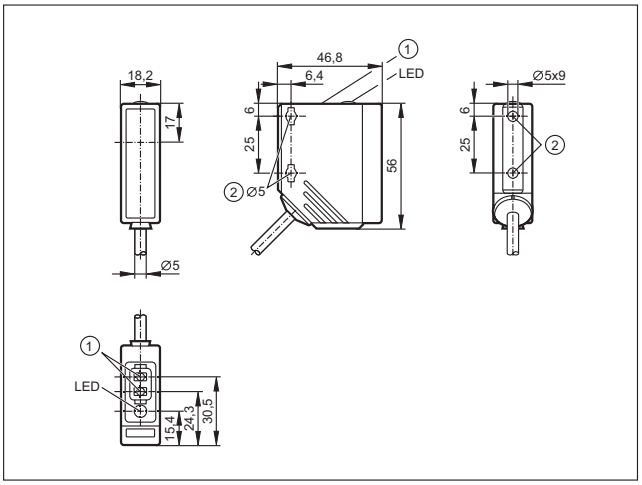
1: potentiometer, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

58



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

59



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

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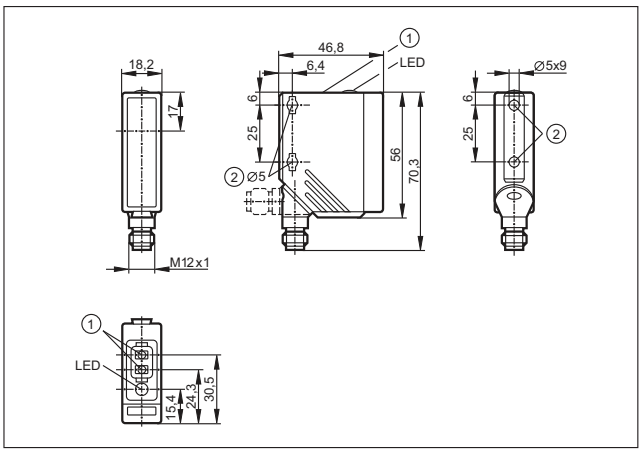
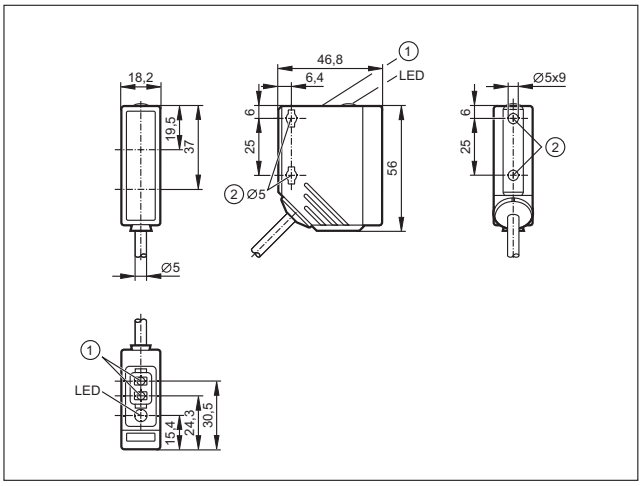


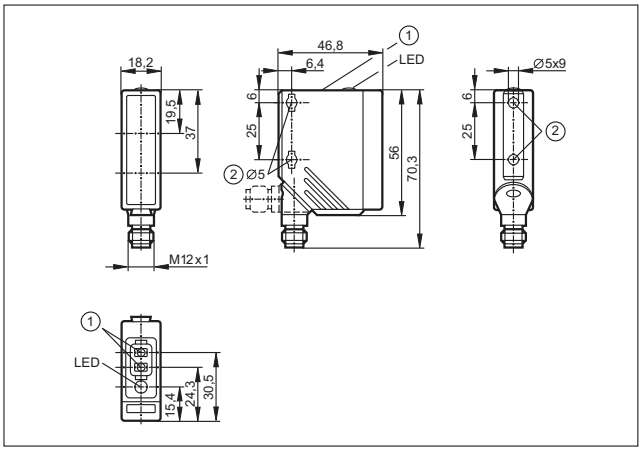
1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

61



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

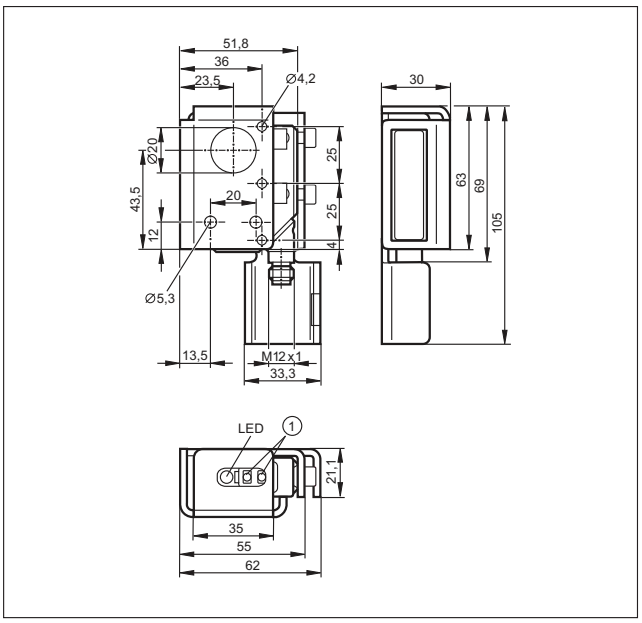
62



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

Scale drawings / drawing no. – CAD download: www.ifm.com

63



1: Programming buttons

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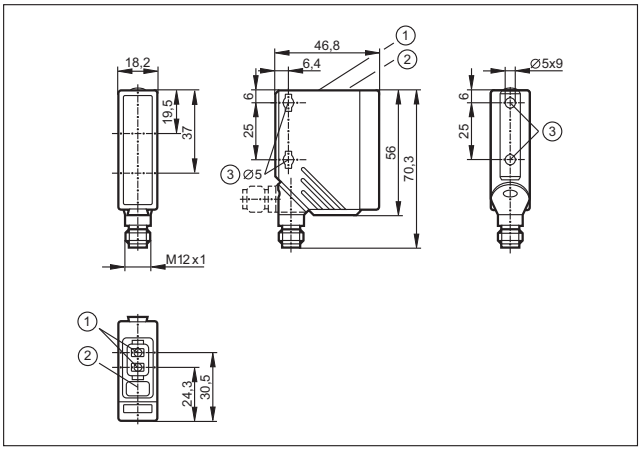

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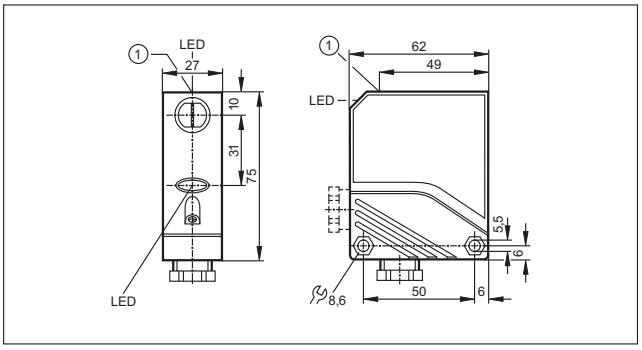
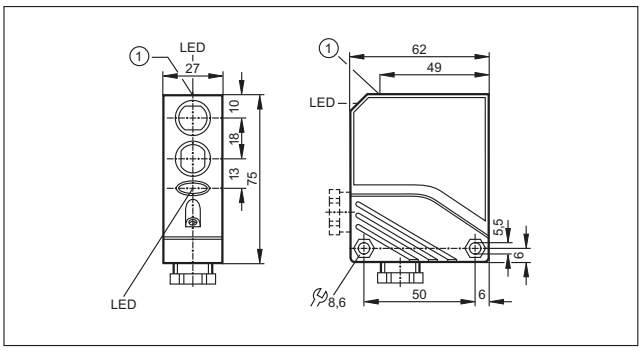


1: pushbutton

66



1: pushbutton

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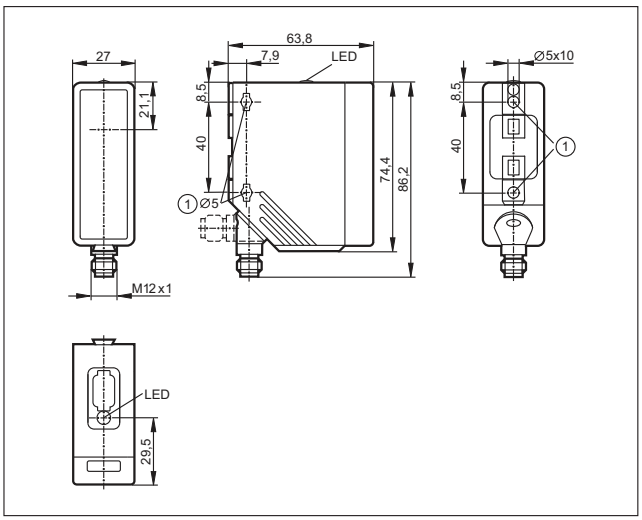
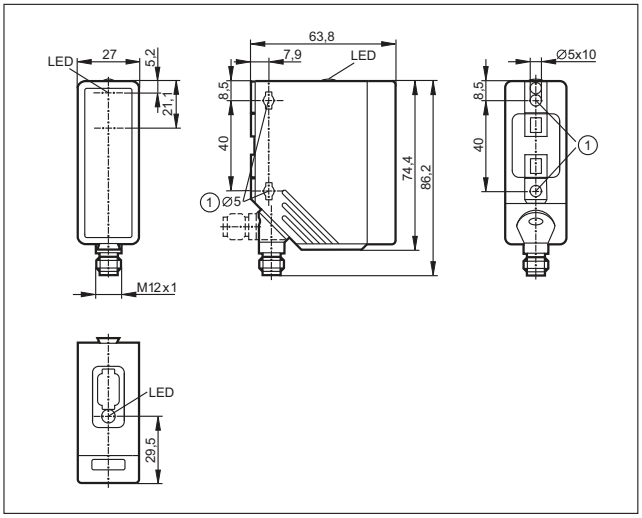


1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

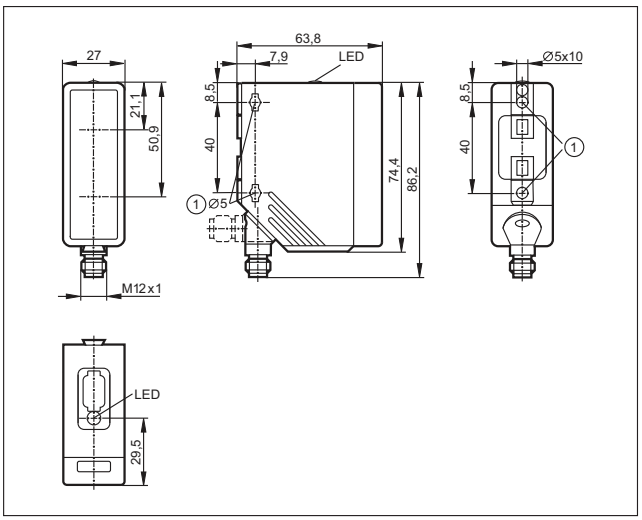
68



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

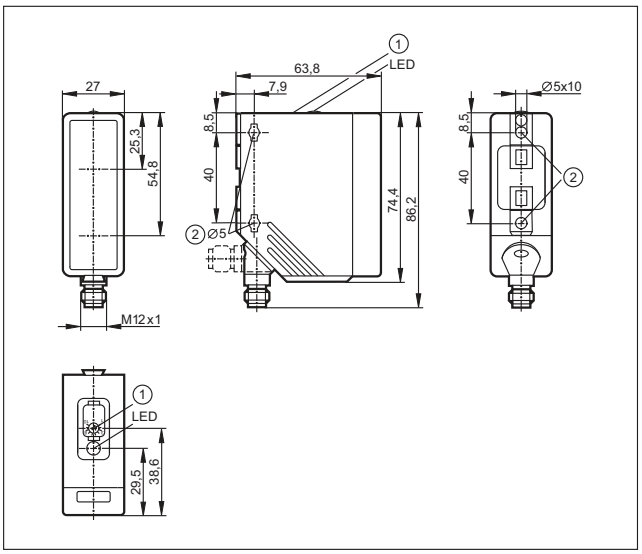
Scale drawings / drawing no. – CAD download: www.ifm.com

69



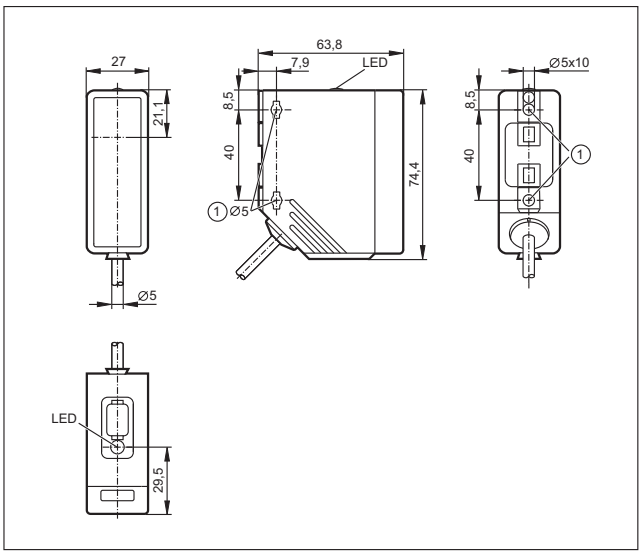
1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

70



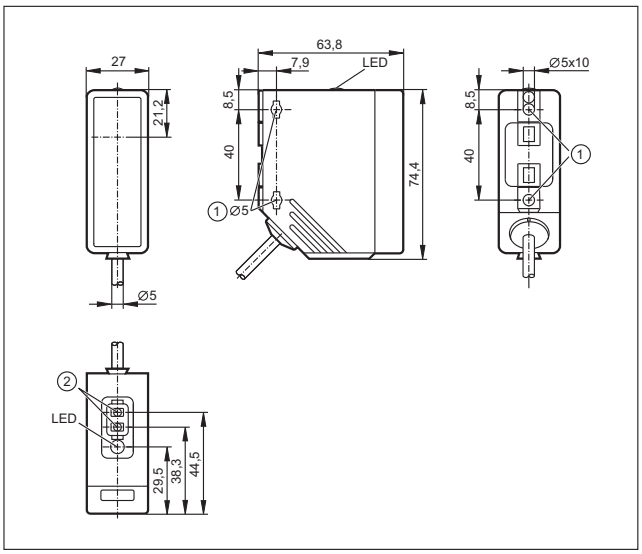
1: potentiometer, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

71



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

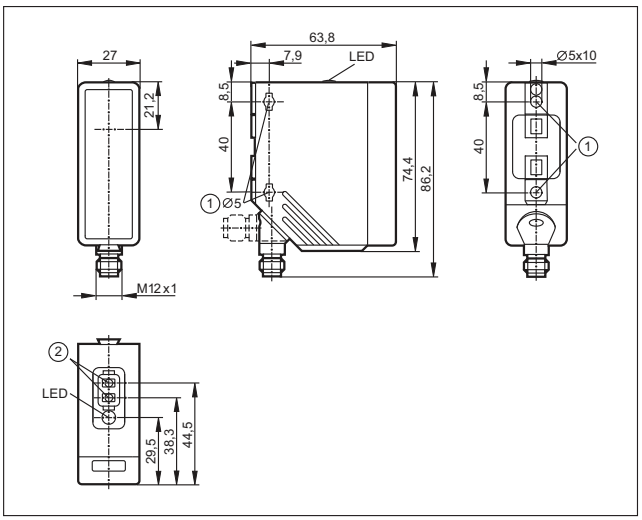
72



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

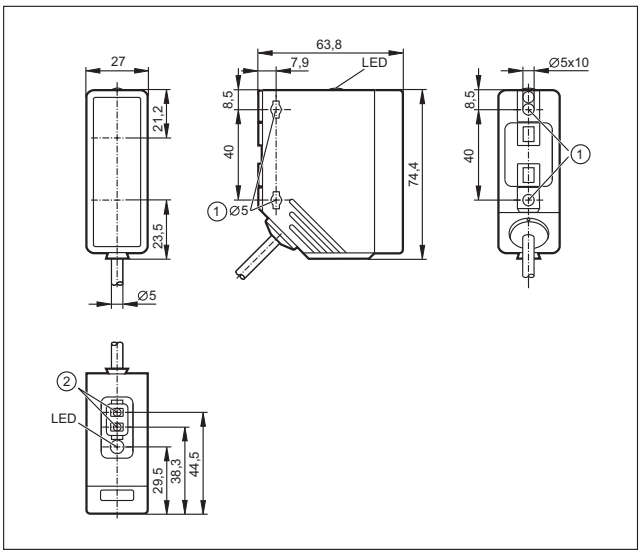
Scale drawings / drawing no. – CAD download: www.ifm.com

73



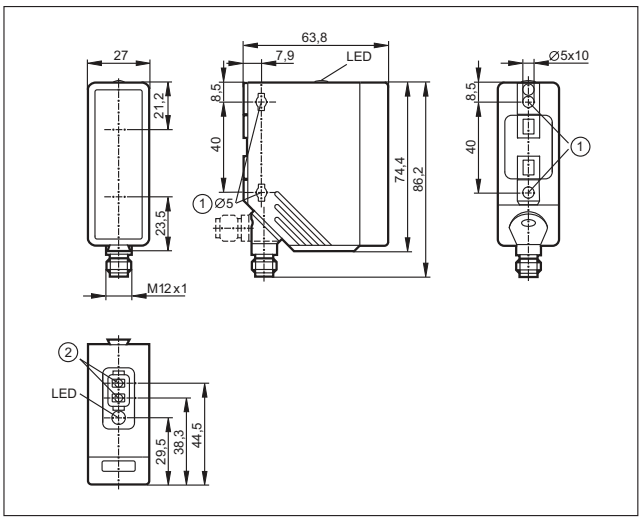
1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

74



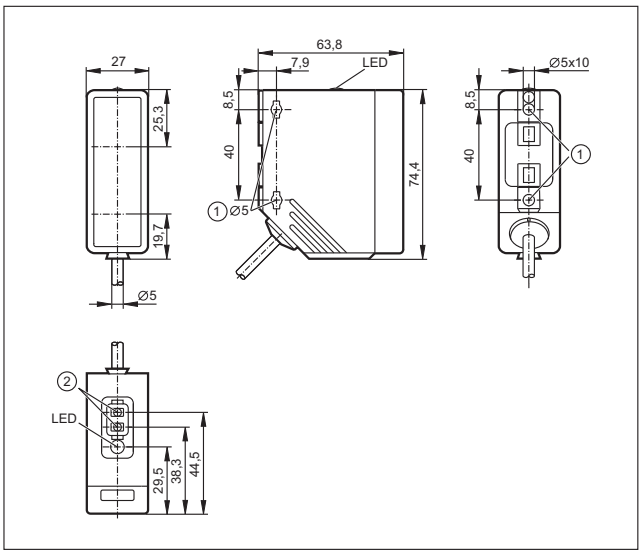
1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

75



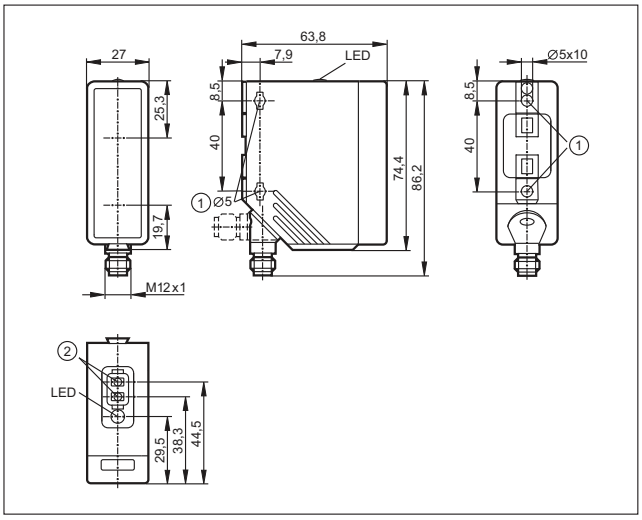
1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

76



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

77



1: When a M5 mounting screw is used, the max. tightening torque is 2 Nm., 2: Programming buttons

- **Quick set-up: no need to align transmitter and receiver**
- **Fine and precise light beam across the whole fork width**
- **Metal housing reduces distortion**
- **Light-on / dark-on mode selectable via rotary switch**
- **Easy sensitivity setting via potentiometer**

Optical fork and angle sensors

The optical fork and angle sensors are made from distortion-resistant diecast zinc and feature a high switching frequency. Applications are in particular part monitoring in feeding technology and handling systems. Further application examples are belt edge and double feed monitoring.

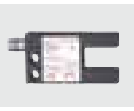
Easy to use

Sensitivity setting using the potentiometer and setting of light-on / dark-on mode using the rotary switch are simple and time-saving. No complex adjustment is required because transmitter and receiver are already aligned towards each other. Due to the fine and precise red light beam which is constant across the entire fork width, out-of-balance monitoring of shafts can also be carried out.

The optical fork and angle sensors are especially used for part monitoring in feeding technology and handling systems.

System overview	*Page*
Optical fork sensors	*246*
Laser fork sensors, laser class 2	*247*
Optical angle sensors	*247*
Wiring diagrams	*247 - 248*
Scale drawings / drawing no. – CAD download: www.ifm.com	*248 - 249*

Optical fork sensors

Type	Fork width (w) [mm]	Fork depth (d) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U_b [V]	Draw-ing no.	Order no.
Optical fork sensor · Type OPU · M8 connector · metal · DC · Wiring diagram no. 3 · Connector groups 1, 2, 3, 74, 80								
	10	17	0.3	10000	H/D PNP/NPN	10...35	1	**OPU200**
Optical fork sensor · Type OPU · M8 connector · metal · DC · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80								
	20	25	0.4	4000	H/D PNP	10...35	2	**OPU201**
	30	35	0.5	4000	H/D PNP	10...35	3	**OPU202**
	50	55	0.5	4000	H/D PNP	10...35	4	**OPU203**
	80	55	0.5	4000	H/D PNP	10...35	5	**OPU204**
	120	60	0.8	2000	H/D PNP	10...35	6	**OPU205**
Optical fork sensor · Type OPU · M8 connector · metal · DC · Wiring diagram no. 2 · Connector groups 1, 3, 74, 80								
	20	25	0.4	4000	H/D NPN	10...35	2	**OPU207**
	30	35	0.5	4000	H/D NPN	10...35	3	**OPU208**
	50	55	0.5	4000	H/D NPN	10...35	4	**OPU209**
	80	55	0.5	4000	H/D NPN	10...35	5	**OPU210**
	120	60	0.8	2000	H/D NPN	10...35	6	**OPU211**

Laser fork sensors, laser class 2

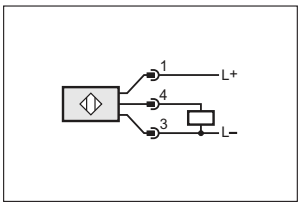
Type	Fork width (w) [mm]	Fork depth (d) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U_b [V]	Drawing no.	Order no.
Optical fork sensor · Type OPU · M8 connector · metal · DC · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80								
	30	30	0.05	3000	H/D PNP	10...30	7	**OPU700**
	50	50	0.05	3000	H/D PNP	10...30	8	**OPU701**
	80	50	0.05	3000	H/D PNP	10...30	9	**OPU702**

Optical angle sensors

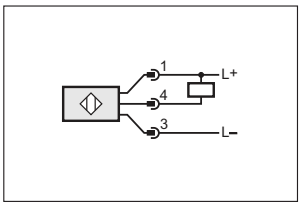
Type	Side length (x, y) [mm]	Sensor width (z) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U_b [V]	Drawing no.	Order no.
Optical angle sensor · Type OPL · M8 connector · metal · DC · Wiring diagram no. 1 · Connector groups 1, 2, 3, 74, 80								
	50	60	0.5	4000	H/D PNP	10...35	10	**OPL200**
	80	100	0.7	4000	H/D PNP	10...35	11	**OPL201**
Optical angle sensor · Type OPL · M8 connector · metal · DC · Wiring diagram no. 2 · Connector groups 1, 3, 74, 80								
	50	60	0.5	4000	H/D NPN	10...35	10	**OPL202**
	80	100	0.7	4000	H/D NPN	10...35	11	**OPL203**

Wiring diagrams

1

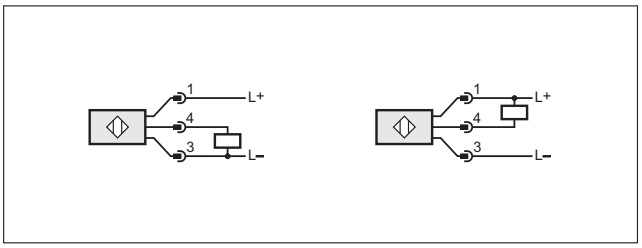


2



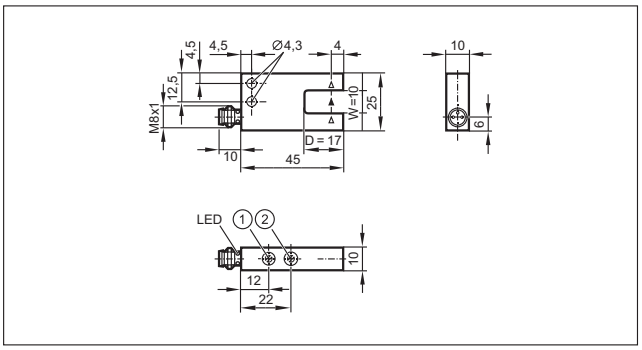
Wiring diagrams

3



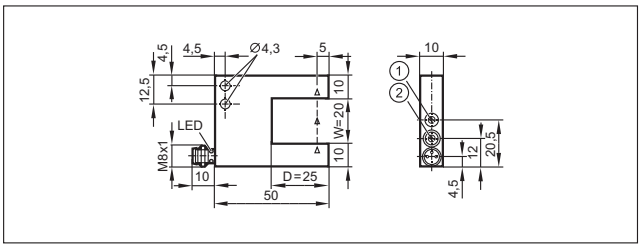
Scale drawings / drawing no. – CAD download: www.ifm.com

1



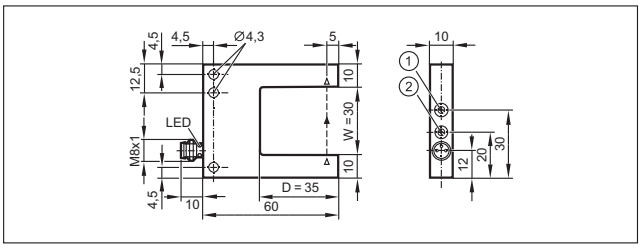
1: output function switch, 2: potentiometer sensitivity

2



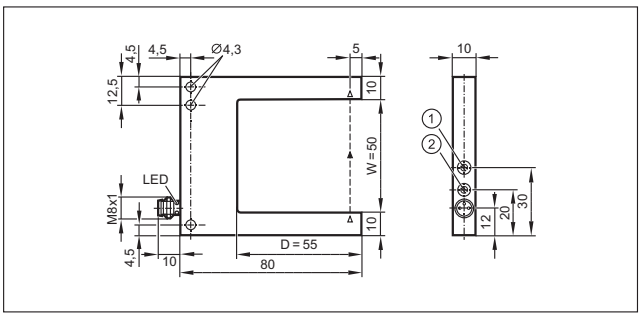
1: potentiometer sensitivity, 2: output function switch

3



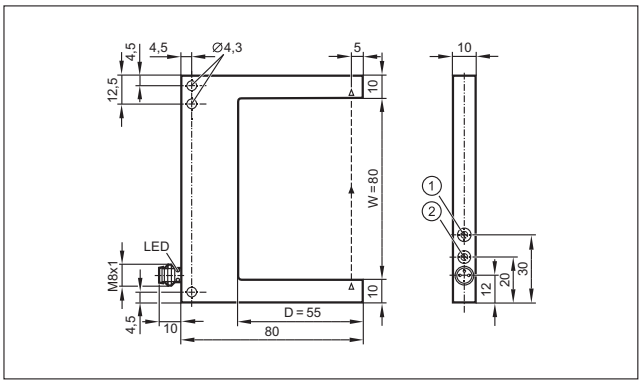
1: potentiometer sensitivity, 2: output function switch

4



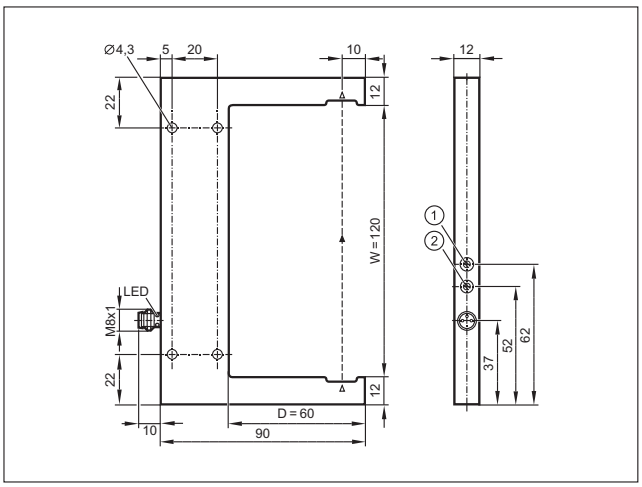
1: potentiometer sensitivity, 2: output function switch

5



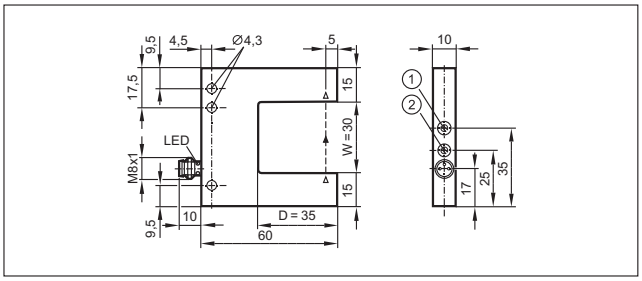
1: potentiometer sensitivity, 2: output function switch

6



1: potentiometer sensitivity, 2: output function switch

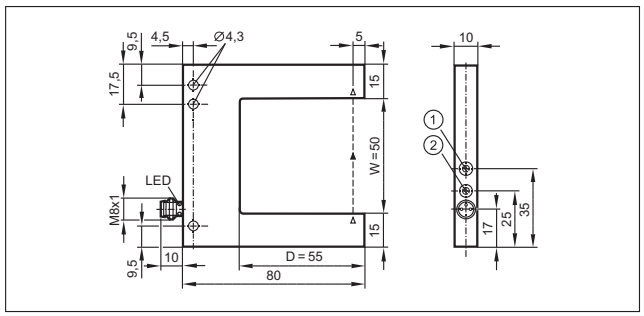
7



1: potentiometer sensitivity, 2: output function switch

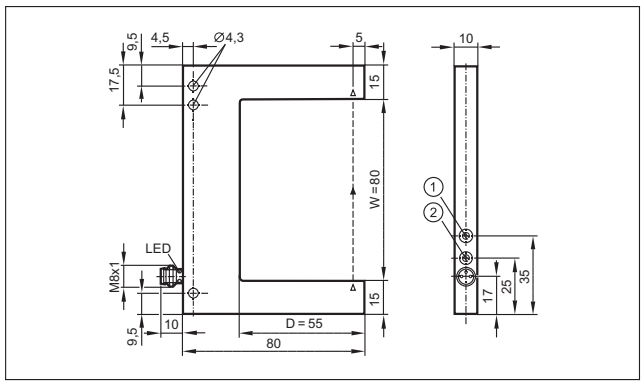
Scale drawings / drawing no. – CAD download: www.ifm.com

8



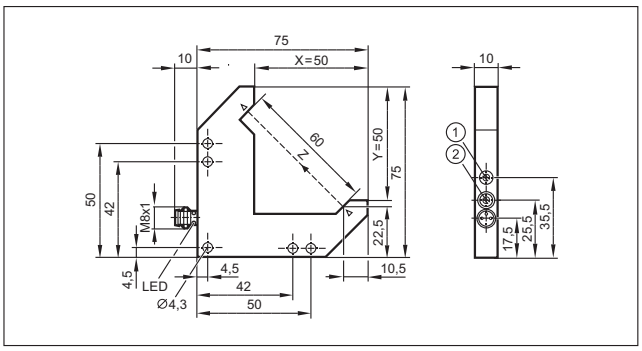
1: potentiometer sensitivity, 2: output function switch

9



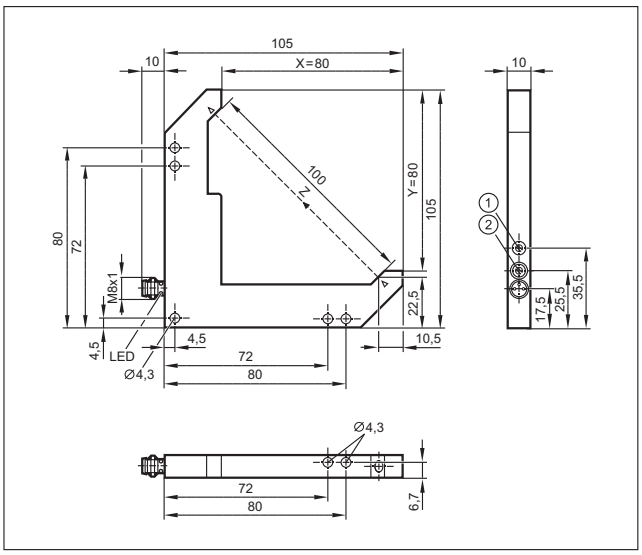
1: potentiometer sensitivity, 2: output function switch

10



1: potentiometer sensitivity, 2: output function switch

11



1: potentiometer sensitivity, 2: output function switch

- **Laser sensors for detection of tiny objects**
- **Laser sensors for high power over long ranges**
- **Clearly visible red light for easy setting**
- **Easy pushbutton adjustment**
- **Accessories for robust mounting and fine adjustment**

Laser sensors

Laser sensors are used where detection of small objects or precise positioning is required. Alternatively, where very high power is needed lasers are also of great benefit to cover longer distances or see through. Laser sensors are available as through-beam sensors, retro-reflective sensors or diffuse reflection sensors. Laser light consists of light waves of identical length which have a defined phase relation (coherence). This results in an important feature of laser systems, that is the almost parallel light beam. The small angle of divergence means long ranges can be achieved. The laser spot which is also clearly visible in daylight simplifies the alignment of the system.

Safety

Laser products are classified in accordance with the IEC 60825-1 standard. Laser detection products from ifm electronic fall into the Class 1 category of low power lasers and can therefore be considered safe under all conditions of normal use.

Coherent: Laser sensors emit light of a defined wave length and the same phase position.

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Rectangular housing OJ Laser PerformanceLine, lateral sensing face, laser class 1	*252 - 253*
Rectangular housing OJ Laser PerformanceLine, front sensing face, laser class 1	*253 - 254*
Rectangular housing O1 Laser PerformanceLine with background suppression, laser class 2	*254 - 255*
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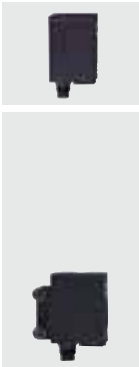
Cylindrical OG housing (M18) Laser PerformanceLine, laser class 1

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP65 / IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	2 m	Red	5	–	1	1	**OGS701**
	Transmitter	60 m	Red	312	–	1	1	**OGS700**
Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP65 / IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	2 m	Red	–	H/D PNP	2	2	**OGE701**
	Receiver	60 m	Red	–	H/D PNP	2	2	**OGE700**
Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP65 / IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.2...2 m	Red	5	H/D PNP	2	2	**OGP701**
	Polarisation filter	0.2...15 m	Red	78	H/D PNP	2	2	**OGP700**
Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP65 / IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	20...200 mm	Red	1.2	H/D PNP	2	2	**OGH700**

Rectangular housing OJ Laser PerformanceLine, lateral sensing face, laser class 1

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Transmitter	1 m	Red	< 4	–	1	3	**OJ5041**
	Receiver	1 m	Red	–	H/D PNP	3	3	**OJ5042**
	Transmitter	15 m	Red	< 24	–	1	3	**OJ5038**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Receiver	15 m	Red	–	H/D PNP	3	3	**OJ5039**
	Transmitter	1 m	Red	< 4	–	1	4	**OJ5141**
	Receiver	1 m	Red	–	H/D PNP	3	4	**OJ5142**
	Transmitter	15 m	Red	< 24	–	1	4	**OJ5138**
	Receiver	15 m	Red	–	H/D PNP	3	4	**OJ5139**
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	8 m	Red	< 12	H/D PNP	3	3	**OJ5036**
	Polarisation filter	8 m	Red	< 12	H/D PNP	3	4	**OJ5136**
Diffuse reflection sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Background suppression	7...150 mm	Red	0.8	H/D PNP	3	5	**OJ5058**
	Background suppression	15...200 mm	Red	2x1	H/D PNP	3	6	**OJ5054**
	Background suppression	7...150 mm	Red	0.8	H/D PNP	3	7	**OJ5158**
	Background suppression	15...200 mm	Red	2x1	H/D PNP	3	8	**OJ5154**

Rectangular housing OJ Laser PerformanceLine, front sensing face, laser class 1

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Transmitter	1 m	Red	< 4	–	1	9	**OJ5019**

You can find wiring diagrams and scale drawings from page 260

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Receiver	1 m	Red	–	H/D PNP	3	9	**OJ5020**
	Transmitter	15 m	Red	< 24	–	1	9	**OJ5016**
	Receiver	15 m	Red	–	H/D PNP	3	9	**OJ5017**
	Transmitter	15 m	Red	< 24	–	1	10	**OJ5116**
	Receiver	15 m	Red	–	H/D PNP	3	10	**OJ5117**
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	8 m	Red	< 12	H/D PNP	3	9	**OJ5014**
	Polarisation filter	8 m	Red	< 12	H/D PNP	3	10	**OJ5114**
Diffuse reflection sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Background suppression	7...150 mm	Red	0.8	H/D PNP	3	11	**OJ5056**
	Background suppression	15...200 mm	Red	2x1	H/D PNP	3	12	**OJ5052**
	Background suppression	15...200 mm	Red	2x1	H/D PNP	3	13	**OJ5152**

Rectangular housing O1 Laser PerformanceLine with background suppression, laser class 2

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	0.2...10 m	–	6	normally open / closed programmable PNP	2	14	**O1D101**

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	0.2...10 m	–	6	normally open / closed programmable NPN	4	14	**O1D104**

Rectangular housing O5 laser class 1

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Transmitter	60 m	Red	150	–	1	15	**O5S700**
Through-beam sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Receiver	60 m	Red	–	H/D PNP	2	16	**O5E700**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	15 m	Red	40	H/D PNP	2	17	**O5P700**
Diffuse reflection sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	20...200 mm	Red	1.2	H/D PNP	2	18	**O5H700**

Prismatic reflector (Hygienic and wet areas)

Type	Description	Order no.
	Prismatic reflector · Ø 10 mm · round · fixing by screw · M3 · for retro-reflective laser sensors · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20990**
	Prismatic reflector · Ø 15 mm · round · fixing by screw · M3 · for retro-reflective laser sensors · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20992**
	Prismatic reflector · Ø 19 mm · round · fixing by screw · M3 · for retro-reflective laser sensors · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	**E20993**

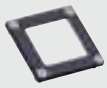
You can find wiring diagrams and scale drawings from page 260

Type	Description	Order no.
	Prismatic reflector · 11 x 11 mm · rectangular · fixing by screw · M3 · for retro-reflective laser sensors · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	E20991
	Prismatic reflector · 14 x 23 mm · rectangular · for retro-reflective laser sensors · Housing materials: front plate: PMMA / base: ABS	E20989
	Prismatic reflector · 30 x 20 mm · rectangular · for retro-reflective laser sensors · Housing materials: front plate: PMMA / base: ABS	E20994
	Prismatic reflector · 50 x 10 mm · rectangular · for retro-reflective laser sensors · Housing materials: front plate: PMMA / base: ABS	E20988
	Prismatic reflector · 50 x 50 mm · rectangular · for retro-reflective laser sensors and glass and film detection · Housing materials: plastics	E20722

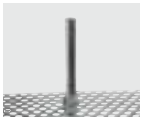
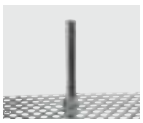
Accessories OG housing

Type	Description	Order no.
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod or free-standing depending on the clamp · for type OG · Housing materials: stainless steel 316Ti / 1.4571	E20737
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	E21220
	Fixture for mounting and fine adjustment of laser units · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21219
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20720
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: diecast zinc / fixture: steel	E20721
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21206
	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21207

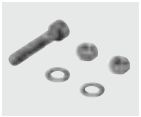
Accessories O1 housing

Type	Description	Order no.
	Prismatic reflector · 226 x 262 mm · rectangular · for type O1D · Housing materials: plastics	**E21159**
	Mounting adapter · O1D · for optical distance sensors · Process connection · G1A · for type O1D · Housing materials: flange: stainless steel 316L / 1.4404 / sealing: FKM / Protective cover: PMMA transparent / screws: high-grade stainless steel	**E21224**
	Fixture for mounting and fine adjustment of laser units · O1D · Clamp mounting · rod or free-standing depending on the clamp · Housing materials: fixture: aluminium transparent anodised / plastics: POM / screws: stainless steel	**E1D100**
	Mounting set · E2D101 + E20938 + E20951	**E21079**
	Angle bracket · O1D, O4 · for type O1D, O4 · Housing materials: stainless steel 316L / 1.4404	**E21120**
	Protective bracket · O1D · for type O1D · Housing materials: Angle bracket: stainless steel 316 / 1.4401 / screws: stainless steel / housing: polyamide	**E21236**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: PMMA transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21133**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: glass transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21171**

Accessories for system components

Type	Description	Order no.
	mounting rod · Ø 10 / M8 · Length: 150 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E21081**
	mounting rod · Ø 10 / M8 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E80310**
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E20938**
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E20940**

You can find wiring diagrams and scale drawings from page 260

Type	Description	Order no.
	Head cap screw · M8 x 40 mm · ISO 4762 (DIN 912) · free-standing M8 · Housing materials: screw: steel galvanised	E21204
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: steel galvanised	E21208
	Head cap screw · M10 x 45 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: high-grade stainless steel	E21209
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	E20951

Rectangular housing O1 for optical distance measurement, laser class 1

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U_b [V]	Wiring diagr. no.	Draw-ing no.	Order no.
Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable) · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Photoelectric distance sensor	0.3...6 m	1...33	6	18...30	5	14	O1D155

Rectangular housing O1 for optical distance measurement, laser class 2

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U_b [V]	Wiring diagr. no.	Draw-ing no.	Order no.
Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable) · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Photoelectric distance sensor	1...75 m	1...33	150	18...30	5	14	O1D106
	Photoelectric distance sensor	0.2...10 m	1...33	6	18...30	5	14	O1D105
	Photoelectric distance sensor	0.2...10 m	1...50	6	18...30	5	14	O1D100
Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable) · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Photoelectric distance sensor	0.2...10 m	1...50	6	18...30	6	14	O1D103

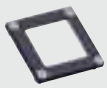
Rectangular housing O1 Laser PerformanceLine with background suppression, laser class 2

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Background suppression	0.2...10 m	–	6	normally open / closed programmable PNP	2	14	**O1D101**
Photoelectric distance sensor · M12 connector · 10...30 DC · metal · IP67 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Background suppression	0.2...10 m	–	6	normally open / closed programmable NPN	4	14	**O1D104**

Rectangular housing O1 for optical level measurement, laser class 2

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U_b [V]	Wiring diagr. no.	Draw-ing no.	Order no.
Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable) · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Optical level sensor	0.2...10 m	1...33	6	18...30	5	14	**O1D300**

Accessories

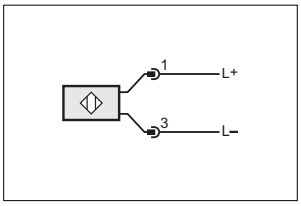
Type	Description	Order no.
	Prismatic reflector · 226 x 262 mm · rectangular · for type O1D · Housing materials: plastics	**E21159**
	Fixture for mounting and fine adjustment of laser units · O1D · Clamp mounting · rod or free-standing depending on the clamp · Housing materials: fixture: aluminium transparent anodised / plastics: POM / screws: stainless steel	**E1D100**
	Mounting set · E2D101 + E20938 + E20951	**E21079**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: PMMA transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21133**
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: glass transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	**E21171**
	Cooling box · Protective housing with an active cooling system for the O1D design · for type O1D · Housing materials: housing: aluminium transparent anodised / cover: aluminium black anodised / bezel: aluminium black anodised / window: float glass / cable gland: Brass nickel-plated / nozzle: Brass nickel-plated / sealing: FPM	**E21248**

You can find wiring diagrams and scale drawings from page 260

Type	Description	Order no.
	Cable · 10 m	E12274

Wiring diagrams

1



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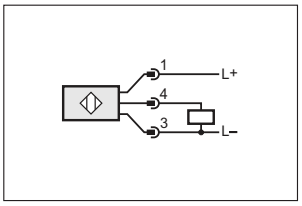

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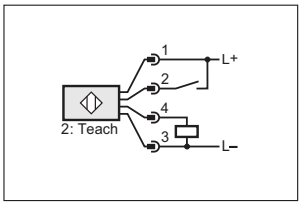

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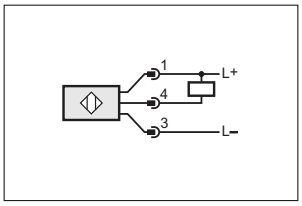

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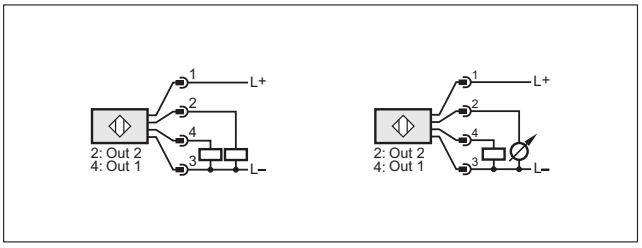

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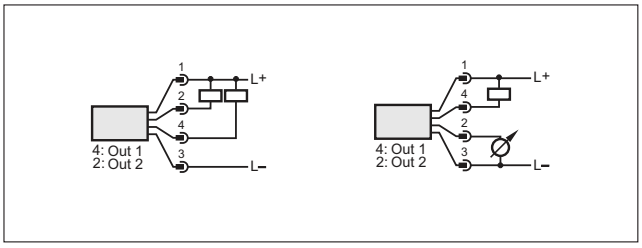
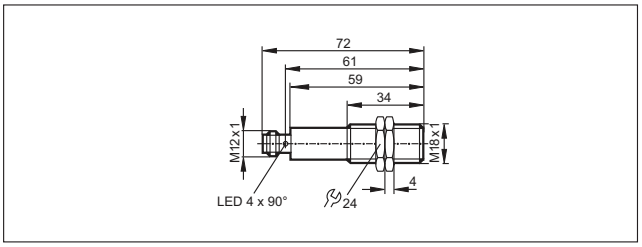


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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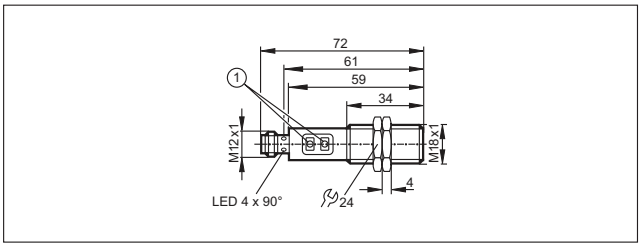
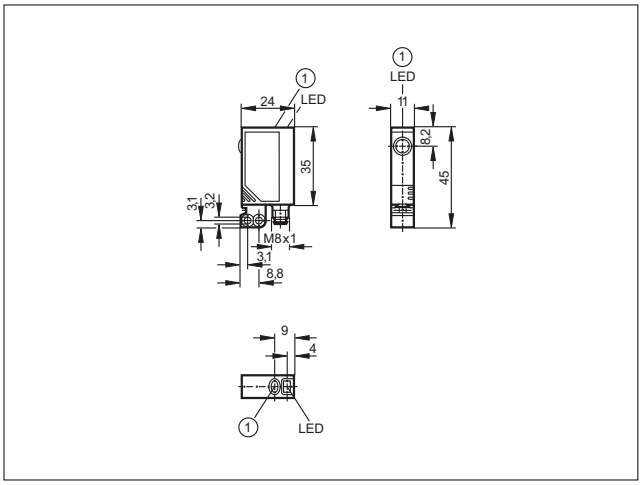


1: Programming buttons

3



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Scale drawings / drawing no. – CAD download: www.ifm.com

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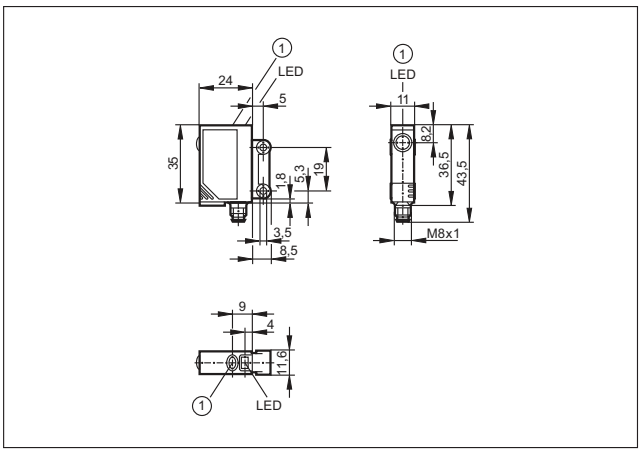

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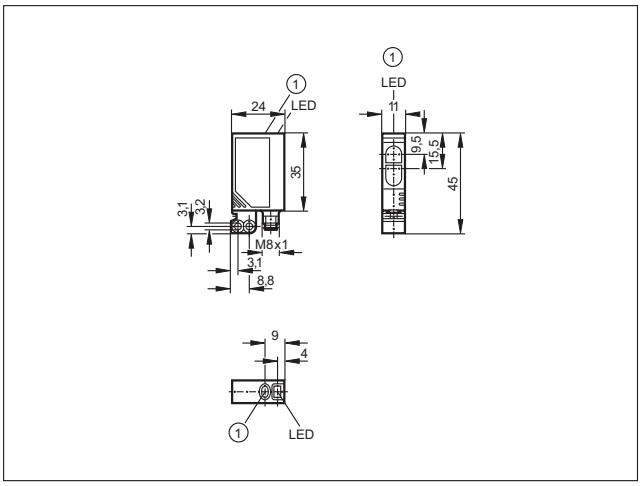
5



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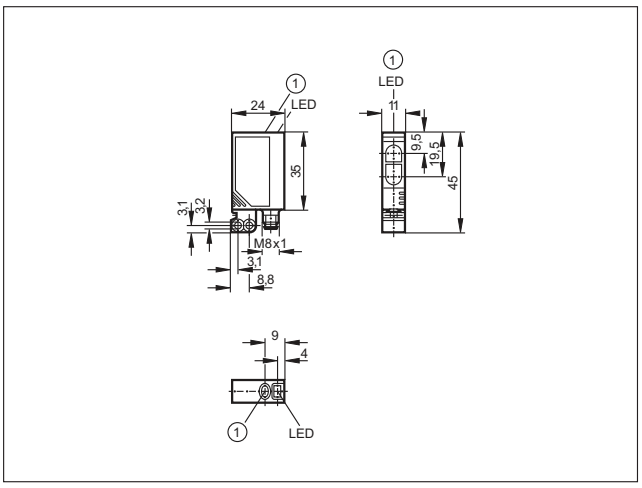
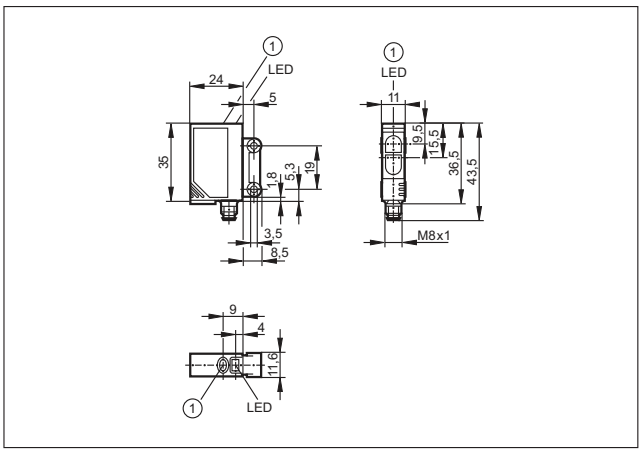


1: pushbutton

7



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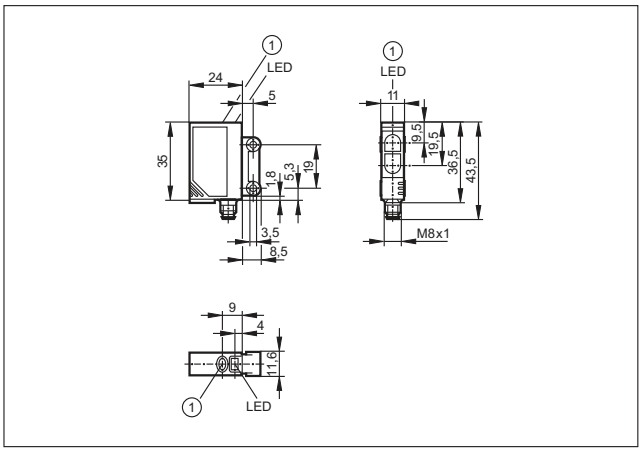
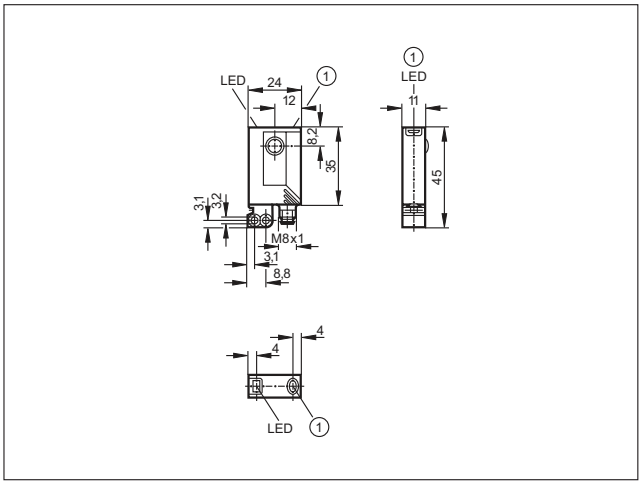


1: pushbutton

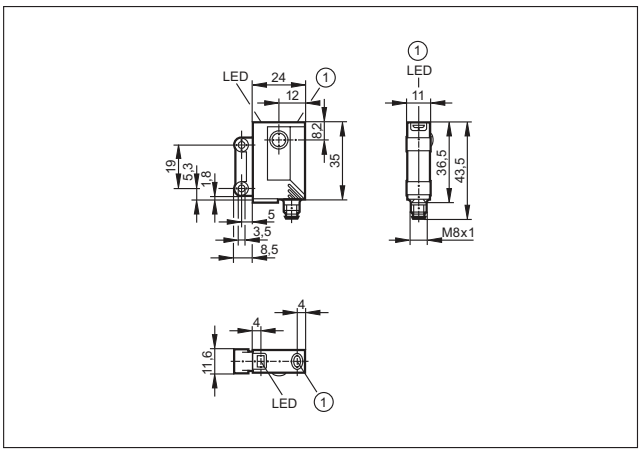
9



1: pushbutton

Scale drawings / drawing no. – CAD download: www.ifm.com

10



1: pushbutton

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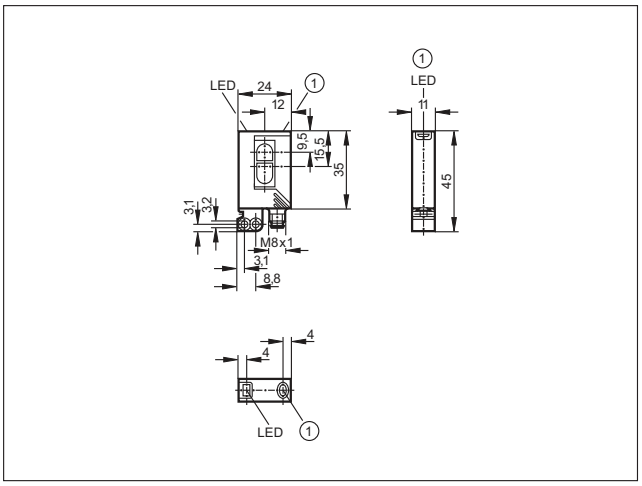

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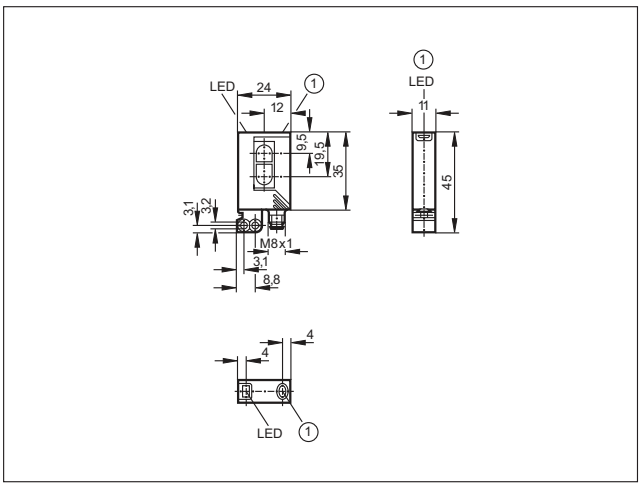
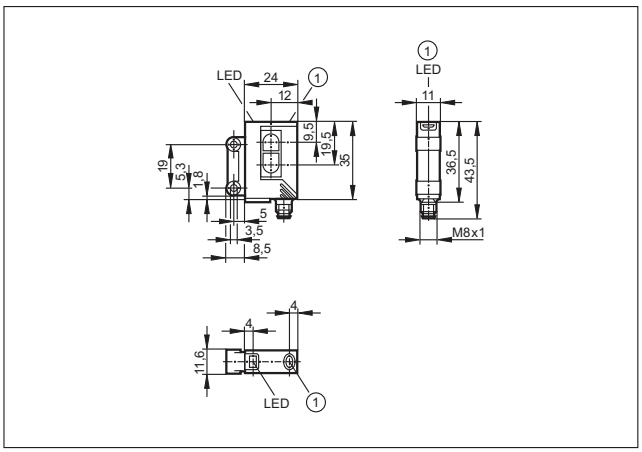
12



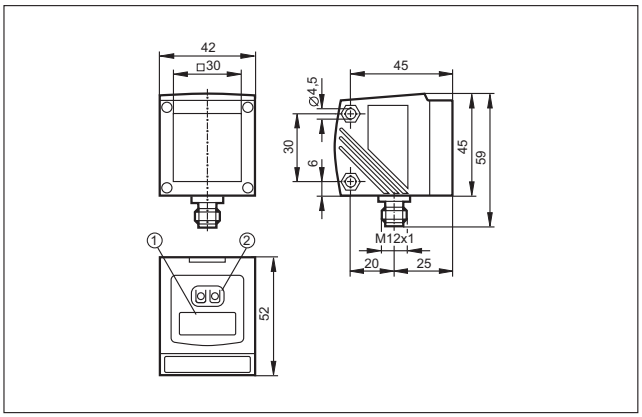
1: pushbutton

13



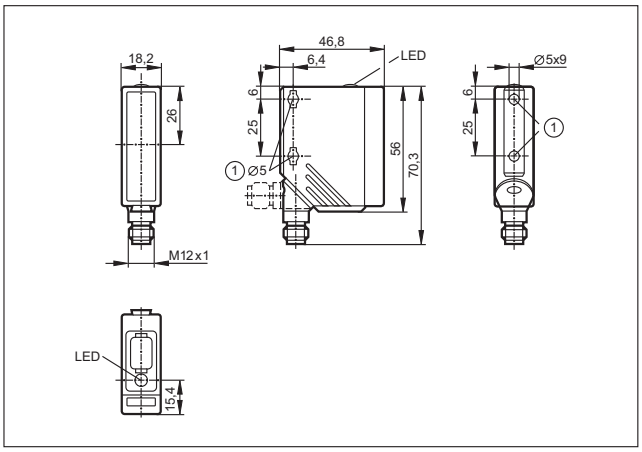
1: pushbutton

14



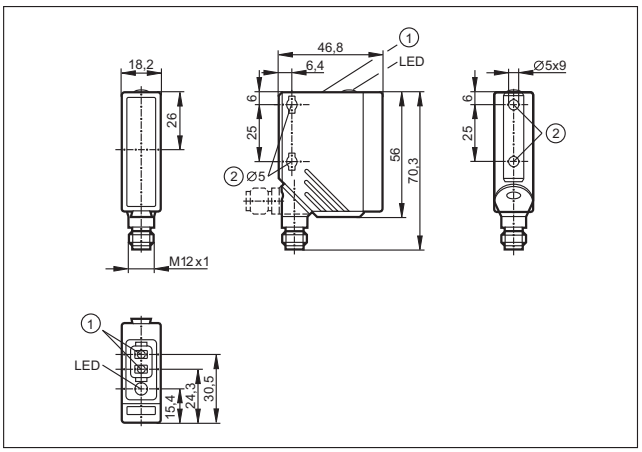
1: 4-digit alphanumeric display, 2: Programming buttons

15

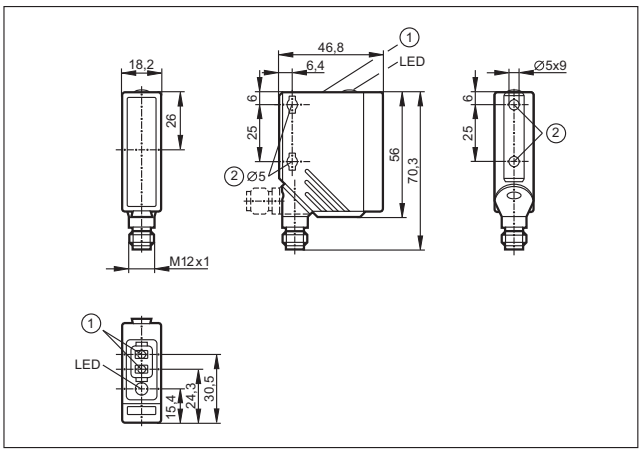


Scale drawings / drawing no. – CAD download: www.ifm.com

16

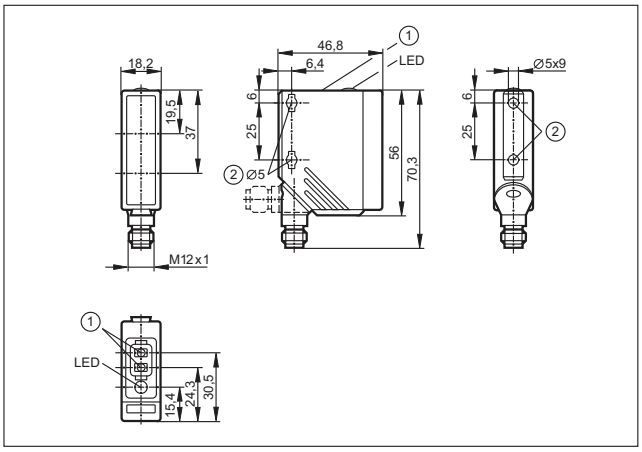


17



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

18



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

- **Powerful single and multichannel fibre optic amplifiers**
- **Manual or automatic setting by means of “teach in”**
- **Helpful display to check operation, switching status and function**
- **Wide choice of fibre optics**
- **Easy mounting**

Fibre optics systems

Fibre optics come into their own where mounting space is at a premium. They are connected to fibre optic amplifiers which contain the photoelectric components and output circuitry. Two photoelectric operating principles can be used:

Through-beam

Transmitting and receiving fibre optics are laid separately. The two ends (fibre optic heads) are mounted opposite each other. The light beam break is evaluated. As with standard photoelectrics this results in longer ranges and higher contrast for reliable sensing.

Diffuse reflection

Transmitting and receiving fibre optics are in one sheath and one sensing head. Evaluation is based on the diffuse reflection from the object, thus relies on the object surface characteristics.

Classification of fibre optics

Acrylic fibre optics

Acrylic fibre optics are suited for most standard applications. Acrylic fibres can be cut to length to fit the application.

High-flex fibre optics

More robust versions of the acrylic fibres are useful when the application places mechanic stresses on the fibre, such as repeated bending or a tight bend radius.

Glass fibre optics

Where particular demands such as heat or chemical resistance are placed on the fibre, glass fibre solutions are offered with sheathing materials which will also withstand harsh environments.

Versatile fibre optic amplifiers

The OOF amplifiers include some useful features. Logical combinations can be applied too, and two outputs can be assigned to one fibre, resulting in two switchpoints from one sensing head. The pulse stretching function (delay time) allows the user to set a minimum pulse duration on the switching output. Where multiple fibres are used there is no danger of cross-talk, as the amplifier polls each one sequentially. The microprocessor-based setting is automated, while manual setting is also possible for critical situations.

Minute objects up to 0.5 mm are detected safely.

Fibre optic systems can also be mounted in places where access is difficult.

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OBF amplifiers for acrylic fibre optics	266
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Acrylic fibre optics for OBF / OOF housings, through-beam system, can be cut to length	269
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Acrylic fibres on a reel for OBF housing	270
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OKF amplifiers for glass fibre optics	270 - 271
OUF amplifiers for glass fibre optics	271
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OOF amplifiers for acrylic fibre optics

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Draw-ing no.	Order no.
Type OOF · M12 connector · plastics · DC · Wiring diagram no. 1 · Connector groups 14, 16, 17									
	2	FE/FT-11	Red	3.8 m	0...300 mm	H/D PNP	12...36	1	**OO5000**
Type OOF · M12 connector · plastics · DC · Wiring diagram no. 5 · Connector groups 16, 17									
	4	FE/FT-11	Red	3.8 m	0...300 mm	H/D PNP	12...36	2	**OO5001**
Type OOF · M16 connector · plastics · DC · Wiring diagram no. 6 · Connector group 23									
	6	FE/FT-11	Red	3.8 m	0...300 mm	H/D PNP	12...36	3	**OO5002**
Type OOF · M16 connector · plastics · DC · Wiring diagram no. 7 · Connector group 23									
	8	FE/FT-11	Red	3.8 m	0...300 mm	H/D PNP	12...36	4	**OO5003**

OBF amplifiers for acrylic fibre optics

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Draw-ing no.	Order no.
Type OBF · M12 connector · plastics · DC · Wiring diagram no. 8 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	1	FE/FT-11	Red	0...2 m	0...100 mm	H/D PNP/NPN	10...30	5	**OBF500**
Type OBF · M8 connector · plastics · DC · Wiring diagram no. 8 · Connector groups 4, 5, 76, 82									
	1	FE/FT-11	Red	0...2 m	0...100 mm	H/D PNP/NPN	10...30	6	**OBF501**
Type OBF · Cable 2 m · plastics · DC · Wiring diagram no. 9									
	1	FE/FT-11	Red	0...2 m	0...100 mm	H/D PNP/NPN	10...30	7	**OBF502**
Type OBF · M8 connector · plastics · DC · Wiring diagram no. 10 · Connector groups 1, 3									
	1	FE/FT-11	Red	0...2 m	0...100 mm	H/D PNP/NPN	10...30	6	**OBF503**

Acrylic fibre optics for OBF / OOF housings, through-beam system

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-11	PMMA	60 / 130 / 160	aluminium	-40...70	PE (polyethylene)	8	**E20609**
	FE-11	PMMA	60 / 130 / 160	aluminium	-40...70	PE (polyethylene)	9	**E20612**
	FE-11	PMMA	150 / 210 / 800	aluminium	-40...70	PE (polyethylene)	9	**E20615**
	FE-11	PMMA	150 / 300 / 700	aluminium	-40...70	PE (polyethylene)	10	**E20757**
	FE-11	PMMA	200 / 350 / 800	aluminium	-40...70	PE (polyethylene)	11	**E20603**
	FE-11	PMMA	200 / 450 / 800	aluminium	-40...70	PE (polyethylene)	9	**E20606**
	FE-11	PMMA	400 / 900 / 1600	aluminium	-40...70	PE (polyethylene)	12	**E20753**
	FE-11	PMMA	1200 / 2000 / 3800	aluminium	-40...70	PE (polyethylene)	13	**E20752**
	FE-11	PMMA	60 / 130 / 160	stainless steel	-40...70	PE (polyethylene)	14	**E20751**
	FE-11	PMMA	140 / 230 / 400	stainless steel	-40...70	PE (polyethylene)	15	**E20714**
	FE-11	PMMA	200 / 450 / 800	stainless steel	-40...70	PE (polyethylene)	16	**E20750**
	FE-11	PMMA	20 / 20 / 20	PA	-25...60	PE (polyethylene)	17	**E20689**

Acrylic fibre optics for OBF / OOF housings, through-beam system, highly flexible

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-11	PMMA	50 / 56 / 120	aluminium	-40...60	PE (polyethylene)	8	**E21103**

You can find wiring diagrams and scale drawings from page 275

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FT-11	PMMA	50 / 56 / 120	aluminium	-40...60	PE (polyethylene)	9	**E21104**
	FT-11	PMMA	250 / 350 / 750	aluminium	-40...60	PE (polyethylene)	18	**E21101**
	FT-11	PMMA	250 / 350 / 750	aluminium	-40...60	PE (polyethylene)	9	**E21102**

Acrylic fibre optics for OBF / OOF housings, diffuse reflection system

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FT-11	PMMA	6 / 10 /	aluminium	-40...70	PE (polyethylene)	19	**E20756**
	FT-11	PMMA	20 / 25 / 60	aluminium	-40...70	PE (polyethylene)	20	**E20639**
	FT-11	PMMA	20 / 25 / 60	aluminium	-40...70	PE (polyethylene)	11	**E20712**
	FT-11	PMMA	60 / 70 / 300	aluminium	-40...70	PE (polyethylene)	21	**E20645**
	FT-11	PMMA	60 / 90 / 300	aluminium	-40...70	PE (polyethylene)	21	**E20651**
	FT-11	PMMA	60 / 70 / 300	aluminium	-40...70	PE (polyethylene)	22	**E20648**
	FT-11	PMMA	60 / 90 / 300	aluminium	-40...70	PE (polyethylene)	22	**E20654**
	FT-11	PMMA	60 / 75 / 200	aluminium	-40...70	PE (polyethylene)	23	**E20758**
	FT-11	PMMA	70 / 100 / 300	aluminium	-40...70	PE (polyethylene)	22	**E20633**
	FT-11	PMMA	15 / 25 / 60	stainless steel	-40...70	PE (polyethylene)	24	**E20748**
	FT-11	PMMA	20 / 25 / 60	stainless steel	-40...70	PE (polyethylene)	25	**E20711**

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FT-11	PMMA	40 / 60 / 150	stainless steel	-40...70	PE (polyethylene)	26	**E20715**
	FT-11	PMMA	70 / 100 / 300	stainless steel	-40...70	PE (polyethylene)	27	**E20749**
	FE-11	PMMA	–	–	-30...70	PE (polyethylene)	28	**E20772**

Acrylic fibre optics for OBF / OOF housings, diffuse reflection system, highly flexible

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FT-11	PMMA	10 / 10 / 30	aluminium	-40...60	PE (polyethylene)	29	**E21106**
	FT-11	PMMA	10 / 10 / 30	aluminium	-40...60	PE (polyethylene)	18	**E21107**
	FT-11	PMMA	70 / 104 / 180	aluminium	-40...60	PE (polyethylene)	30	**E21105**

Acrylic fibre optics for OBF / OOF housings, through-beam system, can be cut to length

Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-11	PMMA	175 / 370 / 700	aluminium	-40...70	–	31	**E20767**

Acrylic fibre optics for OBF / OOF housings, diffuse reflection system, can be cut to length

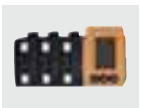
Type	System	Fibre optic material	Range OB50.. / OBF5.. / OO50.. [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-11	PMMA	55 / 110 / 235	aluminium	-40...70	–	32	**E20765**

You can find wiring diagrams and scale drawings from page 275

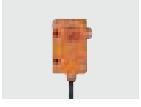
Acrylic fibres on a reel for OBF housing

Type	Description	Order no.
	acrylic fibres on a reel · 20 m · for type OBF, OOF · Housing materials: PE (polyethylene), Fibre optic: PMMA, can be cut to length	**E20773**
	acrylic fibres on a reel · 50 m · for type OBF, OOF · Housing materials: PE (polyethylene), Fibre optic: PMMA, can be cut to length	**E20774**
	acrylic fibres on a reel · 20 m · for type OBF, OOF · Housing materials: PE (polyethylene), Fibre optic: PMMA, can be cut to length	**E20775**

OOF amplifiers for glass fibre optics

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Drawing no.	Order no.
Type OOF · M12 connector · plastics · DC · Wiring diagram no. 1 · Connector groups 14, 16, 17									
	2	FE/FT-00	Red	0.4 m	0...200 mm	H/D PNP	12...36	33	**OO5004**
Type OOF · M12 connector · plastics · DC · Wiring diagram no. 5 · Connector groups 16, 17									
	4	FE/FT-00	Red	0.4 m	0...200 mm	H/D PNP	12...36	34	**OO5005**
Type OOF · M16 connector · plastics · DC · Wiring diagram no. 6 · Connector group 23									
	6	FE/FT-00	Red	0.4 m	0...200 mm	H/D PNP	12...36	35	**OO5006**
Type OOF · M16 connector · plastics · DC · Wiring diagram no. 7 · Connector group 23									
	8	FE/FT-00	Red	0.4 m	0...200 mm	H/D PNP	12...36	36	**OO5007**

OKF amplifiers for glass fibre optics

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Drawing no.	Order no.
Type OKF · Cable 2 m · plastics · DC · Wiring diagram no. 11									
	1	FE/FT-00	Red	0...0.12 m	0...40 mm	H/D PNP	10...50	37	**OK5001**

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Draw-ing no.	Order no.
Type OKF · M12 connector · plastics · DC · Wiring diagram no. 12 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	1	FE/FT-00	Red	0...0.12 m	0...40 mm	H/D PNP	10...50	38	**OK5008**

OUF amplifiers for glass fibre optics

Type	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U_b [V]	Draw-ing no.	Order no.
Type OUF · Cable 2 m · plastics · DC · Wiring diagram no. 2									
	1	FE/FT-00	Infrared	0.12 m	40 mm	H PNP	10...55	39	**OU5001**
	1	FE/FT-00	Infrared	0.12 m	40 mm	D PNP	10...55	39	**OU5002**
Type OUF · M12 connector · plastics · DC · Wiring diagram no. 3 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	1	FE/FT-00	Infrared	0...0.12 m	0...40 mm	H PNP	10...50	40	**OU5043**
Type OUF · M12 connector · plastics · DC · Wiring diagram no. 4 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151									
	1	FE/FT-00	Infrared	0...0.12 m	0...40 mm	D PNP	10...50	40	**OU5044**

Glass fibre optics for OOF / OKF and OUF housings, through-beam system

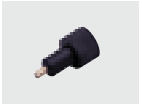
Type	System	Fibre optic material	Range OOF / OKF / OUF [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-00	glass	400 / 120 / 120	aluminium	-20...80	PVC	41	**E20059**
	FE-00	glass	400 / 120 / 120	aluminium	-20...80	PVC	42	**E20060**
	FE-00	glass	400 / 120 / 120	aluminium	-20...80	PVC	43	**E20062**
	FE-00	glass	400 / 120 / 120	aluminium	-20...80	PVC	44	**E20228**

You can find wiring diagrams and scale drawings from page 275

Type	System	Fibre optic material	Range OOF / OKF / OUF [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FE-00	glass	160 / 50 / 50	stainless steel	-20...80	PVC	45	**E20061**
	FE-00	glass	400 / 120 / 120	aluminium	-40...290	aluminium	46	**E20128**
	FE-00	glass	400 / 120 / 120	aluminium	-40...290	aluminium	47	**E20130**
	FE-00	glass	400 / 120 / 120	aluminium	-40...290	aluminium	48	**E20129**
	FE-00	glass	160 / 50 / 50	stainless steel	-40...290	aluminium	49	**E20127**
	FE-00	glass	160 / 50 / 50	stainless steel	-20...150	metal silicone	50	**E20506**
	FE-00	glass	400 / 120 / 120	stainless steel	-20...150	metal silicone	51	**E20505**
	FE-00	glass	400 / 120 / 120	stainless steel	-20...150	metal silicone	52	**E20492**
	FE-00	glass	400 / 120 / 120	stainless steel	-20...150	metal silicone	53	**E20493**

Glass fibre optics for OOF / OKF and OUF housings, diffuse reflection system

Type	System	Fibre optic material	Range OOF / OKF / OUF [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Draw-ing no.	Order no.
	FT-00	glass	200 / 40 / 40	aluminium	-20...80	PVC	54	**E20051**
	FT-00	glass	200 / 40 / 40	aluminium	-20...80	PVC	55	**E20052**
	FT-00	glass	200 / 40 / 40	aluminium	-20...80	PVC	56	**E20054**
	FT-00	glass	200 / 40 / 40	Brass	-20...80	PVC	57	**E20249**
	FT-00	glass	24 / 6 / 6	stainless steel	-20...80	PVC	58	**E20230**

Type	System	Fibre optic material	Range OOF / OKF / OUF [mm]	Sensing head material	Ambient temperature [°C]	Sheathing material	Drawing no.	Order no.
	FT-00	glass	24 / 8 / 8	stainless steel	-20...80	PVC	45	**E20053**
	FT-00	glass	200 / 40 / 40	aluminium	-40...290	aluminium	59	**E20055**
	FT-00	glass	200 / 40 / 40	aluminium	-40...290	aluminium	60	**E20056**
	FT-00	glass	200 / 40 / 40	aluminium	-40...290	aluminium	61	**E20058**
	FT-00	glass	24 / 8 / 8	stainless steel	-40...290	aluminium	49	**E20057**
	FT-00	glass	24 / 8 / 8	stainless steel	-20...150	metal silicone	50	**E20507**
	FT-00	glass	200 / 40 / 40	stainless steel	-20...150	metal silicone	62	**E20489**
	FT-00	glass	200 / 40 / 40	stainless steel	-20...150	metal silicone	63	**E20494**
	FT-00	glass	200 / 40 / 40	stainless steel	-20...150	metal silicone	56	**E20495**
	FT-00	glass	- / 40 / 40	Brass	-20...80	–	64	**E20078**
	FT-00	glass	200 / 40 / 40	stainless steel	-25...80	–	65	**E20215**

Accessories

Type	Description	Order no.
	Lens attachment · Ø 5 mm / M3 · for through-beam fibre optics · Housing materials: aluminium black anodised / glass	**E20679**
	Lens attachment · Ø 6 mm / M4 · for through-beam fibre optics · Housing materials: aluminium black anodised / glass	**E20680**
	Lens attachment · D5x10-M3-ALU · for through-beam fibre optics · M3 · Housing materials: aluminium black anodised	**E20754**

You can find wiring diagrams and scale drawings from page 275

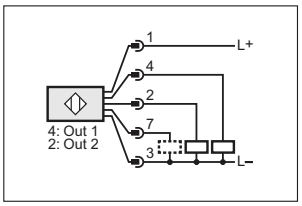
Type	Description	Order no.
	Lens attachment · D5x10-M4-ALU · for through-beam fibre optics · M4 · Housing materials: aluminium black anodised	**E20755**
	Diaphragm attachment · D5x10-M3-ALU/D0.4 · for through-beam fibre optics · M3 · Housing materials: aluminium black anodised	**E20762**
	Angle bracket · for type OBF · Housing materials: steel galvanised	**E20593**
	Angle bracket · OU · with mounting material · Housing materials: galvanised steel	**E20211**
	Mounting clamp · Ø 3 mm · for fibre optics · Housing materials: aluminium black anodised	**E20107**
	Mounting clamp · Ø 3.5 mm · for fibre optics · Housing materials: aluminium black anodised	**E20106**
	Mounting clamp · Ø 4.5 mm · for fibre optics · Housing materials: aluminium black anodised	**E20105**
	Mounting clamp · Ø 5 mm · for fibre optics · Housing materials: aluminium black anodised	**E20104**
	Mounting clamp · Ø 6 mm · for fibre optics · Housing materials: aluminium black anodised	**E20103**
	Mounting clamp · Ø 7 mm · for fibre optics · Housing materials: aluminium black anodised	**E20102**
	Mounting clamp · Ø 8 mm · Housing materials: aluminium black anodised	**E10221**
	Mounting clamp · Ø 10 mm · for fibre optics · Housing materials: PBT	**E20353**
	cutter for fibre optics · for type FE/FT-11 · Housing materials: plastics	**E20600**

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue
VT	lilac
WH	white

1



7: function check

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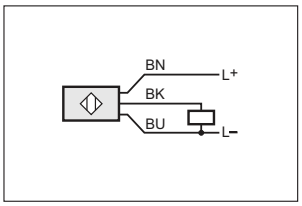

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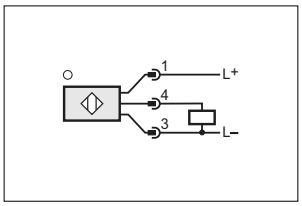

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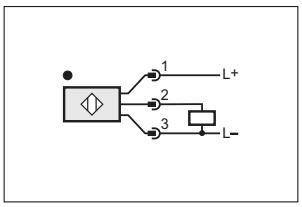

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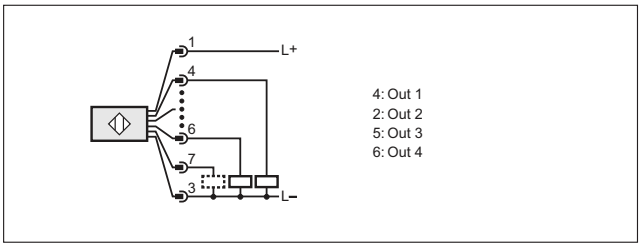

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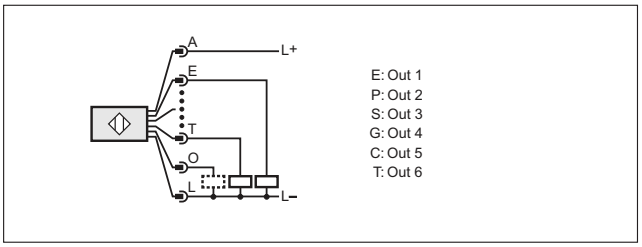

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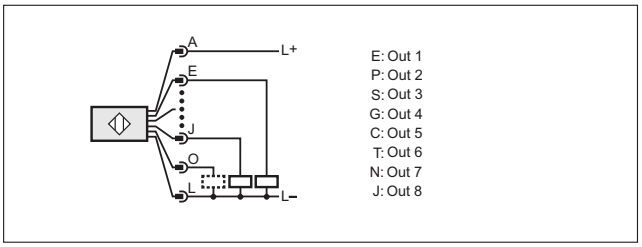

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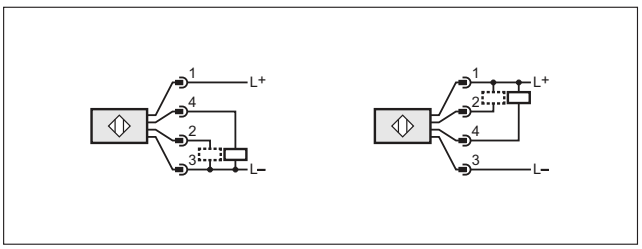

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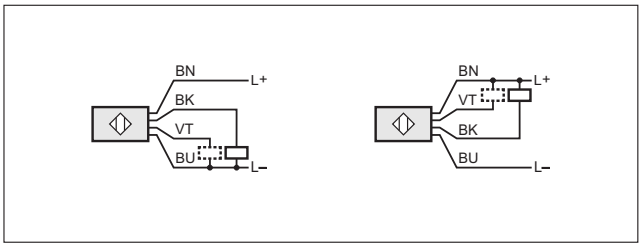

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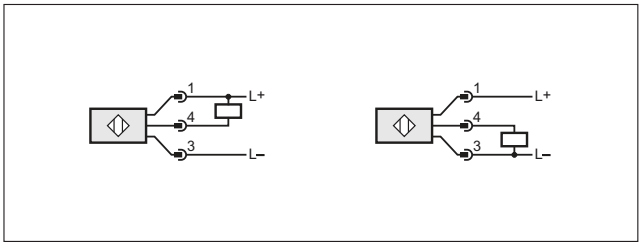

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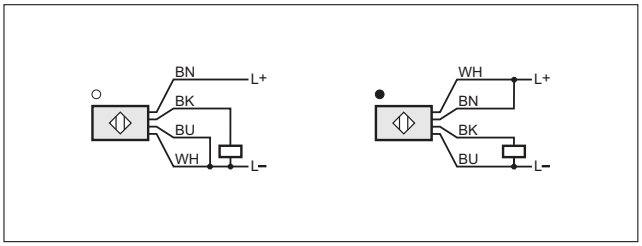

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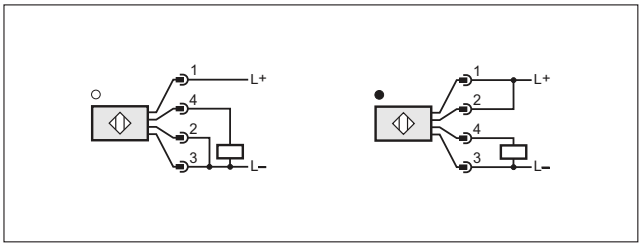

Scale drawings / drawing no. – CAD download: www.ifm.com

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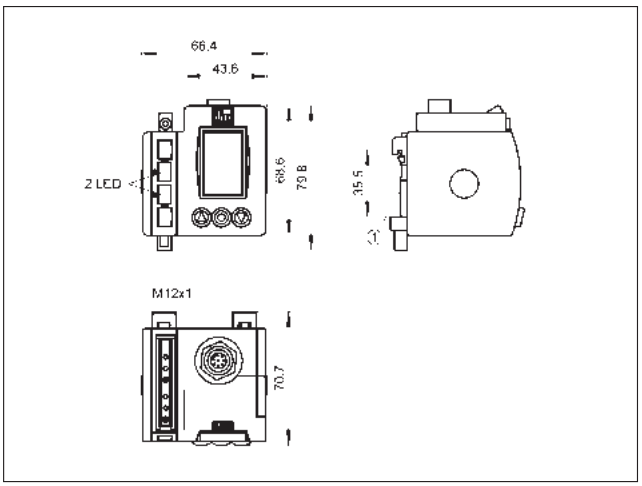

1: Mounting on DIN rail

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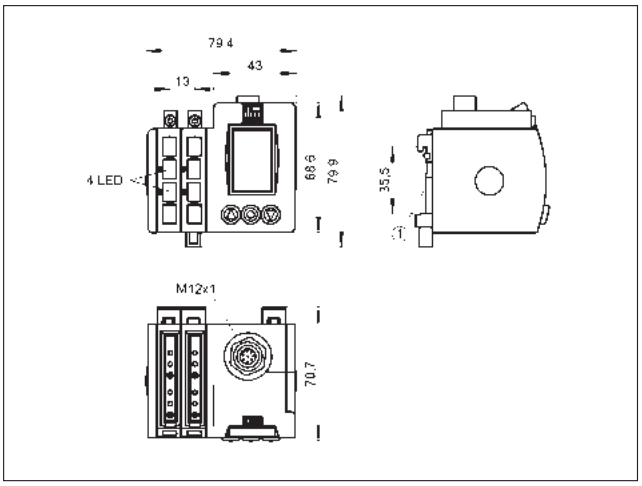

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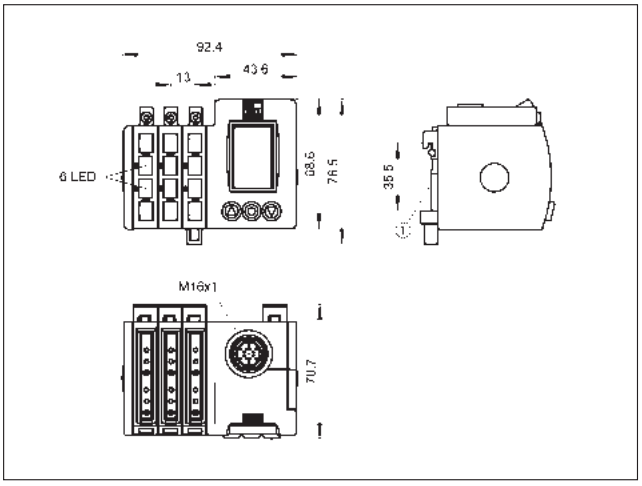

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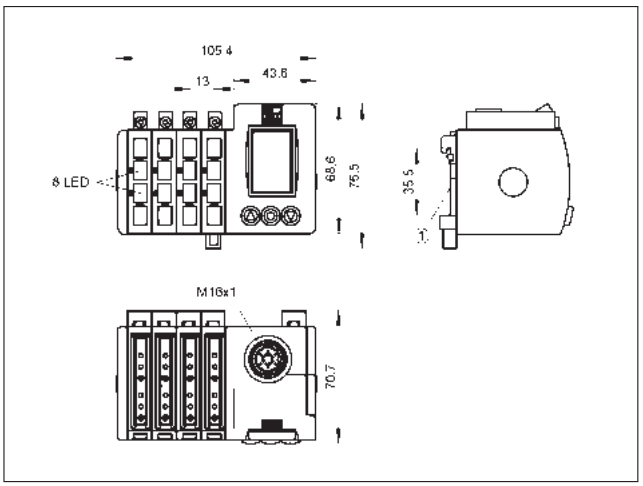

1: Mounting on DIN rail

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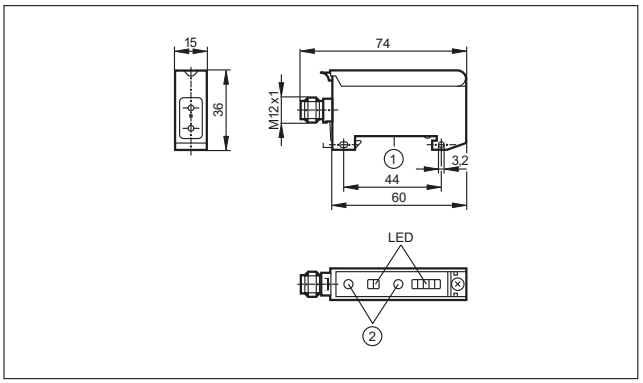

1: Mounting on DIN rail, 2: setting pushbuttons

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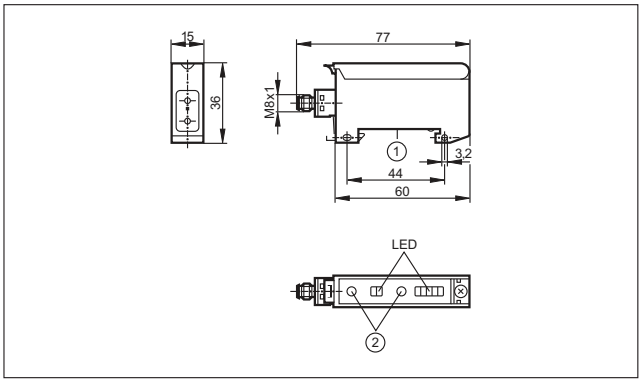

1: Mounting on DIN rail, 2: setting pushbuttons

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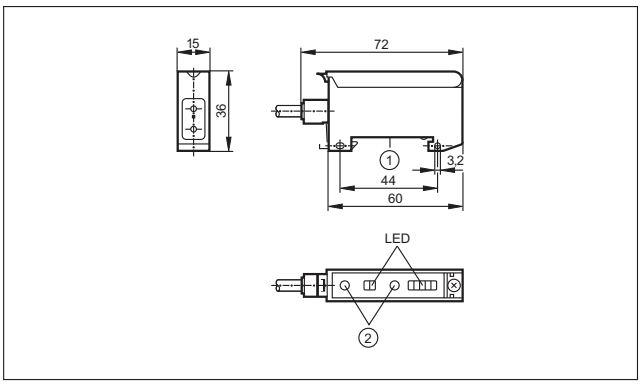

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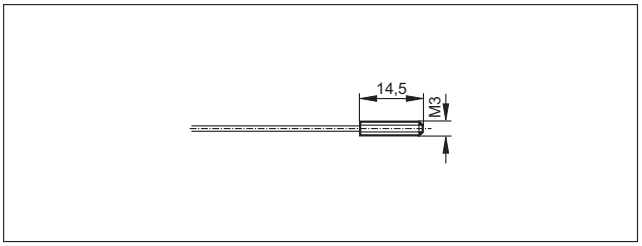

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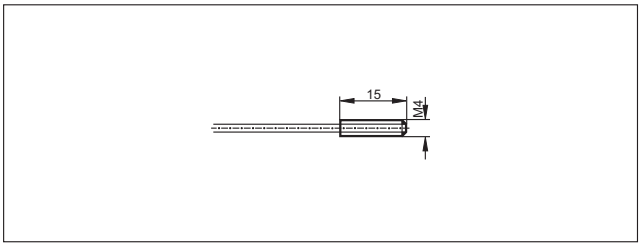

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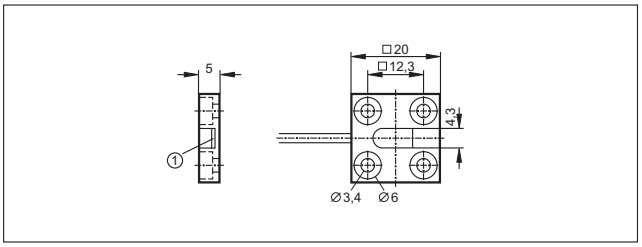

1: Sensing surface

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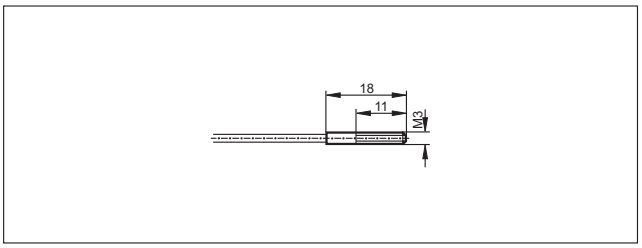

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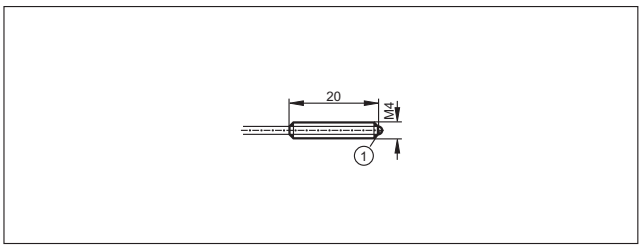

1: glass lens

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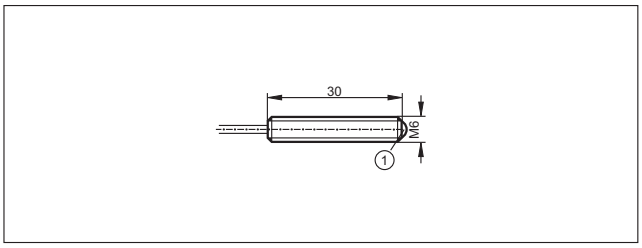

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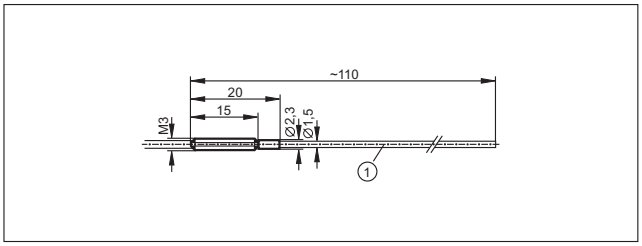

1: bendable

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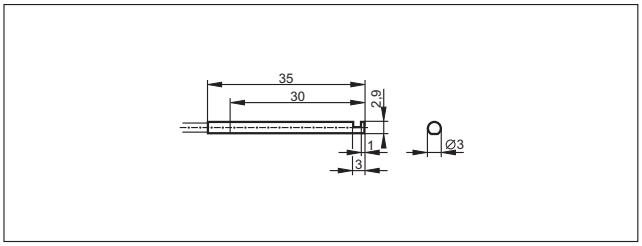

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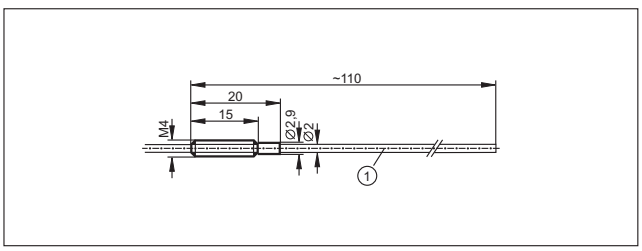

1: bendable

Scale drawings / drawing no. – CAD download: www.ifm.com

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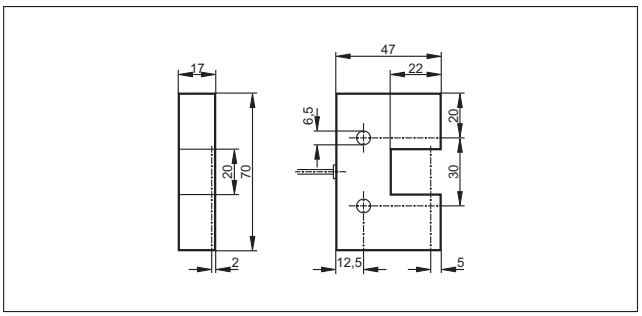

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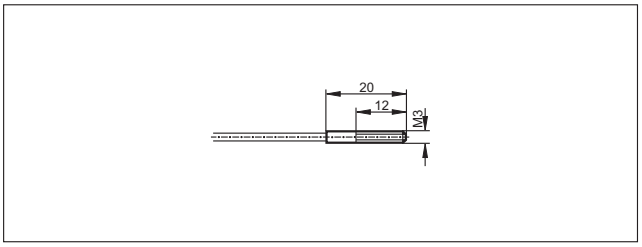

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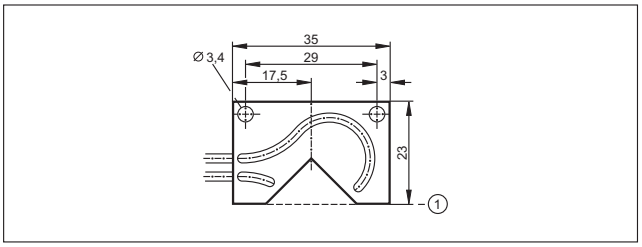

1: Reference edge

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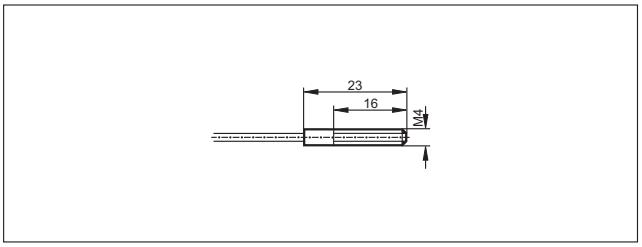

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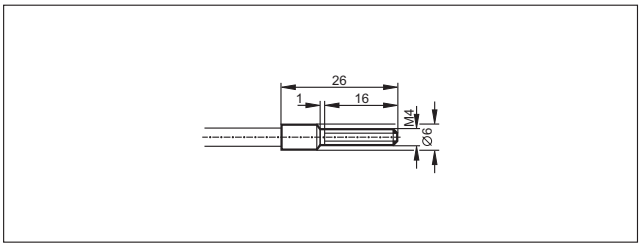

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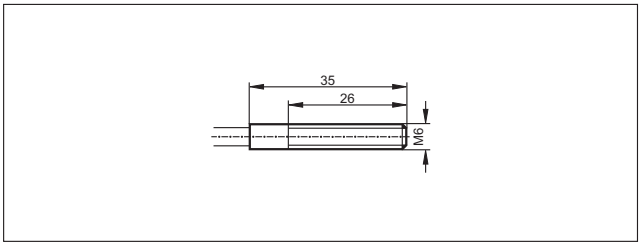

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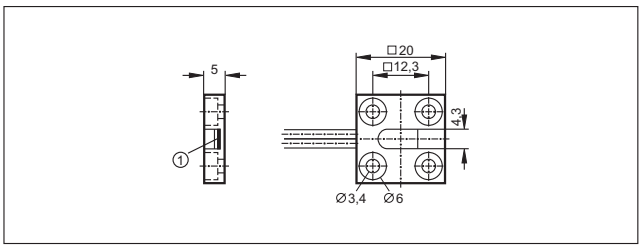

1: Sensing surface

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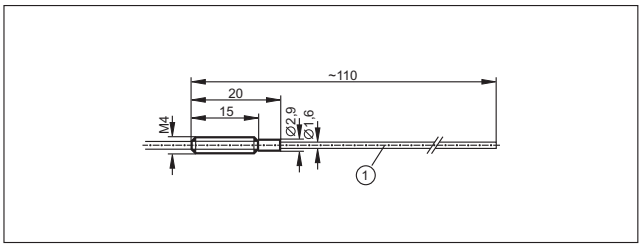

1: bendable

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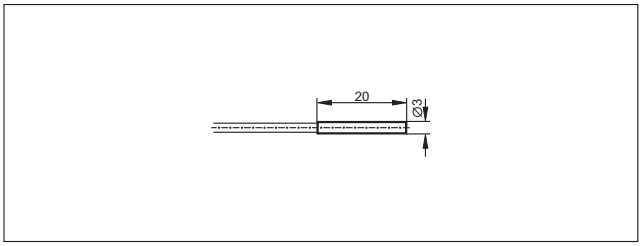

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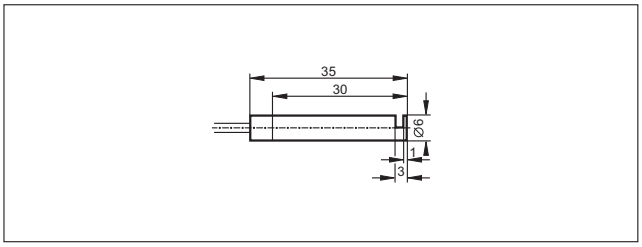

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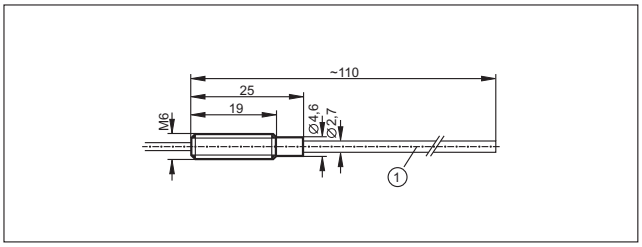

1: bendable

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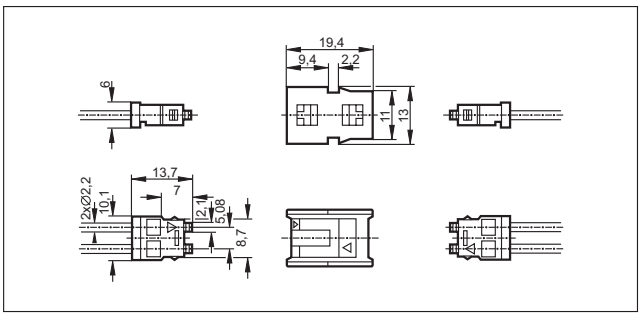

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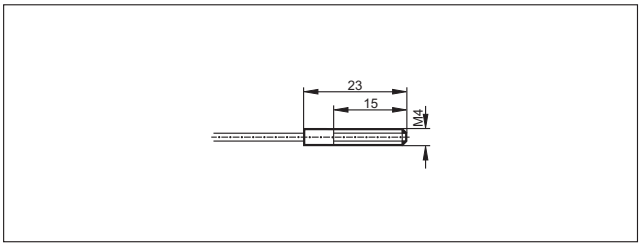

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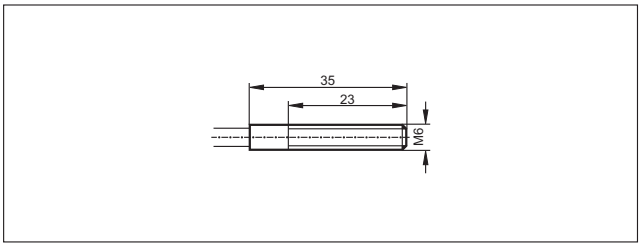

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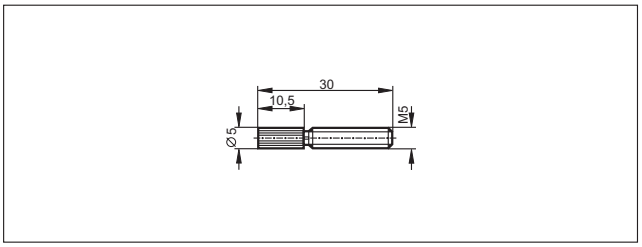

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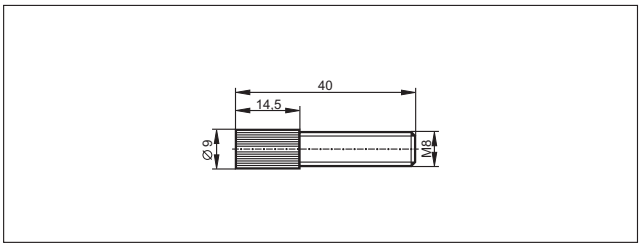

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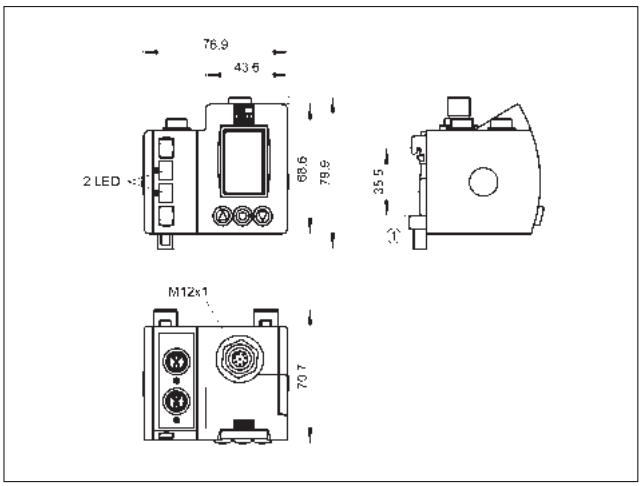

1: Mounting on DIN rail

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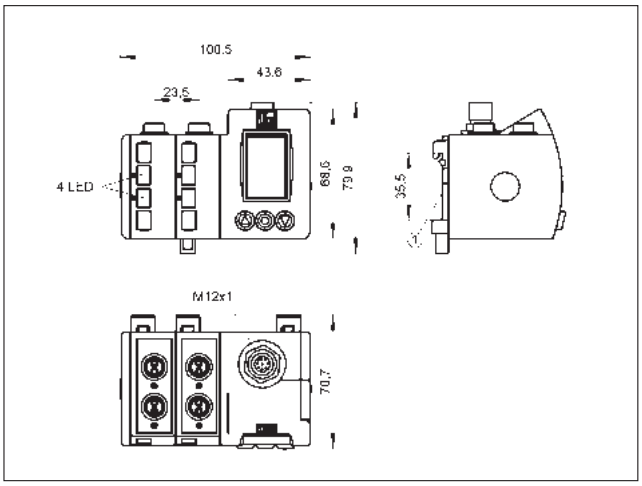

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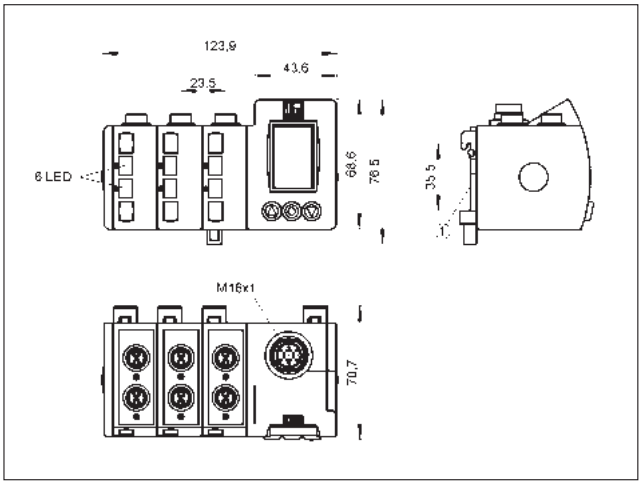

1: Mounting on DIN rail

Scale drawings / drawing no. – CAD download: www.ifm.com

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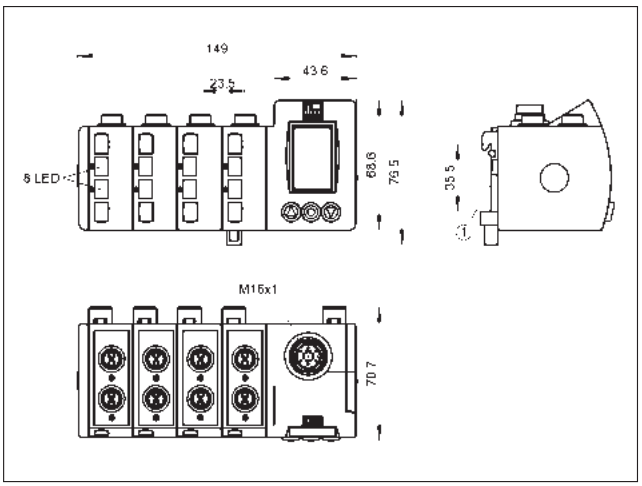

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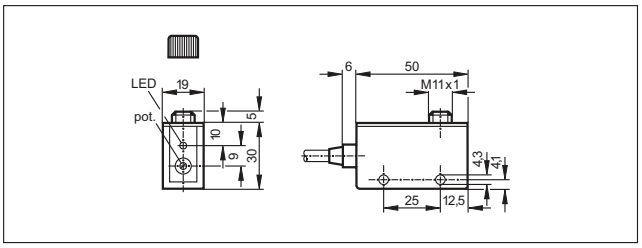

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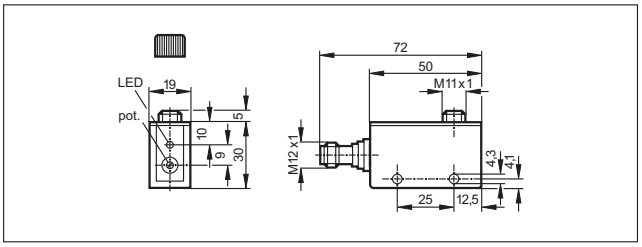

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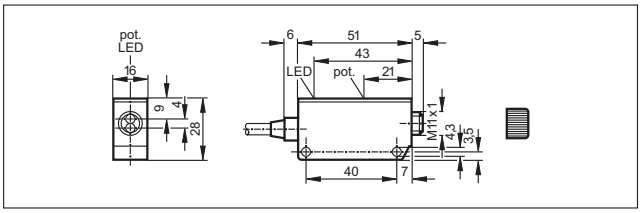

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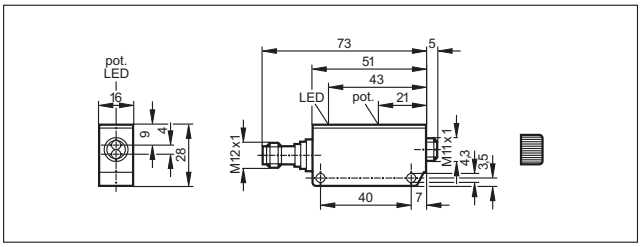

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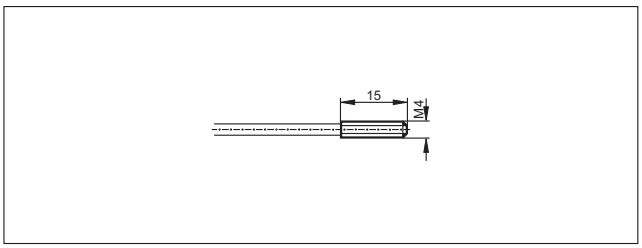

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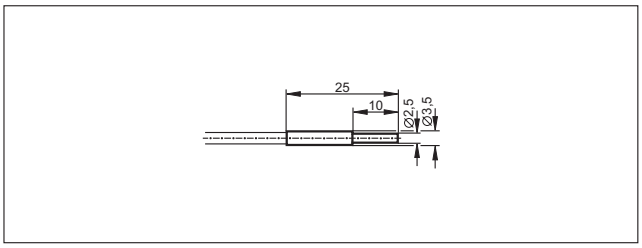

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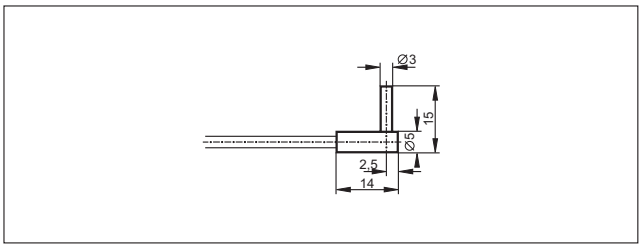

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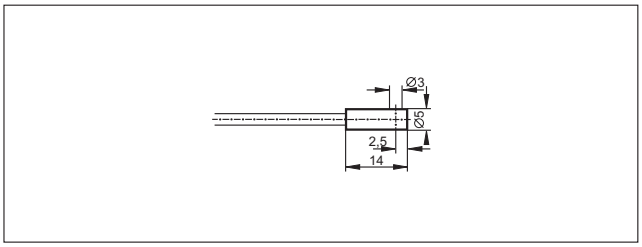

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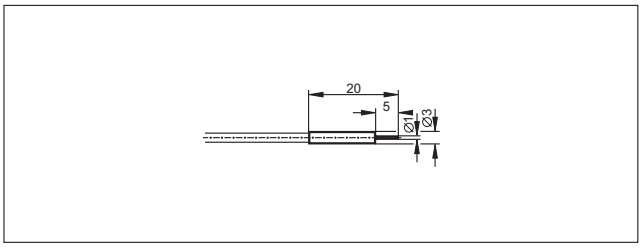

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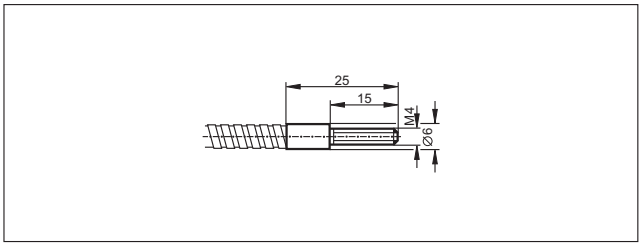

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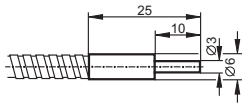

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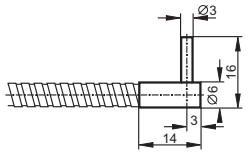

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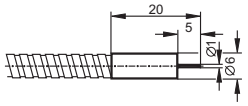

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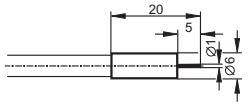

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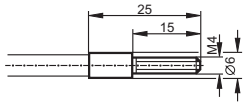

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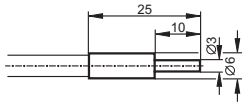

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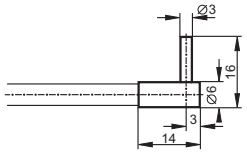

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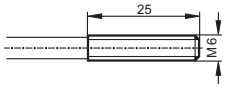

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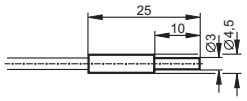

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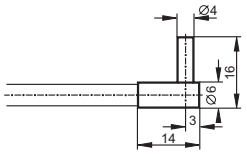

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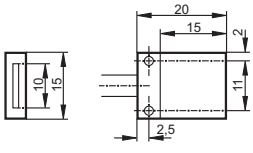

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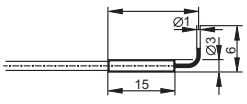

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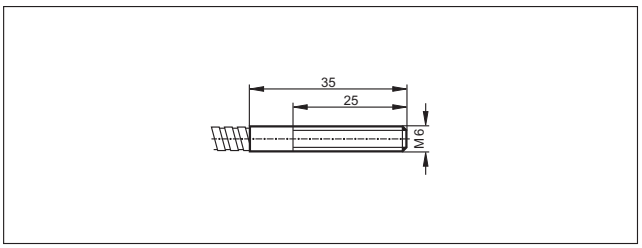

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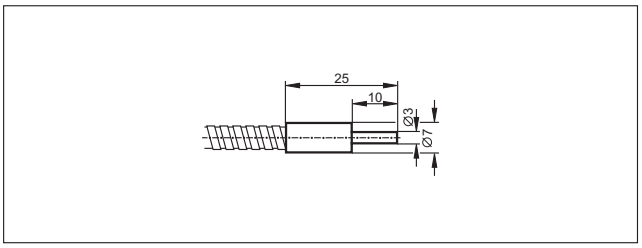

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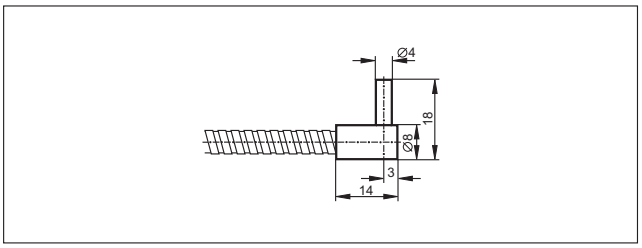

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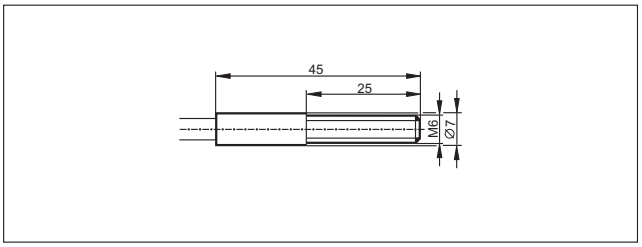

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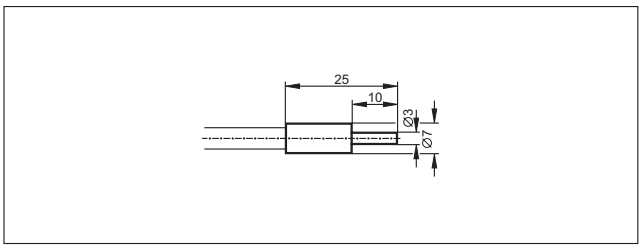

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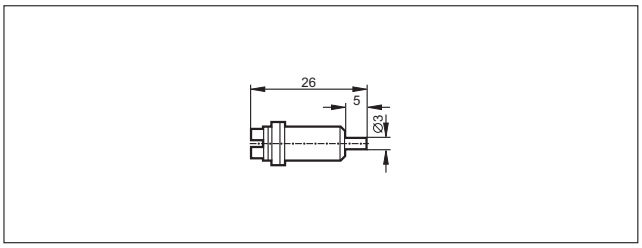

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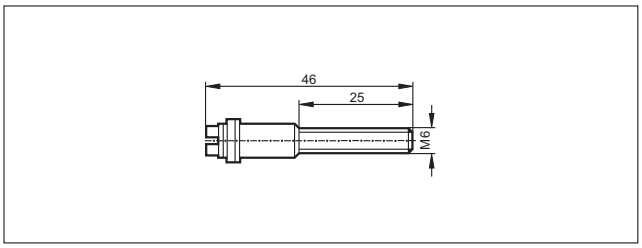


- **Photoelectric sensors for specific applications such as transparent objects, low contrast, colour**
- **Easy pushbutton setting**
- **Wide range of mounting accessories**
- **Excellent price / performance ratio**

Detection of transparent objects

Counting bottles and glasses or the reliable monitoring of film for tear or web-break is straightforward using specially designed retro-reflective sensors. ifm electronic offers two styles of retro-reflective sensor with a small switching hysteresis especially designed for the detection of transparent objects. With this operating principle, retro-reflective sensors have the advantage that the light beam must pass the object to be detected twice, weakening the light sufficiently to detect a transparent object reliably. Precise adjustment is made by means of the push-button setting.

Low contrast sensor

The O5K low contrast sensor is designed to detect print marks and particularly flat objects. Even pale colours on a light background can be detected. With its RGB transmitter LED the sensor detects even very small differences in contrast. During set-up it automatically selects the optimum transmitter colour from the red green blue (RGB) transmitter to ensure maximum energy difference of the reflected light. In addition, the setting method saves time and money. Pressing the pushbuttons twice is enough for the sensor to be ready for operation.

High-resolution colour sensor

The O5C electronic colour sensor from ifm electronic detects the colour, packaging, label or imprint of objects at a high resolution. With the five selectable tolerance steps, the colour sensor perfectly differentiates even the finest shades of colour from the background or other objects. The unit is set to the colour to be detected by one push of the button.

Detection of glass and PET bottles in the beverage industry.

System overview	*Page*
Sensors for the detection of transparent objects	*286*
Contrast sensors	*286*
Sensors for colour detection	*287*
Rectangular housing O1 for optical level measurement, laser class 2	*287*
Prismatic reflector (Hygienic and wet areas)	*287*
Accessories O5 housing	*287 - 288*
Accessories for system components	*288*
Wiring diagrams	*288 - 289*
Scale drawings / drawing no. – CAD download: www.ifm.com	*289 - 290*

Sensors for the detection of transparent objects

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
Retro-reflective sensor · PVC cable 0.15 m · with M12 connector · 10...30 DC · plastics · IP67 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	1	1	**OJ5191**
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	1	2	**OJ5190**
Retro-reflective sensor · M8 connector · 10...30 DC · plastics · IP67 · Connector groups 4, 5, 76, 82								
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	2	3	**OJ5085**
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	2	4	**OJ5086**
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	2	5	**OJ5186**
	Polarisation filter	0.2...1.5 m	Red	64	H/D NPN	3	5	**OJ5189**
	Polarisation filter	0.2...1.5 m	Red	64	H/D PNP	2	6	**OJ5185**
Retro-reflective sensor · M12 connector · 10...36 DC · plastics · IP67 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 126, 127, 128, 129, 150, 152								
	Polarisation filter	0...1.5 m	Red	40 / 80	H/D PNP/NPN	5	7	**O5G500**

Contrast sensors

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Wiring diagr. no.	Draw-ing no.	Order no.
M12 connector · 10...36 DC · plastics · IP67 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 126, 127, 128, 129, 150, 151, 152								
	Diffuse contrast sensor	18...22 mm	RGB	1.5 x 5	H/D PNP/NPN	6	8	**O5K500**

Sensors for colour detection

Type	Operating principle	Measuring range	Light spot diameter [mm]	U_b [V]	Current consumption [mA]	Sampling rate / switching frequency [Hz]	Drawing no.	Order no.
M12 connector · Output function light-on / dark-on programmable · DC PNP/NPN · Wiring diagram no. 4 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 126, 127, 128, 129, 150, 152								
	Colour sensor	15...19 mm	2.5 x 6	10...36	50	2000	8	**O5C500**

Rectangular housing O1 for optical level measurement, laser class 2

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U_b [V]	Wiring diagr. no.	Drawing no.	Order no.
Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable) · Wiring diagram no. 7 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Optical level sensor	0.2...10 m	1...33	6	18...30	7	9	**O1D300**

Prismatic reflector (Hygienic and wet areas)

Type	Description	Order no.
	Prismatic reflector · 48 x 48 mm · rectangular · For red light and infrared light retro-reflective sensors · Housing materials: front plate: PMMA / base: ABS	**E20744**
	Prismatic reflector · 50 x 50 mm · rectangular · for retro-reflective laser sensors and glass and film detection · Housing materials: plastics	**E20722**

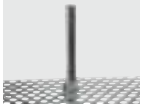
Accessories O5 housing

Type	Description	Order no.
	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	**E21085**
	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	**E21087**
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O5 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	**E21223**

You can find wiring diagrams and scale drawings from page 288

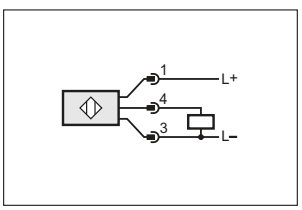
Type	Description	Order no.
	Mounting set · Clamp mounting · With protective cover · rod mounting Ø 12 mm · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21210
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O5, O5D · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21211
	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O5, O5D · Housing materials: stainless steel 316Ti / 1.4571 / clamp: high-grade stainless steel	E21212
	Mounting brackets Mounting on the back of the unit · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	E21086
	Dovetail clamp · for type DTS, O4, O5 · Housing materials: AlMgSi0.5	E21088

Accessories for system components

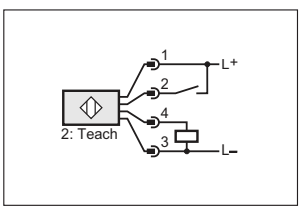
Type	Description	Order no.
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20938
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	E20940
	Head cap screw · M10 x 120 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: steel galvanised	E21213
	Head cap screw · M10 x 120 mm · ISO 4762 (DIN 912) · Free-standing M10 · Housing materials: screw: high-grade stainless steel	E21214
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	E20951

Wiring diagrams

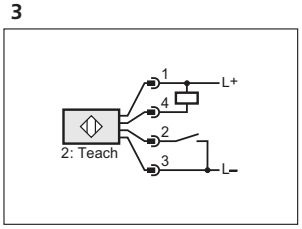
1



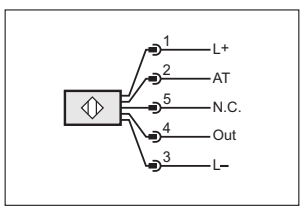
2



3



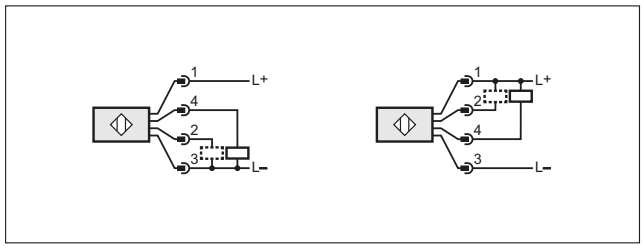
4



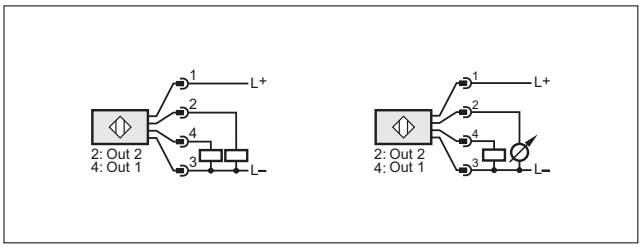
2: Input AT activation trigger,
5: n.c. = not connected

Wiring diagrams

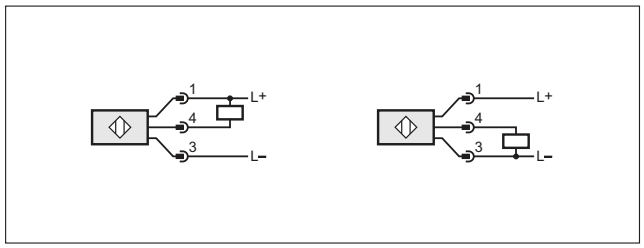
5



7

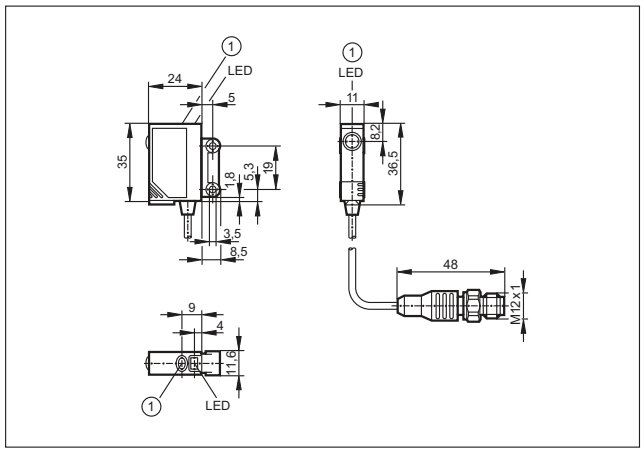


6



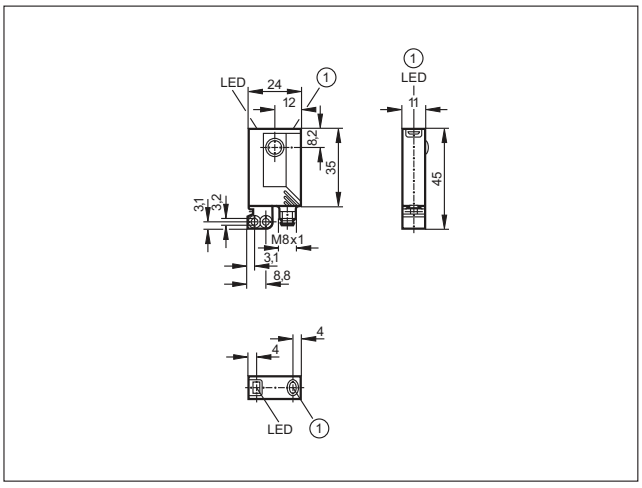
Scale drawings / drawing no. – CAD download: www.ifm.com

1



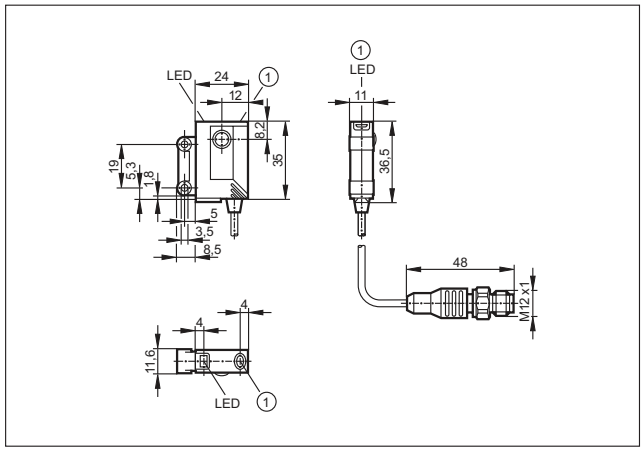
1: pushbutton

3



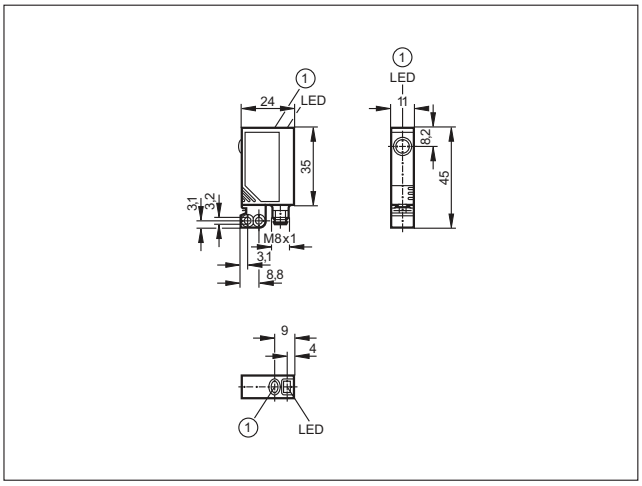
1: pushbutton

2



1: pushbutton

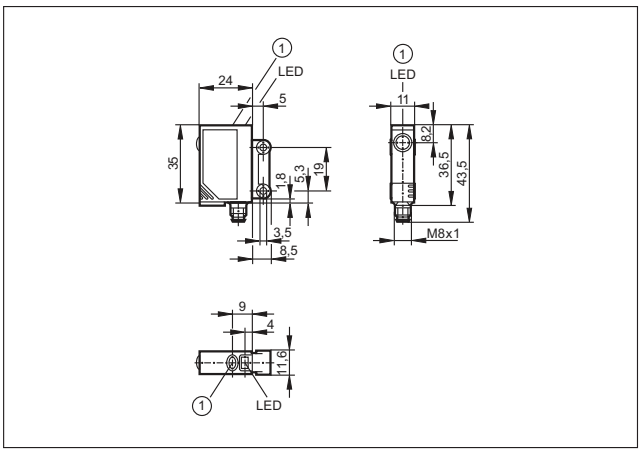
4



1: pushbutton

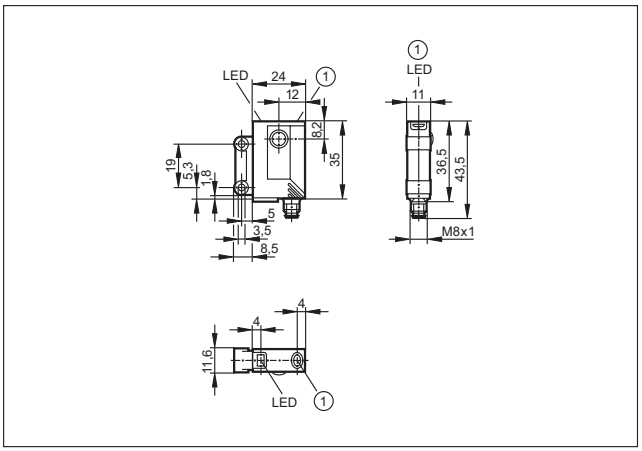
Scale drawings / drawing no. – CAD download: www.ifm.com

5



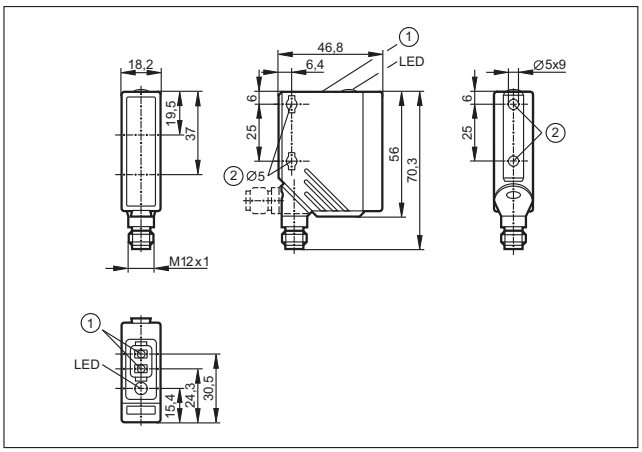
1: pushbutton

6



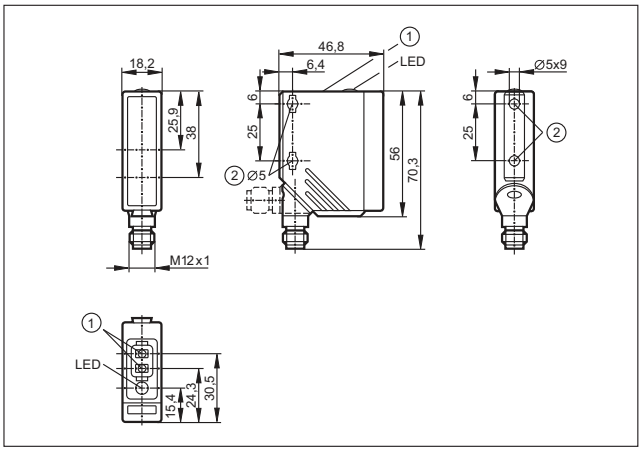
1: pushbutton

7



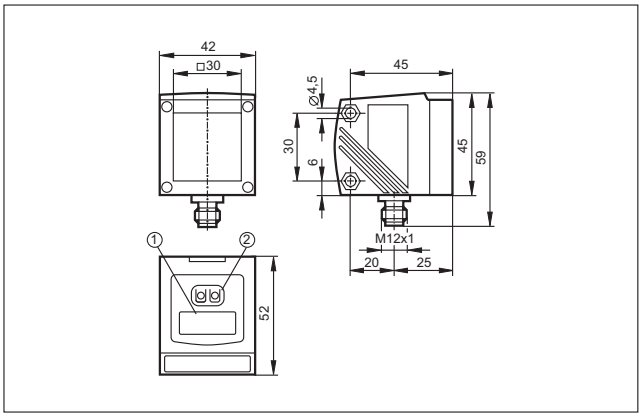
1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

8



1: Programming buttons, 2: When a M5 mounting screw is used, the max. tightening torque is 2 Nm.

9



1: 4-digit alphanumeric display, 2: Programming buttons

- **Dual inductive feedback sensors for pneumatic actuators and valves**
- **Designed for simple fit to common actuators based on VDI / VDE 3845**
- **AS-i versions for even simpler and neater wiring**
- **Compact, weatherproof and low maintenance**
- **Mounting sets available for manual valves and non-standard actuators**

Valve sensors

Butterfly and ball valves in a variety of specifications are common across a broad spectrum of industrial processes. A large proportion of these have been automated with the addition of a pneumatic actuator to drive the valve between its open and closed positions. Feedback can then be added to confirm that the valve has achieved its desired position. This often takes the form of a rotating cam arrangement with a couple of microswitches or small inductive sensors mounted inside a plastic switch box. Such switch boxes can be difficult to set up, suffer from ingress and the cams can sometimes slip under normal plant vibration.

Operating principle

In 1992 ifm electronic released our first alternative to this old and failure prone design. The IND dual sensor is essentially a pair of inductive sensors, operating at different frequencies so as not to interfere with each other, combined into a custom design housing which mechanically matches the top works on standard pneumatic actuators. The dual sensor fits neatly onto the actuator's existing M5 holes. A plastic target "puck" is then fitted onto the slotted actuator shaft, again using the existing threaded hole. The puck has two metal targets spaced 90 degrees apart which are picked up by either the OPEN sensor or the CLOSED sensor.

Advantages

This simple construction addresses all the shortcomings of the switchbox solution. It is weatherproof surviving heavy rain, ice and strong sunshine. It is low profile allowing valve / actuator packages to fit where a switchbox would not. This also means that feedback can be fitted to even small manually operated valves. It is low weight so will not fail even if pumps are causing pipe vibration. It allows for back wiring a local solenoid through the common multi-pin connector, saving on wiring and cable tray costs.

Feedback: Position monitoring of both pneumatically actuated and manual valves is needed for plant control.

System overview	*Page*
Sensors for industrial applications	*294 - 295*
Sensors for industrial applications, AS-i system	*295*
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Sensors with ATEX approval 3D and / or 3G	*296 - 297*
Sensors for rising stem valves	*297*
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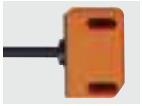
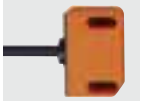
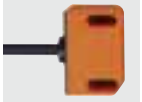
Added value packages with Bürkert solenoid valve	*298*
Added value packages with Norgren Herion solenoid valve	*298*
Switching cams for sensors with quarter-turn actuators	*298 - 300*
Accessories for quarter-turn actuator sensors	*300 - 301*
Accessories for rising stem valve sensors	*301*
Wiring diagrams	*302*
Scale drawings / drawing no. – CAD download: www.ifm.com	*303 - 305*

Sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	1	**IN5251**
Cable 6 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PC (polycarbonate)	10...36	IP 67	1300	250	1	**IN5304**
Cable 10 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	1	**IN5323**
Cable 2 m · Output function ⎍/⎍ · AC/DC · Wiring diagram no. 2									
	40 x 26 x 40	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	2	**IN0110***
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	3	**IN5224**
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 3 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 26 x 47	4 nf	PBT	10...36	IP 67	250	250	4	**IN5331**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	3	**IN5225**
	40 x 26 x 47	4 nf	PBT	10...36	IP 67	1300	250	4	**IN5327**
M18 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector group 24									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	5	**IN5285**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M18 connector · Output function ⎓ / ⎓ · AC/DC · Wiring diagram no. 5 · Connector group 24									
	40 x 26 x 40	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	6	**IN0108***
Rd 24 x 1/8 connector 6 pins · Output function ⎓ / ⎓ · DC PNP · Connector groups 34, 40									
	40 x 26 x 60	4 nf	PBT	10...36	IP 67	1300	250	7	**IN5334**
Terminals · Output function ⎓ / ⎓ · DC PNP · Wiring diagram no. 14									
	33 x 60 x 92	4 nf	PA (polyamide)	10...30	IP 67	500	100	8	**IN5409**

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

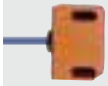
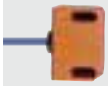
Sensors for industrial applications, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · 1 x 2 inputs · Wiring diagram no. 6 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 128, 129, 150, 152									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	9	**AC2315**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	10	**AC2316**
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	10	**AC2317**

f = flush / nf = non flush

You can find wiring diagrams and scale drawings from page 302

Sensors with ATEX approval 1G / 2G and 1D

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Drawing no.	Order no.
M12 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 7 · Connector group 146										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	11	**NN5008**
Cable 2 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	1	**NN5009**
Cable 10 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	140	1800	1	**NN5011**
M18 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 9 · Connector group 24										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	5	**NN5013**
Rd 24 x 1/8 connector 6 pins · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Connector groups 34, 56, 64, 65, 137										
	40 x 26 x 60	4 nf	PBT	8.2 DC	–	150	150	250	7	**N95001**
	40 x 26 x 60	4 nf	PBT	8.2 DC	–	100	150	1300	7	**N95002**

f = flush / nf = non flush

Sensors with ATEX approval 3D and / or 3G

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 147, 149									
	55 x 60 x 35	4	PBT	26.5...31.6	IP 5x	–	–	12	**AC327A**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 147, 149									
	55 x 60 x 35	4	PBT	26.5...31.6	IP 5x	–	–	12	**AC336A**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 147, 149									
	55 x 60 x 35	4	PBT (Pocan)	26.5...31.6	IP 67	–	–	12	**AC326A**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 147, 149									
	40 x 26 x 47	4	PBT	10...30	IP 67	1300	100	13	**IN507A**
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4	PBT	10...30	IP 67	1300	100	14	**IN512A**

Sensors for rising stem valves

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function 1...5 V analogue · DC · Wiring diagram no. 10									
	67.5 x 43 x 110	–	PA	18...36	IP 65 / IP 67	–	–	15	**IX5002**
Cable 2 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 11									
	67.5 x 43 x 110	–	PA	18...36	IP 65 / IP 67	–	100	16	**IX5006**
Cable with connector 0.3 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 12 · Connector groups 128, 129, 152									
	65 x 52 x 110	–	PA	18...36	IP 65 / IP 67	–	100	17	**IX5010**
	65 x 43 x 110	0.2	PA	18...36	IP 65 / IP 67	–	100	18	**ZZ0214**

You can find wiring diagrams and scale drawings from page 302

Sensors for rising stem valves, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable with connector 0.3 m · AS-i · Wiring diagram no. 6 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 128, 129, 150, 152									
	65 x 52 x 110	–	PA	26.5...31.6	IP 65 / IP 67	–	–	17	**IX5030**

Added value packages with Bürkert solenoid valve

Type	Description	Order no.
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 20 mm · Hole spacing 80 mm · Connector	**AC0017**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 80 mm · Connector	**AC0019**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 130 mm · Connector	**AC0020**

Added value packages with Norgren Herion solenoid valve

Type	Description	Order no.
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 20 mm · Hole spacing 80 mm · Connector	**AC0021**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 80 mm · Connector	**AC0022**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 130 mm · Connector	**AC0023**

Switching cams for sensors with quarter-turn actuators

Type	Description	Order no.
	Target puck · Ø 53 mm · Adjustable between 0° and 360° · Housing materials: Target puck: PVC / screws: high-grade stainless steel	**E10661**

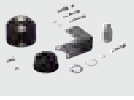
Type	Description	Order no.
	Target puck · Ø 53 mm · 6 possible switching flag positions · with drain holes · Housing materials: Target puck: PA 6 / screws: high-grade stainless steel	**E17105**
	Target puck · Ø 53 mm · Housing materials: Target puck: PBT / screws: high-grade stainless steel	**E17118**
	Target puck · Ø 53 mm · 8 possible switching flag positions · with drain holes · Housing materials: Target puck: PA 6 / screws: high-grade stainless steel	**E17294**
	Target puck · Ø 53 mm · 3 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	**E17320**
	Target puck · Ø 53 mm · 8 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	**E17321**
	Target puck · Ø 53 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 blue / screws: V2A	**E17322**
	Target puck · Ø 53 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17323**
	Target puck · Ø 55 mm · Inverted function · Housing materials: Target puck: PVC / screws: high-grade stainless steel / Metal ring: stainless steel	**E17205**
	Target puck · Ø 59 mm · for Neles actuator type B1CU 6/20E · Housing materials: Target puck: POM	**E11278**
	Target puck · Ø 65 mm · Housing materials: Target puck: PVC / screws: high-grade stainless steel	**E17148**
	Target puck · Ø 65 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17324**
	Target puck · Ø 65 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17325**
	Target puck · Ø 65 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17326**
	Target puck · Ø 65 mm · Housing materials: Target puck: PA 6 / screws: V2A	**E17327**

You can find wiring diagrams and scale drawings from page 302

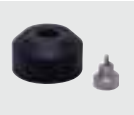
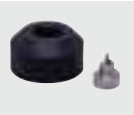
Type	Description	Order no.
	Target puck · Ø 102 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17328
	Target puck · Ø 102 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17329
	Target puck · Ø 102 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17330
	Target puck · Ø 102 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17331
	direction indicator black · 12 x 4.8 · For target puck · Housing materials: POM	E17295
	direction indicator yellow · 12 x 4.8 · For target puck · Housing materials: POM	E17296

Accessories for quarter-turn actuator sensors

Type	Description	Order no.
	Spacer · 10 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10579
	Spacer · 3 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10584
	Spacer · 5 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10585
	Cable gland · M20 x 1.5 · Housing materials: PA 6.6	E12208
	Protective cap · M20 x 1.5 · Housing materials: PA 6.6	E12209
	Plug for covering the oblong holes · Housing materials: EPDM	E12212
	reinforcement bracket · for type IND · Housing materials: stainless steel 316Ti / 1.4571	E11310

Type	Description	Order no.
	protective housing · Accessory for valve sensors · for type IND · Housing materials: stainless steel	**E11984**
	Mounting kit · MS-MEC-KU-RA--F04A · for ball valve Mecafrance ISO5211/F04 DN25 PN40 · Detection of the "ON / OFF" position by means of the IND dual sensor	**E10597**
	Mounting kit for limit position feedback · tyco 792E-100 · for Keystone actuators	**E11243**

Accessories for rising stem valve sensors

Type	Description	Order no.
	Mounting adapter · for Kieselmann seat valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E12123**
	Mounting adapter · for Alfa Laval valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E11900**
	Mounting adapter · for Südmo valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E11989**
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M12 · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12009**
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M16 · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12010**
	Mounting adapter · for Bardiani valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E12170**
	Mounting adapter · IX / Ø 30 mm · for Gemü actuators with mounting kit · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12042**
	Mounting adapter · IX / Ø 45 mm · for Gemü actuators with mounting kit · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12043**

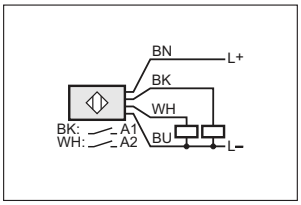
You can find wiring diagrams and scale drawings from page 302

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white
GY	grey

1



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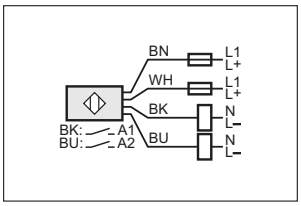

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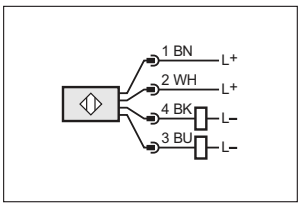

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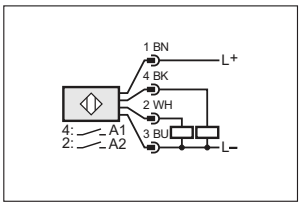

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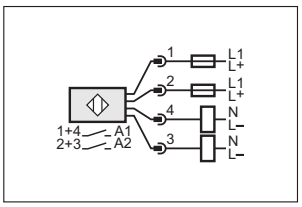

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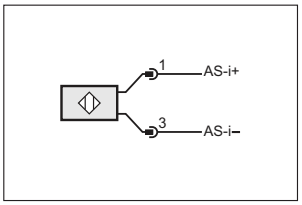

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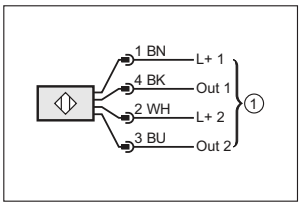
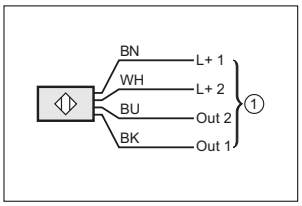


1: connection to NAMUR-amplifier

8



1: connection to NAMUR-amplifier

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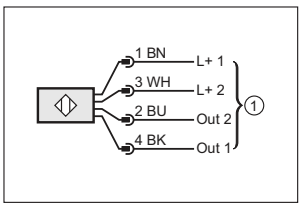

1: connection to NAMUR-amplifier

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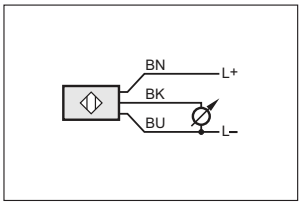

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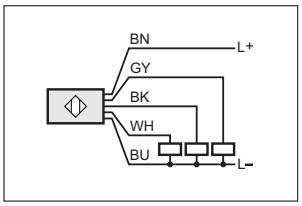

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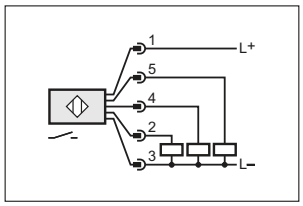

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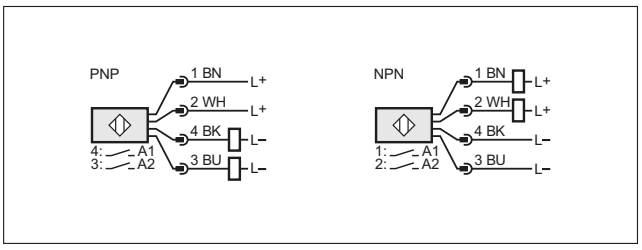

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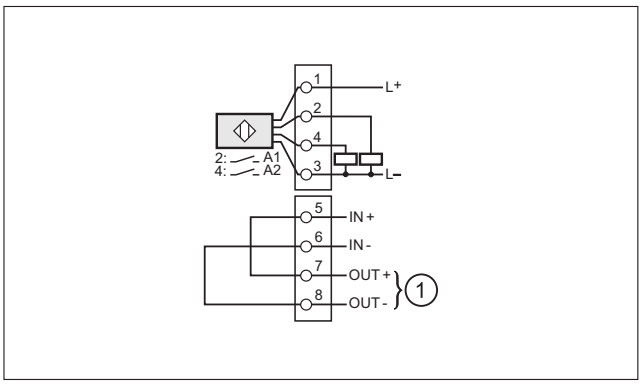

1: solenoid valve

Scale drawings / drawing no. – CAD download: www.ifm.com

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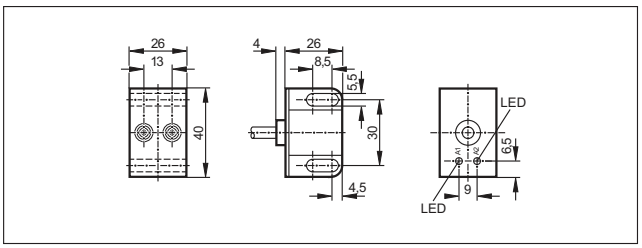

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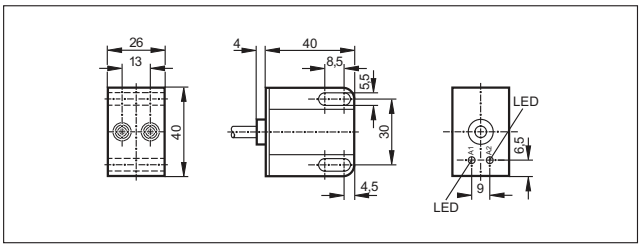

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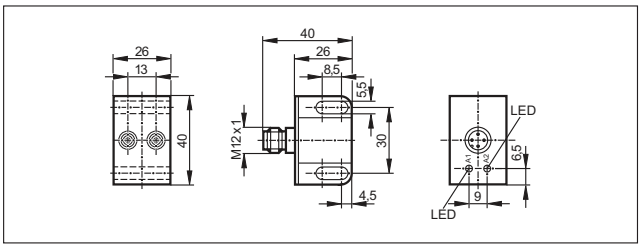

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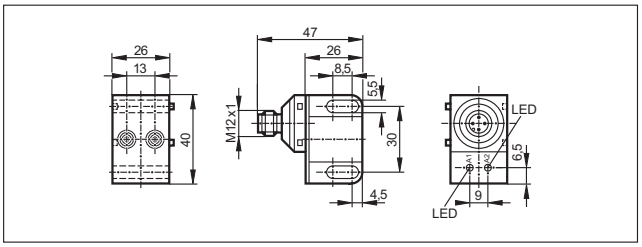

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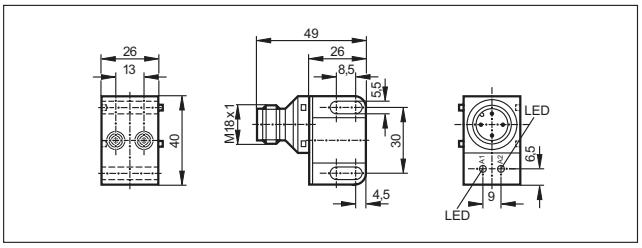

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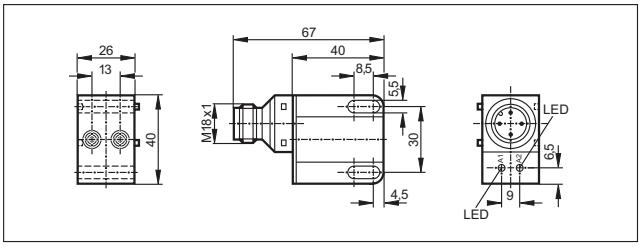

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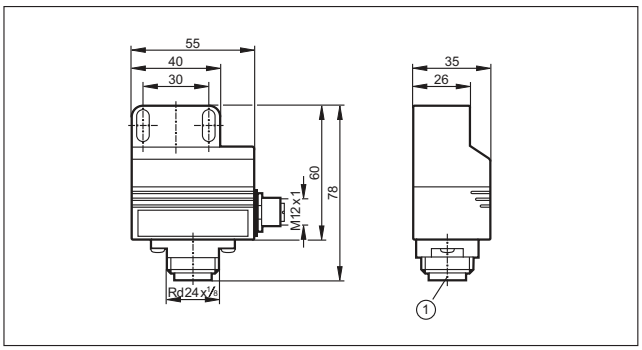

1: field connection

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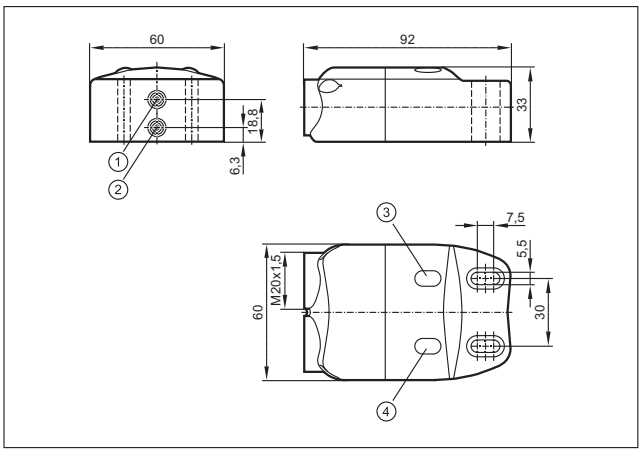
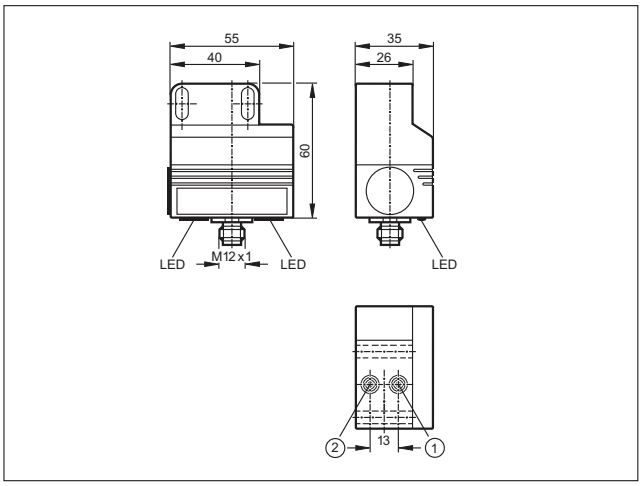


1: sensor 1, 2: sensor 2, 3: LED OUT 2, 4: LED OUT 1

9



1: sensor 1, 2: sensor 2

Scale drawings / drawing no. – CAD download: www.ifm.com

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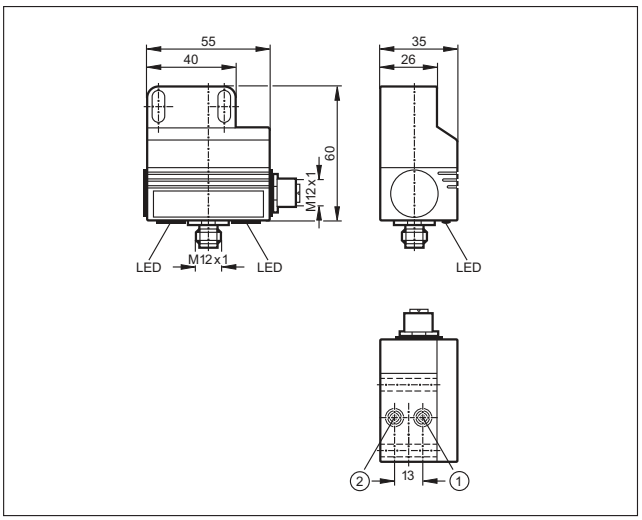

1: sensor 1, 2: sensor 2

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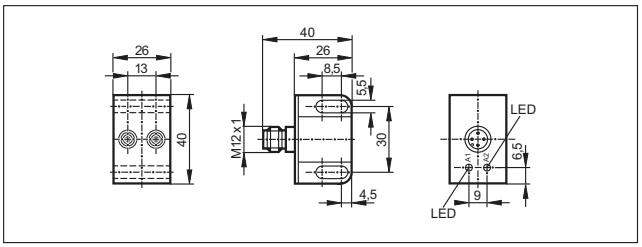

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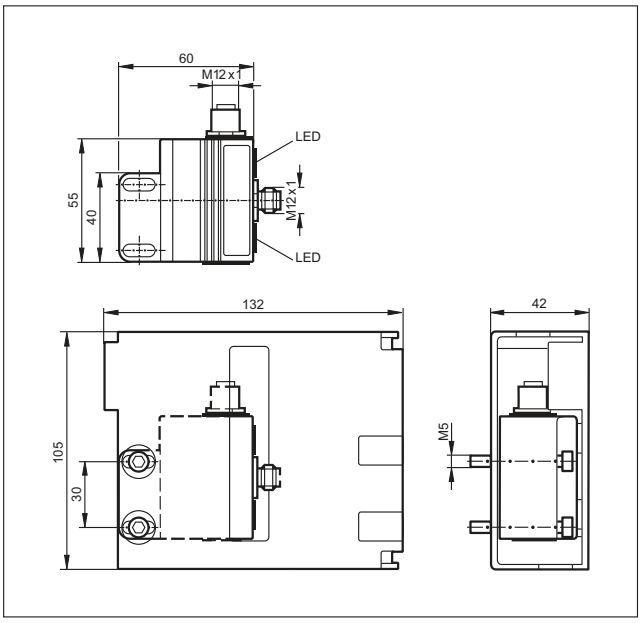

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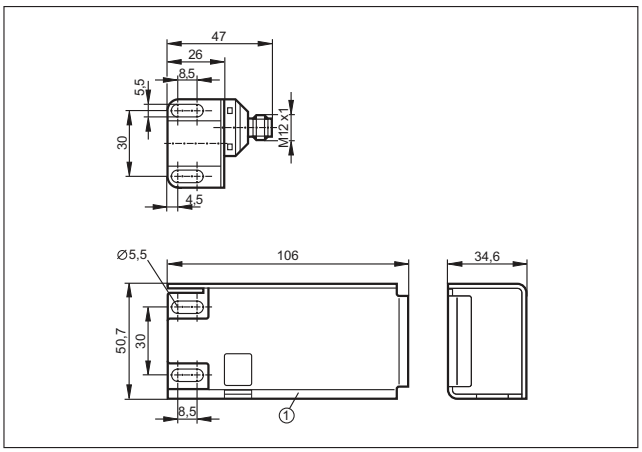
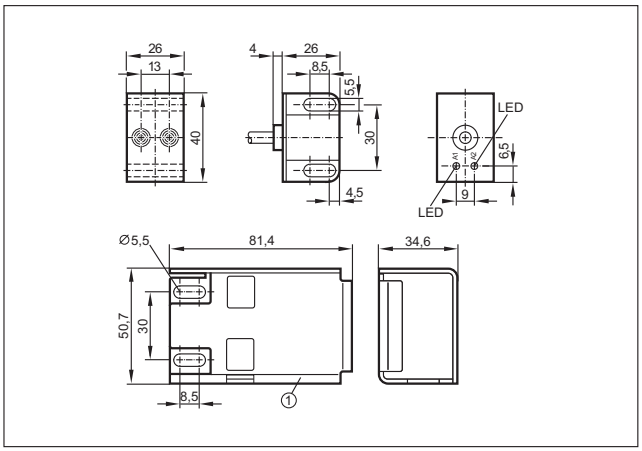


1: protective housing

14



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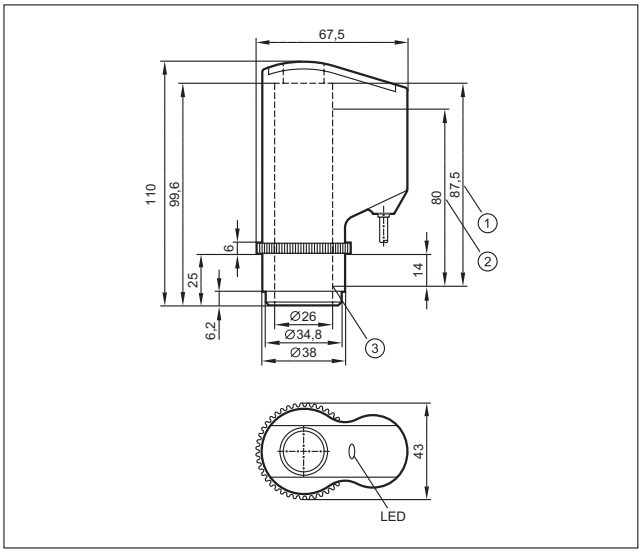

1: Max. spindle stroke, 2: Measuring range, 3: Initial value of the measuring range (zero point)

Scale drawings / drawing no. – CAD download: www.ifm.com

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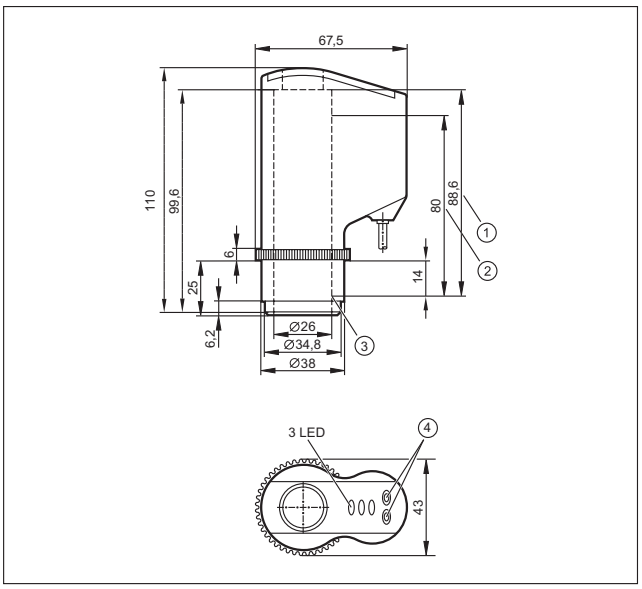
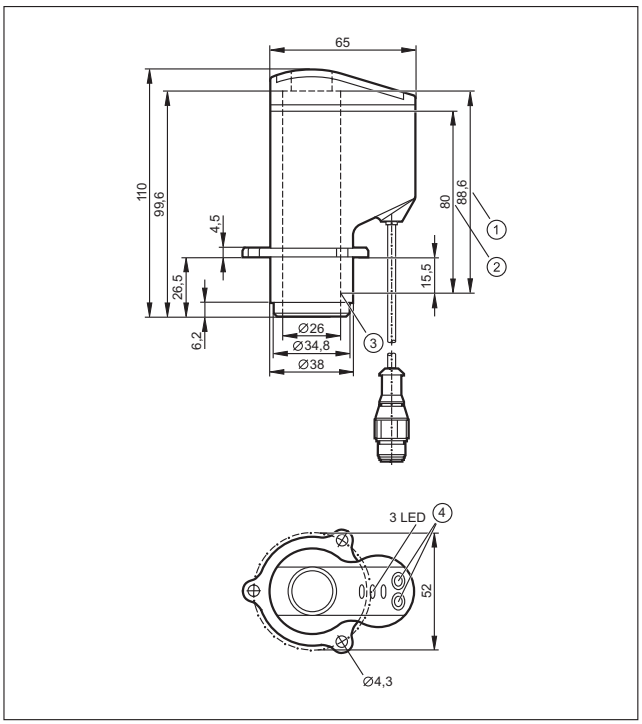


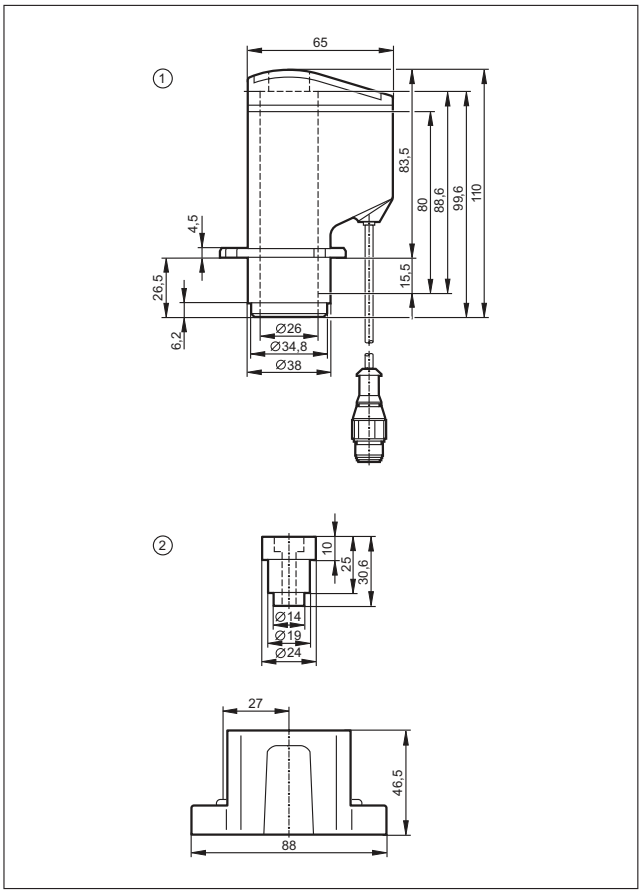
1: Max. spindle stroke, 2: Measuring distance, 3: Initial value of the measuring range (zero point), 4: Programming buttons

17



1: Max. spindle stroke, 2: Measuring distance, 3: Initial value of the measuring range (zero point), 4: Programming buttons

18



1: Valve sensor IX5010, 2: Mounting adapter E11900

- **One or two-channel NAMUR switching amplifiers to IEC 60947-5-6**
- **Short-circuit and wire-break monitoring**
- **Programmable output function**
- **Relay or transistor outputs**
- **Easy mounting on DIN rail**

Hazardous gas and dust areas

ATEX stands for "atmosphère explosible". The 94/9/EC and 1999/92/EC directives are also commonly called "ATEX directives". Potentially explosive atmospheres arise in most industries. ifm electronic can supply sensing equipment for all three unit categories each for gas and dust (1 - 3) that are analogous to the gas zones 0 / 1 / 2 or dust zones 20 / 21 / 22.

NAMUR switching amplifiers for hazardous areas

The NAMUR switching amplifiers evaluate the sensor signal and control the output. They meet all requirements of the ATEX directives. Switching amplifiers with relay and transistor output are available. The switching amplifiers are designed for the connection of NAMUR sensors to IEC 60947-5-6 and mechanical switches. They provide the voltage supply via an electrical separation for the intrinsically safe circuit.

Further features of the switching amplifiers are:

– Programmable effective direction of the output
– Relay output designed as changeover contact
– Short-circuit proof transistor outputs
– The sensor cables are monitored for wire break and short circuit. In case of a fault, the output is blocked or the relay is de-energised.

Typical hazardous gas areas are found in the chemical industry, for example in gas and petroleum processing.

Examples for the hazardous dust areas are the food and feedstuffs industries, but also disposal and recycling operations.

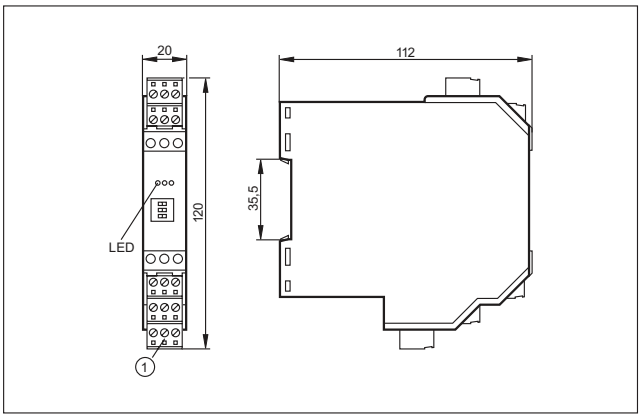
System overview	Page
Switching amplifiers with ATEX approval	308
Scale drawings / drawing no. – CAD download: www.ifm.com	308

Switching amplifiers with ATEX approval

Type	U_b [V]	Power / current consumption [VA] / [mA]	f [Hz]	T_a [°C]	Output	Protection	Drawing no.	Order no.
	115	1.0 /	10	-20...60	relay (1 changeover contact)	IP 20	1	**N0030A**
	230	1.0 /	10	-20...60	relay (1 changeover contact)	IP 20	1	**N0031A**
	115	1.3 /	10	-20...60	relay (1 changeover contact per channel)	IP 20	1	**N0032A**
	230	1.3 /	10	-20...60	relay (1 changeover contact per channel)	IP 20	1	**N0033A**
	24	/ < 23	10	-20...60	relay (1 changeover contact)	IP 20	1	**N0530A**
	24	/ < 50	5000	-20...60	2 transistor outputs PNP (100 mA, short-circuit protection)	IP 20	1	**N0531A**
	24	/ < 50	5000	-20...60	2 outputs (optocoupler, bipolar, 100 mA, short-circuit protection)	IP 20	1	**N0532A**
	24	/ < 50	10	-20...60	relay (1 changeover contact per channel)	IP 20	1	**N0533A**
	24	/ < 50	5000	-20...60	2 transistor outputs PNP (100 mA, short-circuit protection)	IP 20	1	**N0534A**

Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: Combicon plug with screw terminals (optional)

Keeping things moving

Encoder for linear measurement on a tunnel boring machine.

Sensors for motion control

Sensors for motion control are used for measurements of angles and linear and rotational speed.

Encoders

Encoders convert rotary motion into digital signals. This rotary motion is the result of linear measurements, for example on conveyor belts, or of angle measurements such as those taken by solar tracking systems to optimally align the solar panels towards the sun.

Inclination sensors

Inclination sensors are also used for angle measurement. They are smaller than encoders and easier to install. The core element is a measuring cell for example based on MEMS technology (Micro Electro Mechanical Systems). This measuring method allows evaluation of two axes in one unit. Inclination sensors are therefore a valuable supplement to encoders. They are frequently used in mobile machines (levelling of cranes or fire engines) or in the field of renewable energies.

Speed sensors

Inductive speed sensors with integrated evaluation electronics do not only measure revolutions, but also monitor overspeed and underspeed. Once the sensor has been taught the desired speed, it works completely independently. It relieves the user from the additional burden of programming his PLC: he only needs to connect the sensor, teach the rotational speed and start the system. If the speed drops below the set value or exceeds it, the sensor sets a binary switching output as a warning.

Systems for pulse evaluation

By using the matching evaluation systems, sensor pulses can be detected, evaluated, compared and converted into different output signals. The user can choose between binary, analogue (4…20 mA and 0…10 V) and PWM output signals.

Encoders 312 - 325

Speed sensors 326 - 331

Inclination sensors 332 - 335

Pulse evaluation systems 336 - 345

- **Robust industrial absolute and incremental shaft encoders**
- **Industrial standard housings**
- **Solid or hollow-shaft variants**
- **Cable entry for axial and radial use**
- **Designs with integrated bus interface**

Encoders

As a reliable aid to precise positioning an optical encoder cannot be beaten. Encoders convert rotary or oscillating motion into digital signals. A graduated hardened glass disc firmly attached to the shaft, which may be a solid, protruding shaft, or a hollow shaft supplies a very accurate pulse or position.

Incremental encoders

Incremental encoders generate a precisely defined number of pulses per revolution. They are a measure of the angular or linear distance moved. The coded disc is divided into separate segments which are alternately transparent or opaque. An LED emits a parallel light beam which illuminates all segments of the coded disc. Photo elements receive the modulated light and convert it into two sinusoidal signals. Digitalisation electronics amplify the signals and shape them into square-wave pulse trains which are generated via the line driver in the output. The phase difference between signals A and B, which are phase-shifted by 90 degrees, allows evaluation of the direction of rotation.

Absolute encoders

Absolute encoders provide an absolute numerical value for each angular position. This code value is available immediately after power is applied. This "absolute" value makes a reference procedure like the one required for the incremental encoder unnecessary. Absolute encoders are used wherever angular positions have to be allocated to a certain value and where the detection of the present position is necessary in the event of a power failure.

Multiturn

Absolute encoders divide a mechanical revolution (0 to 360 degrees) into a certain number of measuring steps. The measuring values are repeated after one revolution. The maximum resolution is 8192. Multiturn encoders, however, do not only detect angular positions but also distinguish between multiple revolutions. The amount of information available means the connection of modern absolute encoders is done via a serial bus.

Rugged construction

Shaft encoders are designed to be physically attached to the moving component, so are constructed with robustness in mind. Permissible shaft loads are very high, and internally the electronics are designed to withstand even the inevitable moisture ingress at the shaft.

Linear measurement by means of a counter: Rotary movement is converted into digital signals.

Hollow shaft encoder for direct mounting on the axis.

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Incremental encoders with solid shaft

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function TTL output 20 mA									
	500	5	300	20	6	-40...100	radial / axially	1	**RB1015**
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	5	10...30	160	50	6	-40...70	radial / axially	1	**RB6044**
	10	10...30	160	50	6	-40...70	radial / axially	1	**RB6001**
	20	10...30	160	50	6	-40...70	radial / axially	1	**RB6002**
	25	10...30	160	50	6	-40...70	radial / axially	1	**RB6003**
	30	10...30	160	50	6	-40...70	radial / axially	1	**RB6004**
	50	10...30	160	50	6	-40...70	radial / axially	1	**RB6005**
	60	10...30	160	50	6	-40...70	radial / axially	1	**RB6006**
	100	10...30	160	50	6	-30...70	radial / axially	1	**RB6007**
	125	10...30	160	50	6	-40...70	radial / axially	1	**RB6009**
	150	10...30	160	50	6	-40...70	radial / axially	1	**RB6010**
	200	10...30	160	50	6	-40...70	radial / axially	1	**RB6011**
	250	10...30	160	50	6	-40...70	radial / axially	1	**RB6012**
	360	10...30	160	50	6	-40...70	radial / axially	1	**RB6013**
	400	10...30	160	50	6	-40...70	radial / axially	1	**RB6014**

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	500	10...30	160	50	6	-40...70	radial / axially	1	**RB6015**
	600	10...30	160	50	6	-40...70	radial / axially	1	**RB6016**
	1000	10...30	160	50	6	-40...70	radial / axially	1	**RB6029**
Cable 2 m · Output function TTL output 20 mA									
	500	5	300	20	6	-40...100	radial / axially	2	**RU1016**
	1000	5	300	20	6	-40...100	radial / axially	2	**RU1024**
	1024	5	300	20	6	-40...100	radial / axially	2	**RU1025**
	2000	5	300	20	6	-40...100	radial / axially	2	**RU1033**
	2500	5	300	20	6	-40...100	radial / axially	2	**RU1036**
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	100	10...30	300	50	6	-40...100	radial / axially	2	**RU6003**
	250	10...30	300	50	6	-40...100	radial / axially	2	**RU6010**
	360	10...30	300	50	6	-40...100	radial / axially	2	**RU6013**
	500	10...30	300	50	6	-40...100	radial / axially	2	**RU6016**
	1000	10...30	300	50	6	-40...100	radial / axially	2	**RU6024**
	1024	10...30	300	50	6	-40...100	radial / axially	2	**RU6025**
	2000	10...30	300	50	6	-40...100	radial / axially	2	**RU6033**

You can find scale drawings from page 324

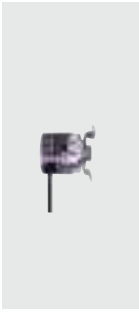
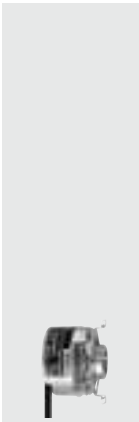
Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	2500	10...30	300	50	6	-40...100	radial / axially	2	**RU6036**
	3600	10...30	300	50	6	-40...100	radial / axially	2	**RU6040**
	5000	10...30	300	50	6	-40...100	radial / axially	2	**RU6045**
	10000	10...30	300	50	6	-40...100	radial / axially	2	**RU6052**
Cable 2 m · Output function TTL output 20 mA									
	500	5	300	20	10	-40...100	radial / axially	3	**RV1016**
	1000	5	300	20	10	-40...100	radial / axially	3	**RV1024**
	1024	5	300	20	10	-40...100	radial / axially	3	**RV1025**
	2000	5	300	20	10	-40...100	radial / axially	3	**RV1033**
	2500	5	300	20	10	-40...100	radial / axially	3	**RV1036**
	5000	5	300	20	10	-40...100	radial / axially	3	**RV1051**
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	50	10...30	300	50	10	-40...100	radial / axially	3	**RV6001**
	100	10...30	300	50	10	-40...100	radial / axially	3	**RV6003**
	200	10...30	300	50	10	-40...100	radial / axially	3	**RV6009**
	250	10...30	300	50	10	-40...100	radial / axially	3	**RV6010**
	360	10...30	300	50	10	-40...100	radial / axially	3	**RV6013**

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	500	10...30	300	50	10	-40...100	radial / axially	3	**RV6016**
	600	10...30	300	50	10	-40...100	radial / axially	3	**RV6018**
	1000	10...30	300	50	10	-40...100	radial / axially	3	**RV6024**
	1024	10...30	300	50	10	-40...100	radial / axially	3	**RV6025**
	1250	10...30	300	50	10	-40...100	radial / axially	3	**RV6028**
	2000	10...30	300	50	10	-40...100	radial / axially	3	**RV6033**
	2048	10...30	300	50	10	-40...100	radial / axially	3	**RV6034**
	2500	10...30	300	50	10	-40...100	radial / axially	3	**RV6036**
	3600	10...30	300	50	10	-40...100	radial / axially	3	**RV6040**
	5000	10...30	300	50	10	-40...100	radial / axially	3	**RV6100**

Incremental encoders with hollow shaft

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	10	10...30	160	50	6 H7	-40...70	radial / axially	4	**RA6001**
	100	10...30	160	50	6 H7	-40...70	radial / axially	4	**RA6007**
	200	10...30	160	50	6 H7	-30...70	radial / axially	4	**RA6011**

You can find scale drawings from page 324

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 2 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	360	10...30	160	50	6 H7	-40...70	radial / axially	4	**RA6013**
	500	10...30	160	50	6 H7	-40...70	radial / axially	4	**RA6015**
	1000	10...30	160	50	6 H7	-40...70	radial / axially	4	**RA6029**
Cable 1 m · Output function HTL-output 50 mA, short-circuit protected < 1 min									
	100	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6342**
	360	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6343**
	500	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6344**
	1024	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6345**
	3600	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6348**
	4096	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6349**
	5000	10...30	300	50	12 H7	-40...100	radial / axially	5	**RO6350**

Absolut singleturn-encoders (SSI)

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 1 m · Output function SSI data interface									
	8192	10...30	–	–	10	-40...85	radial / axially	6	**RN6055**

Absolute multiturn encoders (SSI)

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Cable 1 m · Output function SSI data interface									
	8192	10...30	–	–	6	-40...85	radial / axially	2	**RM6101**
	8192	10...30	–	–	12	-40...85	radial / axially	5	**RM6102**
	8192	10...30	–	–	10	-40...85	radial / axially	7	**RM6104**
Cable 2 m · Output function SSI data interface									
	4096	4.5...30	–	–	6	-40...85	axial	8	**RM8001**
	4096	4.5...30	–	–	10	-40...85	axial	9	**RM8002**

Absolute multiturn encoders (Profibus)

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Terminals · Output function Profibus data interface									
	25 bits	10...30	–	–	6	-40...70	–	10	**RM3001**
	25 bits	10...30	–	–	10	-40...70	–	11	**RM3005**

Absolute singleturn-encoders (CANopen)

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Terminals · Output function CANopen interface									
	13 bits	9...36	–	–	6	-40...70	–	10	**RN7003**

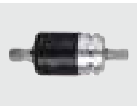
You can find scale drawings from page 324

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Terminals · Output function CANopen interface									
	13 bits	9...36	–	–	10	-40...70	–	11	**RN7004**

Absolute multiturn-encoders (CANopen)

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
Terminals · Output function CANopen interface									
	25 bits	9...36	–	–	6	-40...70	–	10	**RM7003**
	25 bits	9...36	–	–	10	-40...70	–	11	**RM7004**

Absolute multiturn-encoders (CANopen) for mobile applications

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
M12 connector · Output function CANopen interface · Connector group 152									
	24 bits	10...30	–	–	10	-40...85	axial	12	**RM9000**

Fixing accessories for encoders

Type	Description	Order no.
	Resilient base for angle flanges · Housing materials: aluminium black anodised	**E60036**
	Angle bracket · for encoders · for type RB, RC, RU, RN, RM · Housing materials: aluminium black anodised	**E60033**
	Angle bracket · for encoders · for type RM, RMU, RN, RU · Housing materials: aluminium black anodised	**E60034**
	Angle bracket · for encoders · for type RMV, RV · Housing materials: aluminium black anodised	**E60035**

Type	Description	Order no.
	Angle bracket · for encoders · for type RM · Housing materials: aluminium black anodised	E60302
	Fastening clamp · for synchro flange · Housing materials: steel	E60041

Couplings for encoders

Type	Description	Order no.
	Flexible coupling with clamp connection [KV] · Ø 4 mm / Ø 6 mm · Housing materials: aluminium	E60119
	Flexible coupling with clamp connection [KV] · Ø 6 mm / Ø 6 mm · Housing materials: aluminium	E60064
	Flexible coupling with clamp connection [KV] · Ø 6 mm / Ø 6 mm · Housing materials: aluminium	E60065
	Flexible coupling with clamp connection [KV] · Ø 6 mm / Ø 8 mm · Housing materials: aluminium	E60120
	Flexible coupling with clamp connection [KV] · Ø 6 mm / Ø 10 mm · Housing materials: aluminium	E60066
	Flexible coupling with clamp connection [KV] · Ø 10 mm / Ø 10 mm · Housing materials: aluminium	E60067
	Flexible coupling with adjusting screw connection [SV] · Ø 4 mm / Ø 6 mm · Housing materials: aluminium	E60062
	Flexible coupling with adjusting screw connection [SV] · Ø 6 mm / Ø 6 mm · Housing materials: aluminium	E60063
	Flexible coupling with adjusting screw connection [SV] · Ø 6 mm / Ø 8 mm · Housing materials: aluminium	E60027
	Flexible coupling with adjusting screw connection [SV] · Ø 6 mm / Ø 10 mm · Housing materials: aluminium	E60028
	Flexible coupling with adjusting screw connection [SV] · Ø 10 mm / Ø 10 mm · Housing materials: aluminium	E60022

You can find scale drawings from page 324

Type	Description	Order no.
	Spring disc coupling electrically isolating · Ø 6 mm / Ø 6 mm · Housing materials: diecast zinc / PA	E60121
	Spring disc coupling electrically isolating · Ø 6 mm / Ø 10 mm · Housing materials: diecast zinc / PA	E60117
	Spring disc coupling electrically isolating · Ø 10 mm / Ø 10 mm · Housing materials: diecast zinc / PA	E60118

Measuring wheels for encoders

Type	Description	Order no.
	Measuring wheel · Ø 159.15 mm / Ø 10 mm · cross-knurl · Housing materials: wheel: aluminium	E60098
	Measuring wheel · Ø 63.6 mm / Ø 6 mm · aluminium · Housing materials: wheel: aluminium	E60006
	Measuring wheel · Ø 63.6 mm / Ø 10 mm · aluminium · Housing materials: wheel: aluminium	E60095
	Measuring wheel · Ø 159.16 mm / Ø 10 mm · rubber · Housing materials: wheel: aluminium / tread: PU	E60076
	Measuring wheel · Ø 159.15 mm / Ø 10 mm · smooth plastic · Housing materials: wheel: Hytrel TPE-E	E60110
	Measuring wheel · Ø 63.66 ±0.1 mm / Ø 6 mm · smooth plastic · Housing materials: wheel: Hytrel TPE-E	E60111
	Measuring wheel · Ø 63.66 ±0.1 mm / Ø 10 mm · smooth plastic · Housing materials: wheel: Hytrel TPE-E	E60112
	Measuring wheel · Ø 63.66 ±0.1 mm / Ø 6 mm · grooved plastic · Housing materials: wheel: aluminium	E60137
	Measuring wheel · Ø 63.66 ±0.1 mm / Ø 10 mm · grooved plastic · Housing materials: wheel: Hytrel TPE-E	E60138

Connectors for encoders

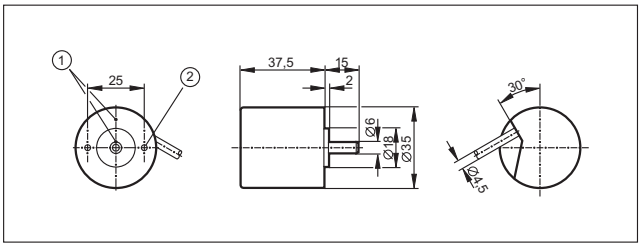
Type	Description	Order no.
	Wirable socket · straight · wirable · M18 connector · Housing materials: Brass nickel-plated	E60174
	Wirable socket · angled · wirable · M18 connector · Housing materials: Brass nickel-plated	E60175
	Wirable socket · angled · wirable · M23 connector · Housing materials: Brass nickel-plated	E10447
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass nickel-plated	E10448
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	E60124
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	E60122
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass nickel-plated	E60136
	Socket · straight · M23 connector · 5 m · Housing materials: Brass plastic coated / PA 6.6 black	E60144
	Socket · straight · M23 connector · 10 m · Housing materials: Brass plastic coated / PA 6.6 black	E60147
	Socket · angled · Free from silicone · Gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11986
	Socket · angled · Free from silicone · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	E11987
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	E12074
	Wirable plug · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	E60141
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	E60157

You can find scale drawings from page 324

Type	Description	Order no.
	Wirable socket · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	**E60146**
	Wirable plug · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	**E60123**
	Wirable plug · straight · wirable · M23 connector · Housing materials: Brass plastic coated / PA 6.6 black	**E60128**

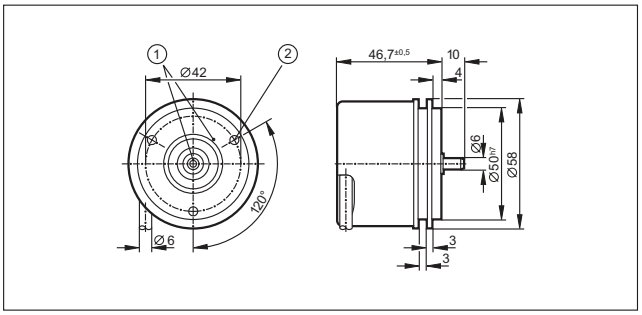
Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: reference mark, 2: M3 5 mm deep

2



1: reference mark, 2: M4 5 mm deep

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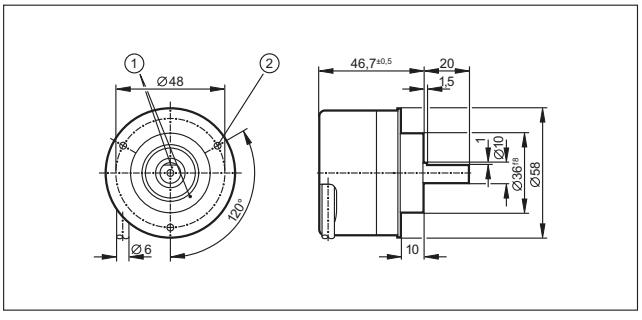

1: reference mark, 2: M3 5 mm deep

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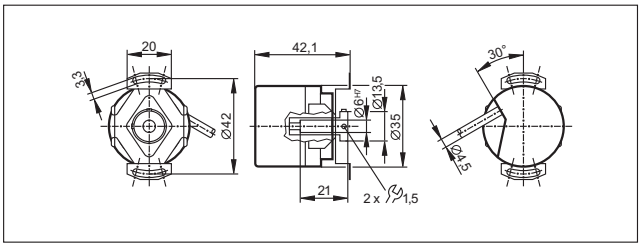

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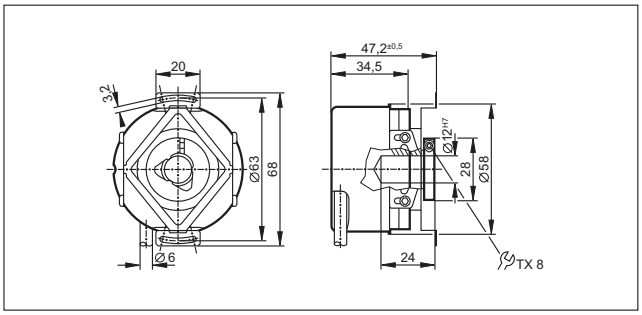

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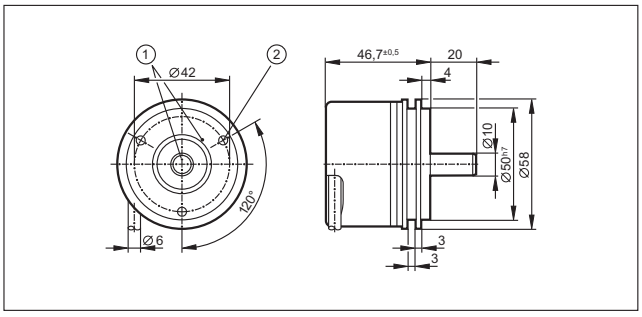
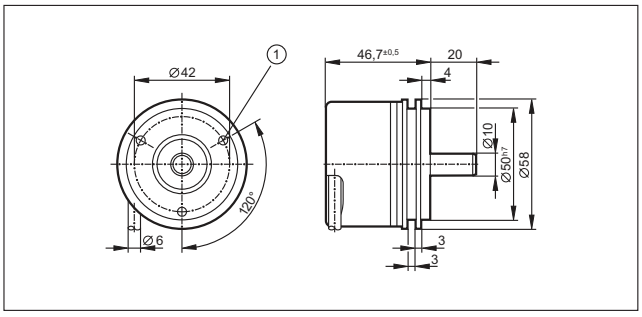


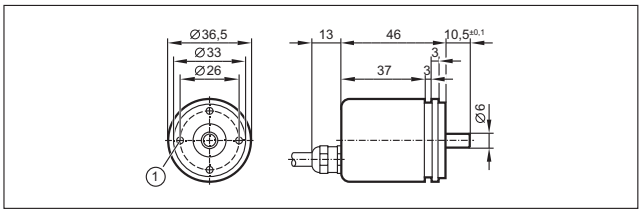
1: reference mark, 2: M4 5 mm deep

7



M4 5 mm deep

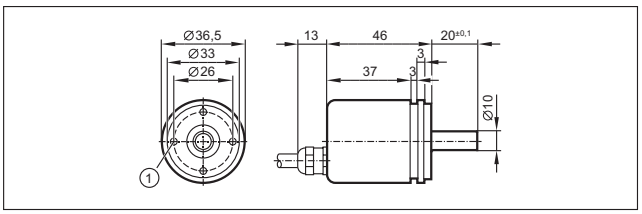
8



M3 6 mm deep

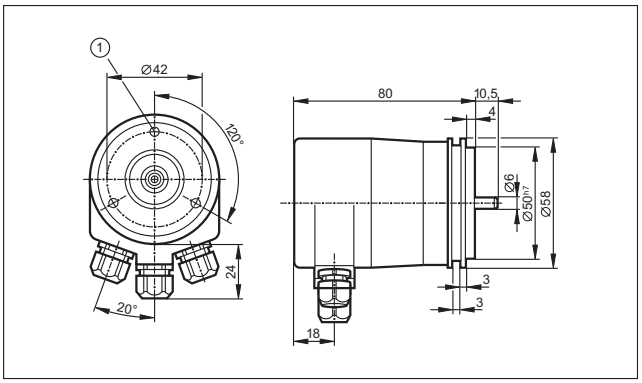
Scale drawings / drawing no. – CAD download: www.ifm.com

9



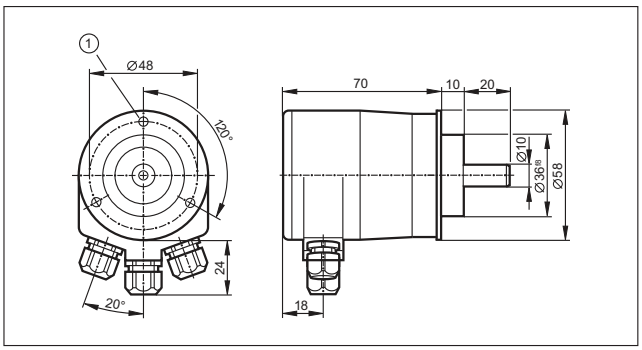
M3 6 mm deep

10



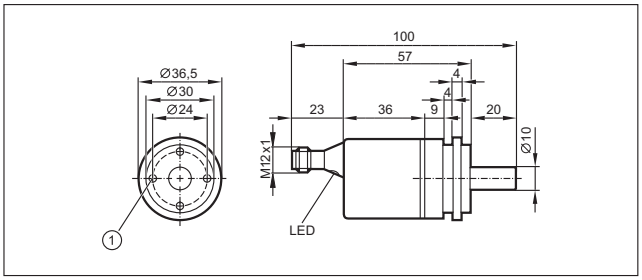
1: M4 5 mm deep

11



1: M4 5 mm deep

12



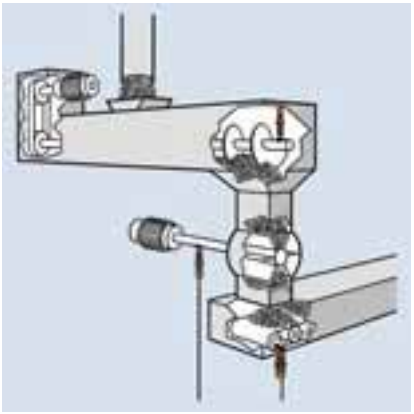
- **2 in 1: speed sensor and evaluation in one compact housing**
- **Space-saving design**
- **Easy to fit**
- **Easy parameter setting by potentiometer or pushbutton**

Inductive sensor with integrated speed evaluation

In many industrial applications drives need to be monitored for rotational speed or standstill. A typical application in building automation is V-belt monitoring on fans. In conveying, standstill monitoring is used to detect belt break on conveyors. A similar principle is applied in agricultural engineering to monitor elevator drives or detect blockage of screw conveyors. Application examples can also be found in the textile industry. Here the compact speed monitor signals thread break on sewing machines. The compact DI series speed monitor offers a specially low-cost and reliable solution. In principle it is an inductive sensor with integrated speed evaluation. The advantage: the condition information of the drive is directly transferred to the control system. The nominal speed is easily set by potentiometer or pushbutton.

Versions

ifm electronic offers the right unit for each application. The user can choose between M18 and M30 types with either M12 connector or cable. There are 2-wire and 3-wire units with either NC or NO function. For use in hazardous areas ifm offers speed monitors with ATEX 3D approval.



In conveying, compact speed monitors monitor drive shafts and conveyor belts.

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Speed monitor with integrated sensor

Type	Dimensions [mm]	Sensing range [mm]	Electrical design	U_b [V]	Setting range [puls. / min.]	Start-up delay [s]	Drawing no.	Order no.
Output function ⎍ / ⎍ · Wiring diagram no. 1 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	M18 / L = 68	12 nf	DC PNP	10...36 DC	3...6000	0...15	1	**DI6001**
Output function ⎍ · Wiring diagram no. 2								
	M30 / L = 81	10 f	AC/DC	20...250 AC/DC	5...300	12	2	**DI0001***
	M30 / L = 81	10 f	AC/DC	20...250 AC/DC	50...3000	12	2	**DI0002***
	M30 / L = 81	10 f	AC/DC	20...250 AC/DC	5...300	< 0.5	2	**DI0004***
Output function ⎍ · Wiring diagram no. 3								
	M30 / L = 81	10 f	DC PNP	10...36 DC	5...300	15	2	**DI5001**
	M30 / L = 81	10 f	DC PNP	10...36 DC	30...3000	15	2	**DI5003**
	M30 / L = 81	10 f	DC PNP	10...36 DC	30...3000	0	2	**DI5011**
Output function ⎍ · Wiring diagram no. 4								
	M30 / L = 81	10 f	DC PNP	10...36 DC	5...300	15	2	**DI5005**
Output function ⎍ · Wiring diagram no. 5								
	M30 / L = 81	10 f	DC PNP	10...36 DC	5...300	15	3	**DI5004**
	M30 / L = 81	10 f	DC PNP	10...36 DC	5...300	5	3	**DI5007**

Type	Dimensions [mm]	Sensing range [mm]	Electrical design	U_b [V]	Setting range [puls. / min.]	Start-up delay [s]	Drawing no.	Order no.
Output function ⎍ · Wiring diagram no. 6 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	M30 / L = 82	10 f	DC PNP	10...36 DC	5...300	15	4	**DI5009**

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Speed monitors with integrated sensor, ATEX category 3D

Type	Dimensions [mm]	Sensing range [mm]	Electrical design	U_b [V]	Setting range [puls. / min.]	Start-up delay [s]	Drawing no.	Order no.
Output function ⎍ · Wiring diagram no. 2								
	M30 / L = 81	10 f	AC/DC	20...250 AC/DC	5...300	12	5	**DI003A***
	M30 / L = 81	10 f	AC/DC	20...250 AC/DC	50...3000	12	5	**DI004A***
Output function ⎍ · Wiring diagram no. 3								
	M30 / L = 81	10 f	DC PNP	10...36 DC	5...300	15	5	**DI504A**
Output function ⎍ · Wiring diagram no. 6								
	M30 / L = 82	10 f	DC PNP	10...36 DC	5...300	15	6	**DI505A**
	M30 / L = 82	10 f	DC PNP	10...36 DC	5...300	5	6	**DI506A**
Output function ⎍ / ⎍ · Wiring diagram no. 1								
	M18 / L = 68	8 nf	DC PNP	10...36 DC	3...6000	0...15	7	**DI602A**

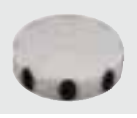
f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

You can find wiring diagrams and scale drawings from page 330

Accessories

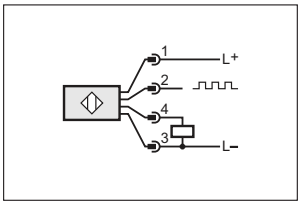
Type	Description	Order no.
	Angle bracket · for type M18 · Housing materials: stainless steel	E10736
	Angle bracket · for type M30 · Housing materials: stainless steel	E10737
	Mounting clamp · Ø 20 mm - Ø 18 mm · with reducing bush · for type M18 · Housing materials: PBT	E10076
	Mounting clamp · Ø 34 mm - Ø 30 mm · with reducing bush · for type M30 · Housing materials: PBT	E10077
	Target wheel · Plastic disk with 8 screws as "target" · Centered drill holes	E89010
	Target for pulse pickups · Strap dimensions 7 x 220 mm	E89013

Wiring diagrams

Core colours

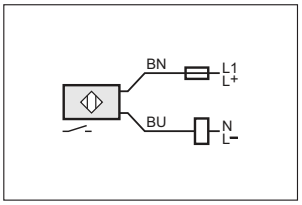
BN	brown
BU	blue
BK	black

1



2: pulse output (the pulse sequence corresponds to the damping frequency),
4: switching output (adjustable)

2



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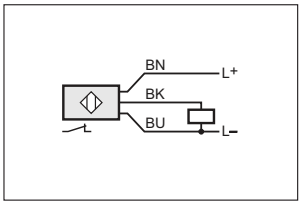

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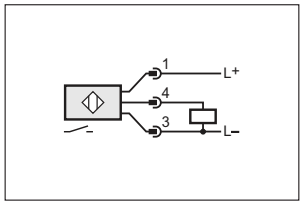

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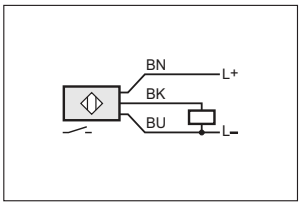

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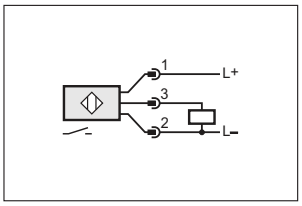
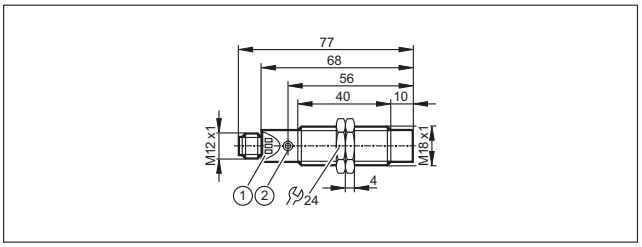


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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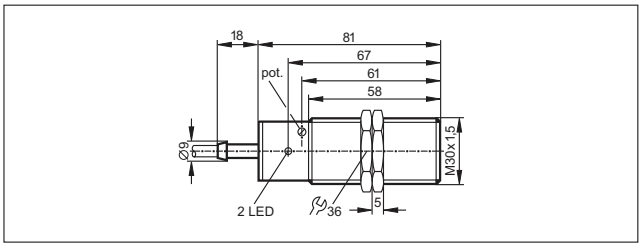
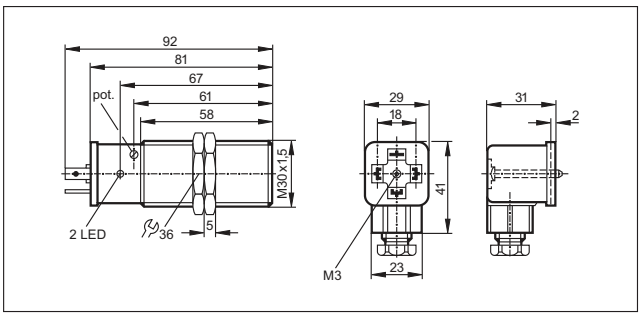


1: 3 LED, 2: setting pushbutton

Product selectors and further information can be found at: www.ifm.com

Scale drawings / drawing no. – CAD download: www.ifm.com

3



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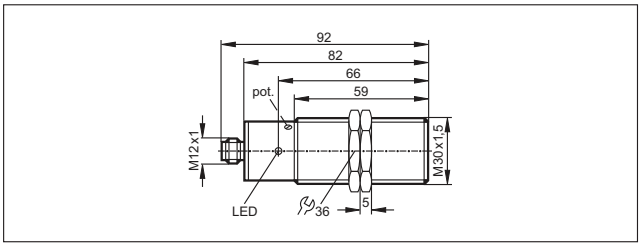

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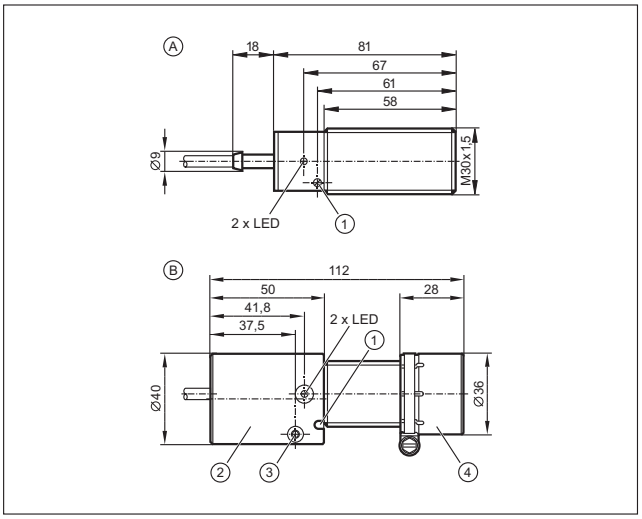
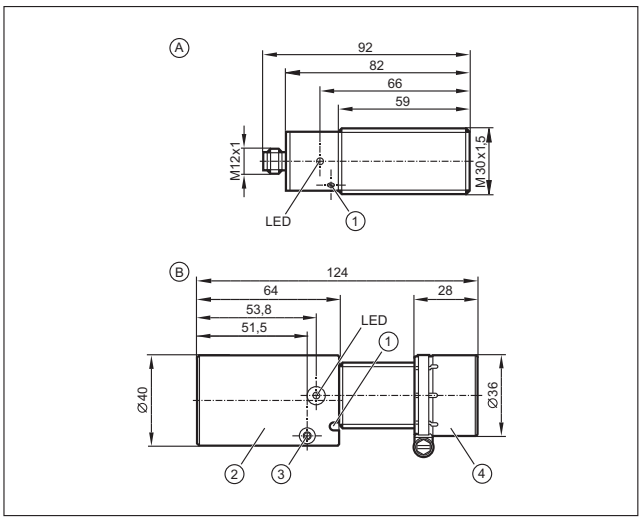


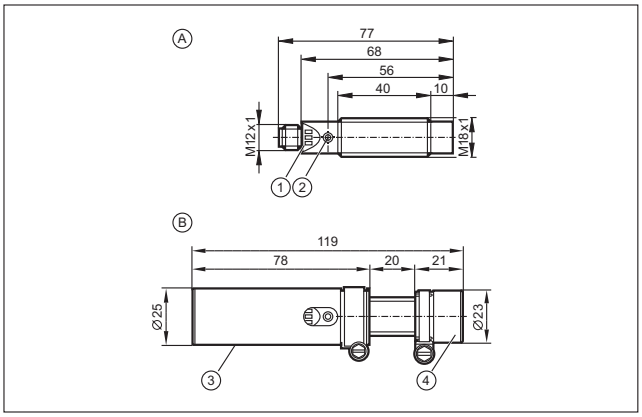
A: Sensor, B: sensor with impact protection housing,
1: potentiometer, 2: impact protection housing for the cable,
3: clamping screw, 4: impact protection housing for the sensor

6



A: Sensor, B: sensor with impact protection housing,
1: potentiometer, 2: impact protection housing for the connector,
3: clamping screw, 4: impact protection housing for the sensor

7



A: Sensor, B: sensor with impact protection housing, 1: 3 LED,
2: setting pushbutton, 3: impact protection housing for the connector, 4: impact protection housing for the sensor

- **Compact and robust design**
- **Wide angle range**
- **Sensor types for signal output via CANbus, as digital or analogue signal**
- **High protection rating IP 67**
- **CAN sensors are configurable**

Inclination detection

Electronic controllers and sensors are fundamental to the automation of vehicles and mobile machines. Often the horizontal alignment of machines or machine parts is an important requirement for reliable operation. Typical applications are cranes, access platforms or outriggers.

The micromechanics of the integrated capacitive measuring cell responds to the gravitational acceleration. This produces a sinusoidal analogue signal depending on the inclination. The sensor outputs supply the output signal as voltage or current value depending on the device.

If only a switch point is to be detected, the mercury-free tilt sensor is used. Due to its design it has the same good switching characteristics as a conventional mercury switch. Due to the harmless filling of the switching element with alcohol it has considerable ecological advantages in case of damage or disposal.

2-axis inclination sensor

The inclinometer detects precisely the deviations of the two measurement axes (X and Y direction). The high accuracy is achieved with measuring cells which operate to the conductometric principle. The change in conductivity of a liquid is determined. Depending on the sensor inclination the electrodes are surrounded by a different level of liquid. This results in a behaviour comparable to that of a potentiometer. The arrangement of the electrodes provides the assigned values for the two axes.

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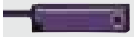
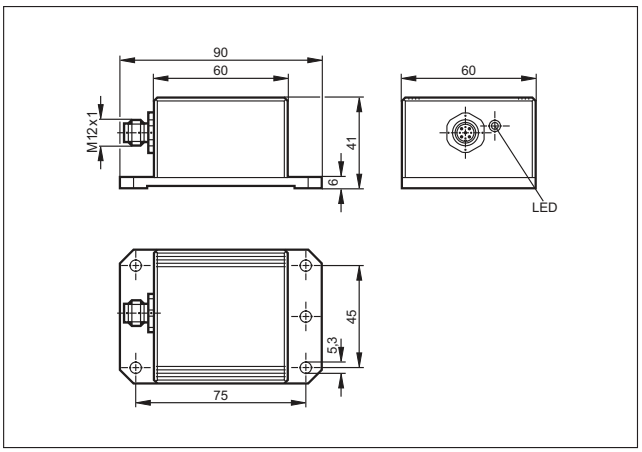
Inclination sensors

Type	Description	Drawing no.	Order no.
	Inclination sensor · CAN interface · ± 15° · 2 axes · Configurable output functions · 10...32 V DC	1	**CR2101**
	Inclination sensor · CAN interface · Analogue outputs · 4...20 mA · ± 45° · 2 axes · Configurable output functions · 10...32 V DC	2	**CR2102**
	Inclination sensor · ± 90° · 15...30 V DC · Output 0...10 V · Cable	3	**EC2019**
	Inclination sensor · ± 90° · Input 8...30 V DC · Output 0.5...4.5 V · Cable	3	**EC2045**
	Inclination sensor · ± 20° · Analogue output · 4...20 mA	3	**EC2060**
	Inclination sensor · ± 90° · Analogue output · 4...20 mA	3	**EC2082**
	Tilt sensor · free from mercury · semi-conductor output · 10...30 V DC · Cable	4	**EC2061**

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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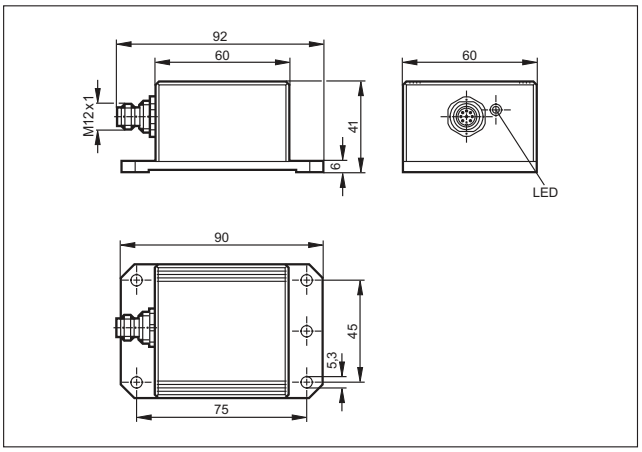

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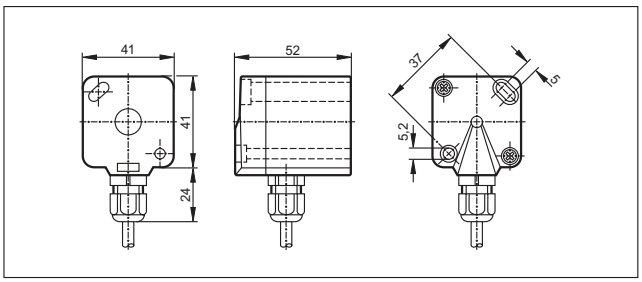

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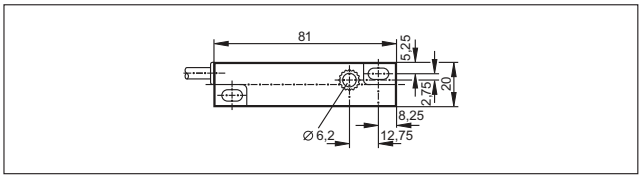


- **Easy adjustment and parameter setting**
- **Primary voltage 24V DC or 110 / 230V AC, wide-range input**
- **Programmable switching characteristics**
- **Standstill, overspeed, direction, slip and frequency conversion, counter**
- **Switching relays and transistor outputs, scalable analogue output**

Evaluation systems

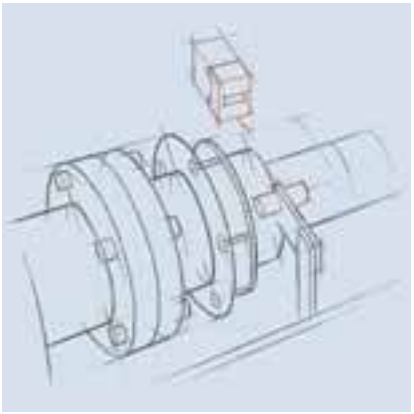
Although PLC applications in industrial automation are becoming more and more versatile there are still numerous processes in practice which require decentralised monitoring.

For this ifm electronic offers a number of pulse evaluation systems. Shown here is the versatile system for monitoring overspeed or underspeed using sophisticated microprocessor systems which are nonetheless easy to use. Also included is the monitor designed for very safe indication that moving parts have stopped.

In addition to the units for rail mounting there are also self-contained compact designs in metal M18 and M30 housings, where the pick-up sensor and evaluation are all in one device.

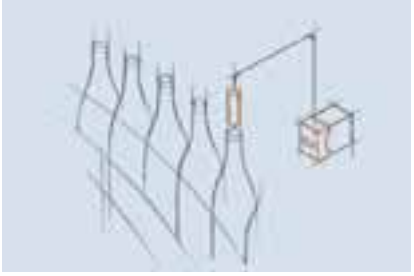
Overall ifm electronic offers the following evaluation systems:

– Speed monitors
– Standstill monitors
– Slip / synchronisation monitors
– Direction monitors
– Frequency-to-current converters
– Threshold relays
– Displays with frequency and analogue input
– Counters



Pulse evaluation systems are used for decentralised monitoring of drives.

Machine cycles must also be monitored in conveying.



Product selectors and further information can be found at: www.ifm.com

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Universal speed monitors

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FR-1 · 2 switch points for monitoring overspeed / underspeed and acceptable range										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	1...60000	0.1...1000	1	2	2	1	**DD2503**

Universal speed monitors with sensor wire monitoring

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FR-1N · 2 switch points for monitoring overspeed / underspeed and acceptable range										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	Namur 8.2 V	1...60000	0.1...1000	1	2	4	1	**DD2603**

Dual speed monitors

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FR-2 · 1 switch point each for monitoring overspeed / underspeed and acceptable range										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	2	PNP / NPN / Namur	1...60000	0.1...1000	–	2	2	1	**DD2505**

Dual speed monitors with sensor wire monitoring

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FR-2N · 1 switch point each for monitoring overspeed / underspeed and acceptable range										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	2	Namur 8.2 V	1...60000	0.1...1000	–	2	4	1	**DD2605**

Standard speed monitors

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
D100 · evaluation of pulse sequences with regard to overspeed and underspeed; rotational speed monitoring										
	230 AC (50...60 Hz) / 24 DC	1	PNP	5...5000	–	–	1	–	2	**DD0001**
	230 AC (50...60 Hz) / 24 DC	1	PNP	10...10000	–	–	1	–	2	**DD0022**
	110...240 AC/DC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP	5...5000	–	–	1	1	2	**DD0116**
	27...60 AC/DC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP	5...5000	–	–	1	1	2	**DD0122**

Slip monitors

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FS-1 · 1 switching output for slip monitoring; 1 switching output for overspeed / underspeed and acceptable range								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	slip: 0.1...99.9 % rotational speed (frequency): 1...60000 pulses/min (0.1...1000)	2	2	1	**DS2503**

Slip monitors with sensor wire monitoring

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FS-1N · 1 switching output for slip monitoring; 1 switching output for overspeed / underspeed and acceptable range								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	Namur 8.2 V	slip: 0.1...99.9 % rotational speed (frequency): 1...60000 pulses/min (0.1...1000)	2	2	1	**DS2603**

You can find scale drawings from page 344

Slip / synchronous monitors

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FS-2 · 2 switch points for slip/synchronous monitoring								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	pulse differences: 1...999 reset time: 0.0...1000.0 s	2	2	1	**DS2505**
FS-3 · 2 switch points for synchronous monitoring								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	pulse differences: 1...999 hysteresis: 1...999	2	2	1	**DS2506**

Slip / synchronous monitors with sensor wire monitoring

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FS-2N · 2 switch points for slip / synchronous monitoring								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	Namur 8.2 V	pulse differences: 1...999 reset time: 0.0...1000.0 s	2	2	1	**DS2605**

Combined direction and speed monitors

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FD-1 · 1 switching output for indication of direction; 1 switching output for overspeed / underspeed and acceptable range								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	cycle time: 0.0...1000 s rotational speed (frequency): 1...60000 pulses/min (1...1000)	2	2	1	**DR2503**
FD-2 · 2 switching outputs for separate indication of direction; adjustable reset times for standstill monitoring								
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	reset time: 0.0...1000 s	2	2	1	**DR2505**

Frequency-to-current converters

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FA-1 · Conversion of pulse sequences into analogue standard signals										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	0...600000	0...10000	2	1	1	1	**DW2503**

Standstill monitors

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
A300 · Evaluation of pulse sequences with regard to underspeed or missing pulse										
	230 AC (50...60 Hz) / 24 DC	1	PNP	5...25 / 20...100	–	–	1	–	3	**DA0001**
	110...240 AC/DC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP	5...25 / 20...100	–	–	1	1	3	**DA0116**
	27...60 AC/DC (50...60 Hz) / 27 DC (typ. 24 DC)	1	PNP	5...25 / 20...100	–	–	1	1	3	**DA0122**

Safety standstill monitors, SIL 3, PL e

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
Monitoring rotational or linear movements for minimum switch point not reached (standstill)										
	24 DC	1	PNP	–	0.2 / 0.5 / 1.0 / 2.0	–	2	1	4	**DA101S**
	24 DC	1	PNP	–	0.2 / 0.5 / 1.0 / 2.0	–	2	1	4	**DA102S**

You can find scale drawings from page 344

Safety speed monitor, SIL 3, PL e

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
Monitoring of rotational or linear movements for adherence to a maximum setpoint (overspeed)										
	24 DC	1	PNP	–	-40...75	–	2	1	5	**DD110S**

Multifunctional displays for digital signals / frequency input

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
FX 360 · universal evaluation and display for all physical units which can be derived from pulse sequences										
	115/230	2	PNP / NPN	–	–	–	–	–	6	**DX2001**
	115/230	2	PNP / NPN	–	–	2	–	–	6	**DX2002**
	115/230	2	PNP / NPN	–	–	–	–	2	6	**DX2003**

Universal counters

Type	U_b [V]	In-puts	Input function	Setting range	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
preset counter with 2 presets								
	90...260 AC	1	PNP / NPN	–	2	–	7	**E89005**

2-channel threshold relay for analogue standard signals

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
AL-3 · 2-channel analogue threshold relay for analogue standard signals										
	110...240 AC (50...60 Hz) / 27 DC (typ. 24 DC)	2	2 x 0/4...20 mA	–	–	1	1	1	1	**DL2503**

Multifunctional displays for analogue standard signals

Type	U_b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Draw-ing no.	Order no.
AX 360 · universal unit for the display of analogue standard signals (e.g. of pressure, temperature,or flow sensors)										
	115/230	2	0/4...20 mA / 0...10 V	–	–	–	–	–	6	**DX2011**
	115/230	2	0/4...20 mA / 0...10 V	–	–	–	–	2	6	**DX2012**
scaleable display for sensors with analogue output (e.g. pressure sensors, flow sensors)										
	–	1	4...20 mA	–	–	–	–	–	8	**E89150**

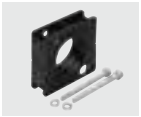
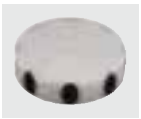
Accessories pulse divider / pulse stretcher

Type	Description	Draw-ing no.	Order no.
	Pulse divider · Ratio input/output pulse 10:1 · Housing for DIN rail mounting · plastics	9	**E80100**
	Pulse divider · Division 1...255	10	**E80102**
	Pulse stretcher · Pulse length · IN (min): > 0.2 ms / OUT: 25 ms · Housing for DIN rail mounting · plastics	9	**E80110**

Accessories

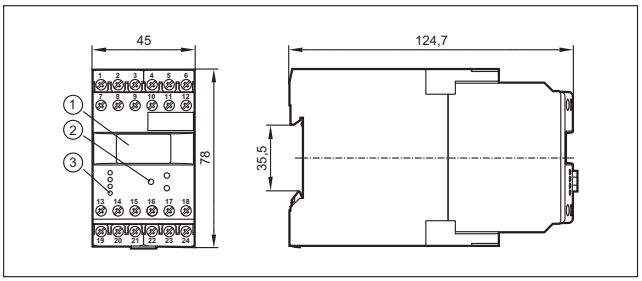
Type	Description	Order no.
	Angle bracket · for type M18 · Housing materials: stainless steel	**E10736**
	Angle bracket · for type M30 · Housing materials: stainless steel	**E10737**
	Mounting clamp · Ø 20 mm - Ø 18 mm · with reducing bush · for type M18 · Housing materials: PBT	**E10076**

You can find scale drawings from page 344

Type	Description	Order no.
	Mounting clamp · Ø 34 mm - Ø 30 mm · with reducing bush · for type M30 · Housing materials: PBT	**E10077**
	Target wheel · Plastic disk with 8 screws as "target" · Centered drill holes	**E89010**
	Target for pulse pickups · Strap dimensions 7 x 220 mm	**E89013**

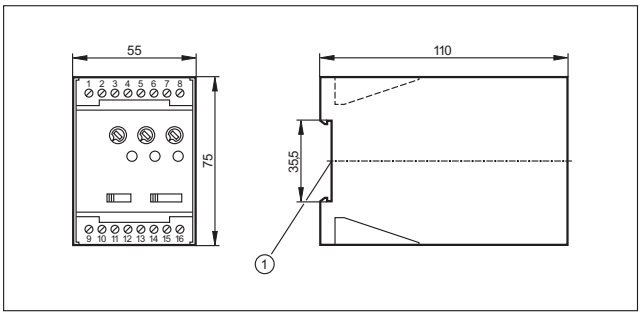
Scale drawings / drawing no. – CAD download: www.ifm.com

1



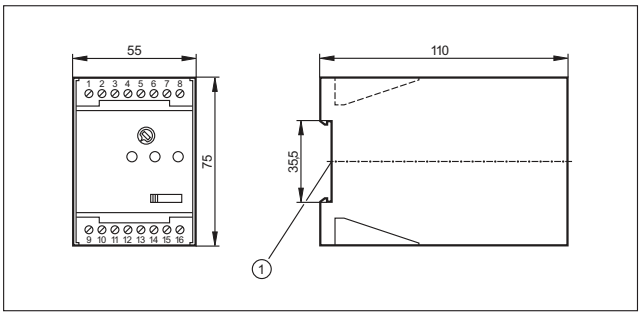
1: OLED display, 2: Programming buttons, 3: LEDs

2



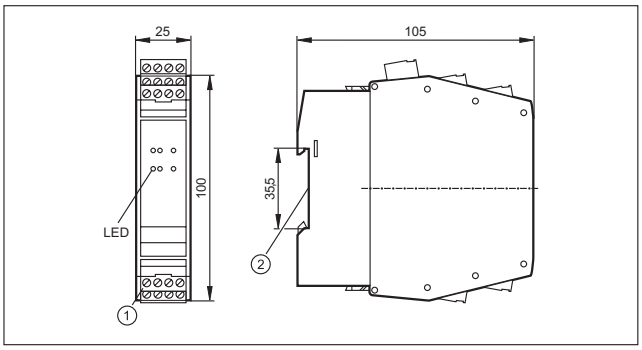
1: Mounting on DIN rail

3



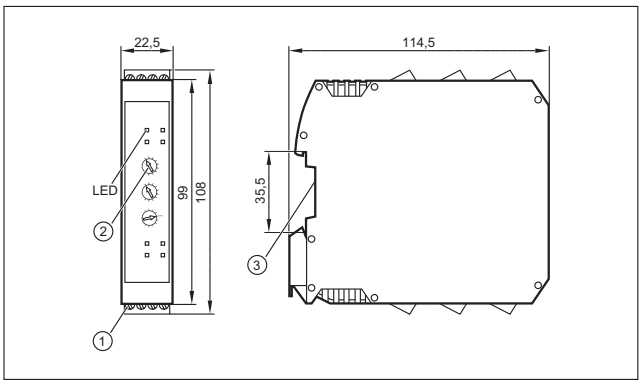
1: Mounting on DIN rail

4



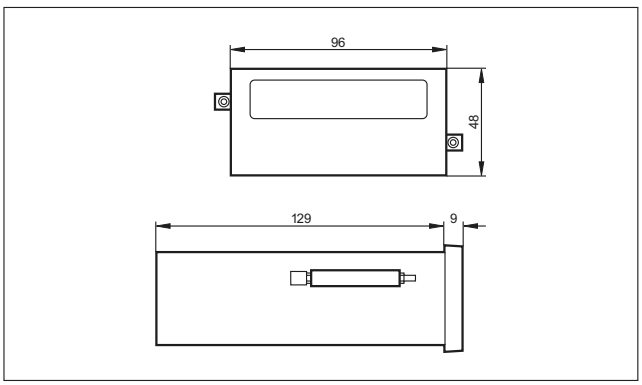
1: Combicon connector with screw terminals,
2: Mounting on DIN rail

5



1: screw terminals, 2: Rotary switch, 3: Mounting on DIN rail

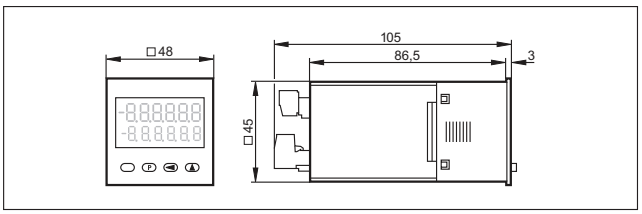
6



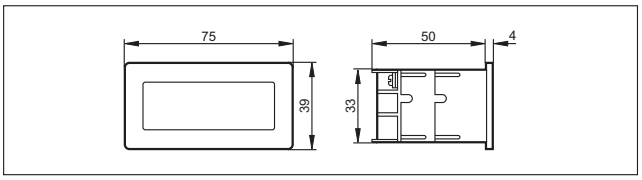
Product selectors and further information can be found at: www.ifm.com

Scale drawings / drawing no. – CAD download: www.ifm.com

7

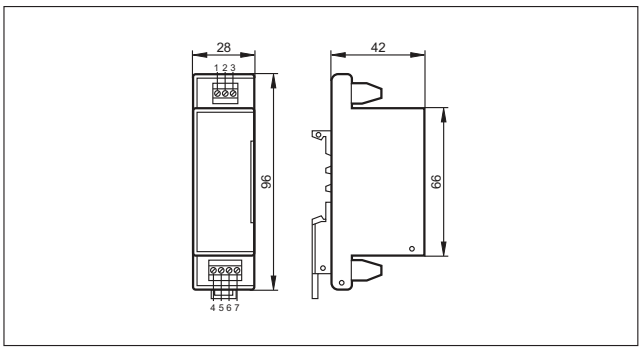


8

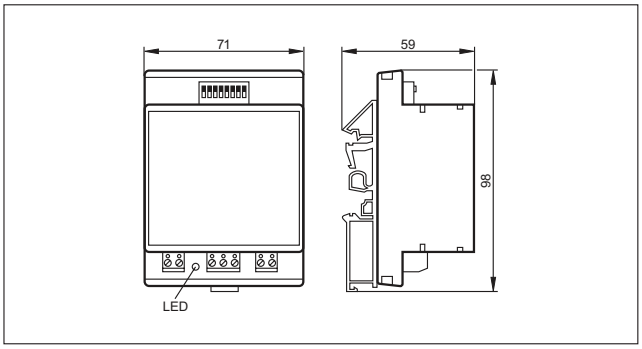


control panel cutout: 68 x 33 mm (according to DIN)

9



10



Detected at a glance

Completeness check in the bottling process with efector pmd3d.

The power of a camera system with the simplicity of a sensor

In automation technology vision sensors are nowadays an integral part of assembly and manufacturing tasks as well as quality control and also a means of increasing efficiency. Vision sensors are cameras with application-specific evaluation, i.e. reliable electronic eyes at a low cost and a high degree of integration.

While a few years ago expensive camera systems were necessary, technical advancements and a continued decline in component prices have made it possible to integrate more and more intelligent functions into even smaller devices at a low cost. Not only do compact vision sensors replace camera systems, but they also offer additional application options. They are for example used to detect objects that have variable positions or shapes, replacing complex proximity switches or multiple sensor solutions such as sensor bridges used for completeness checks of pallets or crates.

Easy to integrate

One of the distinguishing features of vision sensors is their simplicity. This means that they can be used without any specific prior knowledge. All units have switching outputs to confirm pass / fail conditions. So vision sensors offer the same ease of use as binary sensors. An Ethernet process interface is used for data transmission, parameter setting and remote monitoring.

Robust and compact

Another advantage: the high protection ratings and wide temperature ranges of ifm vision sensors make it possible to install them close to the objects to be monitored. In contrast to complex camera solutions, all necessary components such as lighting, optics, evaluation electronics and output logic are integrated in the industrial housing. With ifm vision sensors tasks such as quality and completeness checks can now be solved easily and at a low cost.

Vision sensors 348 - 352

3D sensors 354 - 355

3D cameras 356 - 358

Illumination 360 - 363

Vision sensors

Stand-alone unit with integrated lighting and evaluation in a robust, industrially compatible housing.

The electronic eye for monitoring presence, completeness, position, quality control as well as sorting tasks.

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Sensors for object recognition	349
Software for vision sensors	350
Panel PC for vision sensors	350
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Reflective tapes, diffusers and protective panes for vision sensors	352
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Object inspection sensors

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Drawing no.	Order no.
Type O2V · M12 plug, 8 poles M12 socket, 4 poles · metal · DC · PNP · Connector groups 16, 17								
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	White light	-10...60	1	**O2V100**
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	Infrared	-10...60	1	**O2V120**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	White light	-10...60	1	**O2V102**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	Infrared	-10...60	1	**O2V122**
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	White light	-10...60	2	**O2V104**
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	Infrared	-10...60	2	**O2V124**

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Drawing no.	Order no.
Type O2V · M12 plug, 8 poles M12 socket, 4 poles · metal · DC · NPN · Connector groups 16, 17								
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	White light	-10...60	1	**O2V101**
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	Infrared	-10...60	1	**O2V121**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	White light	-10...60	1	**O2V103**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	Infrared	-10...60	1	**O2V123**
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	White light	-10...60	2	**O2V105**
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	Infrared	-10...60	2	**O2V125**

Sensors for object recognition

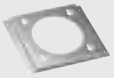
Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Drawing no.	Order no.
Type O2D2 · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · PNP · Connector groups 16, 17								
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	Infrared	-10...60	2	**O2D224**
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	Infrared	-10...60	1	**O2D220**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	Infrared	-10...60	1	**O2D222**
Type O2D2 · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · NPN · Connector groups 16, 17								
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	Infrared	-10...60	2	**O2D225**
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	Infrared	-10...60	1	**O2D227**
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	Infrared	-10...60	1	**O2D229**

You can find scale drawings from page 352

Software for vision sensors

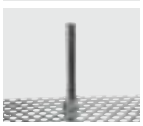
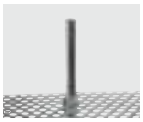
Type	Description	Order no.
	Operating software · O2D	E2D200
	Operating software · O2V	E2V100

Panel PC for vision sensors

Type	Description	Order no.
	Touch Panel PC · AFL-12A-ATOM-N270/WT-R/1GB-R20 · 12.1" colour display · Intel Atom CPU 1.6 GHz · 1 GByte RAM · Windows XP Embedded	E2D400
	Mounting bracket · for Touch Panel PC · for wall mounting · VESA standard 100 x 100 mm · Housing materials: fixture: metal	E2D401
	Mounting set · for Touch Panel PC · for control cabinet mounting · Housing materials: fixture: metal / End cap: plastics	E2D402

Fixing components for vision sensors

Type	Description	Order no.
	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 12 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D110
	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 14 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D112
	Mounting set · Backlight 25 x 25 mm · Clamp mounting · Housing materials: Mounting plate: stainless steel / clamp: high-grade stainless steel	E2D107
	Mounting set · Backlight 50 x 50 mm · Clamp mounting · Housing materials: Mounting plate: stainless steel / clamp: high-grade stainless steel	E2D108
	Mounting set · Backlight 100 x 100 mm · Clamp mounting · Housing materials: Mounting plate: stainless steel / clamp: high-grade stainless steel	E2D109
	clamp · Ø 12 mm · rod mounting Ø 12 mm · Housing materials: clamp: stainless steel	E21110

Type	Description	Order no.
	clamp · Ø 14 mm · rod mounting Ø 14 mm · Housing materials: clamp: stainless steel	**E21109**
	clamp · Ø 12 mm; M10 · Free-standing M10 · Housing materials: clamp: stainless steel	**E20946**
	clamp · Ø 14 mm; M12 · free-standing M12 · Housing materials: clamp: stainless steel	**E20948**
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E20938**
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E20940**
	mounting rod · Ø 12 · Length: 150 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E21111**
	mounting rod · Ø 12 · Length: 200 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E21112**
	mounting rod · Ø 12 · Length: 300 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E21113**
	mounting rod · Ø 14 / M12 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	**E20939**
	mounting rod · Ø 14 / M12 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	**E20941**
	Connection piece · Ø 20 mm · for the connection of two clamps with Ø 20 mm · Housing materials: stainless steel 316L / 1.4404	**E21076**
	Cube · M10 · aluminium profile · Housing materials: diecast zinc	**E20951**
	Cube · M12 · aluminium profile · Housing materials: diecast zinc	**E20952**

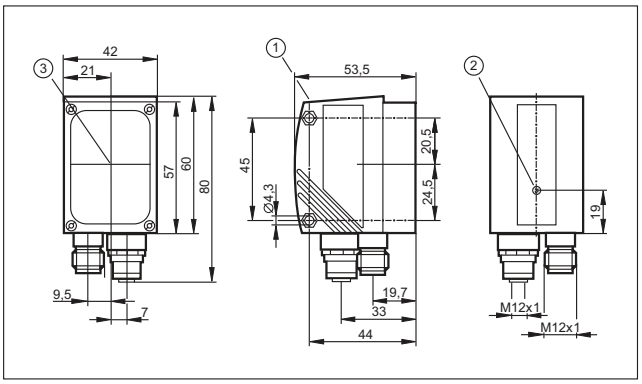
You can find scale drawings from page 352

Reflective tapes, diffusers and protective panes for vision sensors

Type	Description	Order no.
	Reflective tape · TS-03 · 100 x 100 mm · Housing materials: plastics	E2D106
	Plastic diffuser · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21165
	Plastic protective pane for the food industry · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21166
	Glass protective pane · O2D / O2I · Housing materials: housing: diecast zinc black / lens: float glass	E21168
	Daylight filter · O2D · Housing materials: housing: diecast zinc black / lens: PMMA / Metal ring: aluminium black anodised / sealing: FPM 75+/-5 Shore A black	E21172

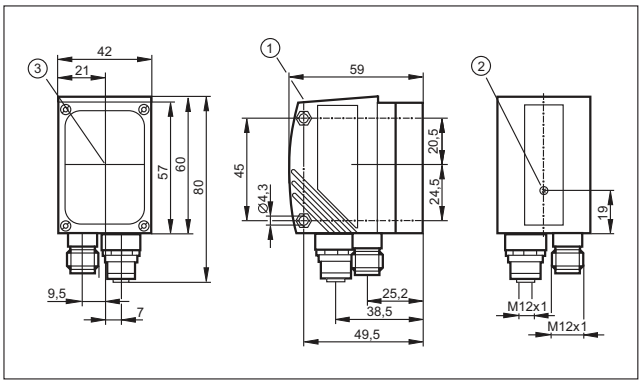
Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: display, 2: Focus setting, 3: Centre of the lens axes

2



1: display, 2: Focus setting, 3: Centre of the lens axes

3D sensors

efector pmd 3d is the first industrial 3D sensor that can assess objects in three dimensions at a glance. Each pixel of this chip matrix evaluates its distance to the object. The image of the object on the chip matrix and the respective distance values correspond to a 3D image. The integrated evaluation enables the detailed assessment of the object's or scene's conditions by means of volume, distance or level detection in three dimensions.

System overview

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Panel PC for vision sensors	354 - 355
Fixing components for 3D sensors	355
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Sensors for 3D object recognition

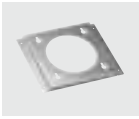
Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Drawing no.	Order no.
PMD 3D sensor · Type O3D · M12 connector · metal · DC · Connector groups 16, 17								
	PMD 3D sensor	64 x 48	30 x 40	Infrared LED	20	-10...50	1	**O3D200**

Software for 3D sensors

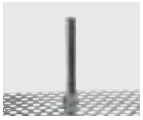
Type	Description	Order no.
	Operating software for PMD 3D sensor · O3D	**E3D200**

Panel PC for vision sensors

Type	Description	Order no.
	Touch Panel PC · AFL-12A-ATOM-N270/WT-R/1GB-R20 · 12.1" colour display · Intel Atom CPU 1.6 GHz · 1 GByte RAM · Windows XP Embedded	**E2D400**

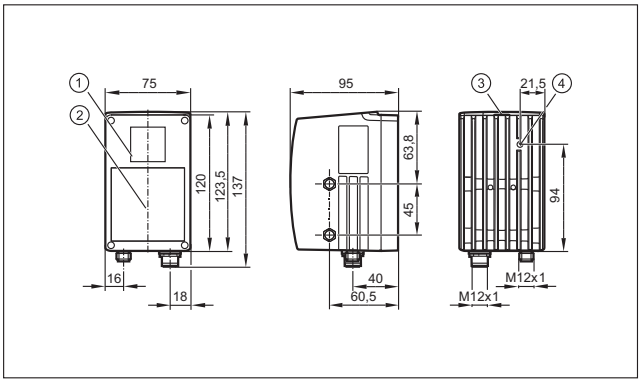
Type	Description	Order no.
	Mounting bracket · for Touch Panel PC · for wall mounting · VESA standard 100 x 100 mm · Housing materials: fixture: metal	E2D401
	Mounting set · for Touch Panel PC · for control cabinet mounting · Housing materials: fixture: metal / End cap: plastics	E2D402

Fixing components for 3D sensors

Type	Description	Order no.
	Mounting set · O3D · Clamp mounting · rod mounting Ø 14 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E3D103
	mounting rod · Ø 14 / M12 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20939
	mounting rod · Ø 14 · Length: 200 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21228
	mounting rod · Ø 14 · Length: 300 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21229
	mounting rod · Ø 14 · Length: 500 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21232

Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: lens, 2: Illumination unit, 3: Display / buttons / LEDs,
4: Focus setting

3D cameras

The pmd 3d camera detects scenes and objects in their spatial dimensions at a glance. In contrast to laser scanners it does not require moving components and is thus robust and wear-free. The operating principle is the same as for the 3D sensor. Besides the 3D distance image the camera provides a grey image of the scene. The combination of these images offers the possibility to freely program application-specific tasks by means of a software development kit.

System overview

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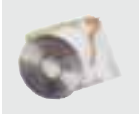
Connection cables for industrial imaging	357 - 358
Scale drawings / drawing no. – CAD download: www.ifm.com	358

Cameras for 3D object recognition

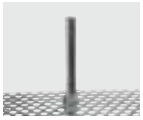
Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Drawing no.	Order no.
PMD 3D camera · Type O3D · M12 connector · metal · DC · Connector groups 16, 17								
	PMD 3D camera	64 x 48	30 x 40	Infrared LED	20	-10...50	1	**O3D201**

Software for 3D cameras

Type	Description	Order no.
	Operating software for PMD 3D camera · O3D	**E3D201**

Fixing components for 3D cameras

Type	Description	Order no.
	Mounting set · O3D · Clamp mounting · rod mounting Ø 14 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	**E3D103**

Type	Description	Order no.
	mounting rod · Ø 14 / M12 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20939
	mounting rod · Ø 14 · Length: 200 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21228
	mounting rod · Ø 14 · Length: 300 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21229
	mounting rod · Ø 14 · Length: 500 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21232

Connection cables for industrial imaging

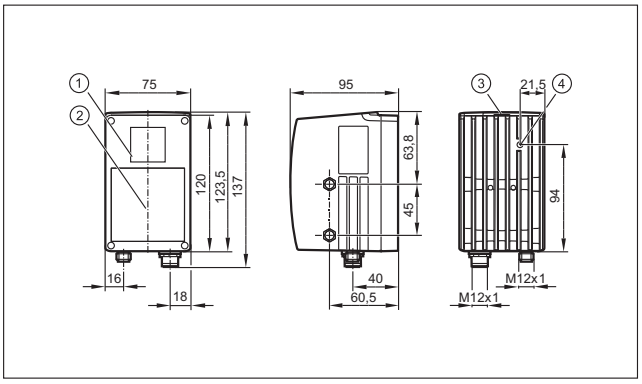
Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Jumper · straight / straight · Ethernet · Patch cable · 2 m · Housing materials: PUR / PC	E12090
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 2 m · Housing materials: TPU	E21138
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 5 m · Housing materials: TPU	E21139
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 10 m · Housing materials: TPU	E21137
	Jumper · straight / straight · Ethernet · 2 m · Housing materials: PUR	E21135
	Jumper · straight / straight · Ethernet · 5 m · Housing materials: PUR	E21136
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 10 m · Housing materials: PUR / PC	E12204
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 20 m · Housing materials: PUR / PC	E12205

You can find scale drawings from page 358

Type	Description	Order no.
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: PUR	E11232
	Socket · straight · Free from halogen · M12 connector · 5 m · Housing materials: PUR	E11807
	Socket · straight · Free from halogen · M12 connector · 10 m · Housing materials: PUR	E11311
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR	E11950
	Adapter · angled · Connector	E21140
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR	EC2080
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 5 m · Housing materials: PUR	E30112

Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: lens, 2: Illumination unit, 3: Display / buttons / LEDs,
4: Focus setting

Illumination

Very slim LED backlights for generating a precise silhouette. Versions with red light or infrared light available. Continuous operation or pulse mode with 4-fold light intensity..

System overview	Page
Illumination units, spotlight	360
Illumination units, backlight	360 - 361
Illumination units, spotlight	361 - 362
Accessories for illumination units	362
Wiring diagrams	362
Scale drawings / drawing no. – CAD download: www.ifm.com	363

Illumination units, spotlight

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Drawing no.	Order no.
PUR cable with M12 connector 0.3 m · metal · DC · Wiring diagram no. 1 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Ø 122 / L = 20,5	Red	Ø 66 / 106	800	1300	External; 24 V PNP to IEC61131-1	1	**O2D915**
	Ø 122 / L = 20,5	Infrared	Ø 66 / 106	800	1400	External; 24 V PNP to IEC61131-1	1	**O2D917**
	Ø 122 / L = 20,5	White light	Ø 66 / 106	800	1200	External; 24 V PNP to IEC61131-1	1	**O2D919**

Illumination units, backlight

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Drawing no.	Order no.
PUR cable 2 m · metal · DC · Wiring diagram no. 2								
	70.5 x 9.2 x 33.4	Red	25 x 25	50	25	External; 24 V PNP to IEC61131-1	2	**O2D900**

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Drawing no.	Order no.
PUR cable 2 m · metal · DC · Wiring diagram no. 2								
	70.5 x 9.2 x 33.4	Infrared	25 x 25	50	25	External; 24 V PNP to IEC61131-1	2	**O2D901**
	108 x 9.8 x 81	Red	50 x 50	200	100	External; 24 V PNP to IEC61131-1	3	**O2D902**
	108 x 9.8 x 81	Infrared	50 x 50	200	100	External; 24 V PNP to IEC61131-1	3	**O2D903**
	161.2 x 9.8 x 133	Red	100 x 100	450	250	External; 24 V PNP to IEC61131-1	4	**O2D904**
	161.2 x 9.8 x 133	Infrared	100 x 100	450	250	External; 24 V PNP to IEC61131-1	4	**O2D905**
PUR cable 0.15 m · metal · DC · Wiring diagram no. 1 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	70.5 x 9.2 x 33.4	Red	25 x 25	50	25	External; 24 V PNP to IEC61131-1	2	**O2D910**
	70.5 x 9.2 x 33.4	Infrared	25 x 25	50	25	External; 24 V PNP to IEC61131-1	2	**O2D906**
	108 x 9.8 x 81	Red	50 x 50	200	100	External; 24 V PNP to IEC61131-1	3	**O2D911**
	108 x 9.8 x 81	Infrared	50 x 50	200	100	External; 24 V PNP to IEC61131-1	3	**O2D907**
	161.2 x 9.8 x 133	Red	100 x 100	450	250	External; 24 V PNP to IEC61131-1	4	**O2D912**
	161.2 x 9.8 x 133	Infrared	100 x 100	450	250	External; 24 V PNP to IEC61131-1	4	**O2D908**

Illumination units, spotlight

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Drawing no.	Order no.
M12 connector · metal · DC · Wiring diagram no. 1 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	42 x 42 x 31	Red	–	180	90	External; 24 V PNP to IEC61131-1	5	**O2D909**

You can find wiring diagrams and scale drawings from page 362

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Draw-ing no.	Order no.
M12 connector · metal · DC · Wiring diagram no. 1 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	42 x 42 x 32.2	Red	–	180	90	External; 24 V PNP to IEC61131-1	6	**O2D913**

Accessories for illumination units

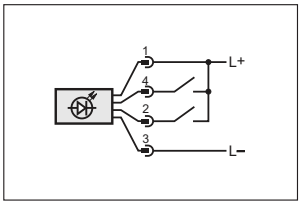
Type	Description	Order no.
	Mounting set · Ring light · Clamp mounting · Housing materials: Mounting bracket: stainless steel / clamp: high-grade stainless steel	**E2D201**
	Glass diffuser · Ring light · Housing materials: housing: aluminium black anodised / lens: glass	**E2D202**

Wiring diagrams

Core colours

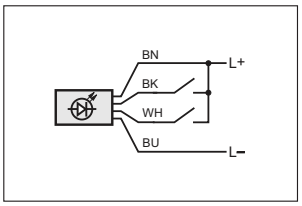
BK	black
BN	brown
BU	blue
WH	white

1



1: Trigger, 2: Operating mode "high light intensity"

2



black: Trigger, white: Operating mode "high light intensity"

Scale drawings / drawing no. – CAD download: www.ifm.com

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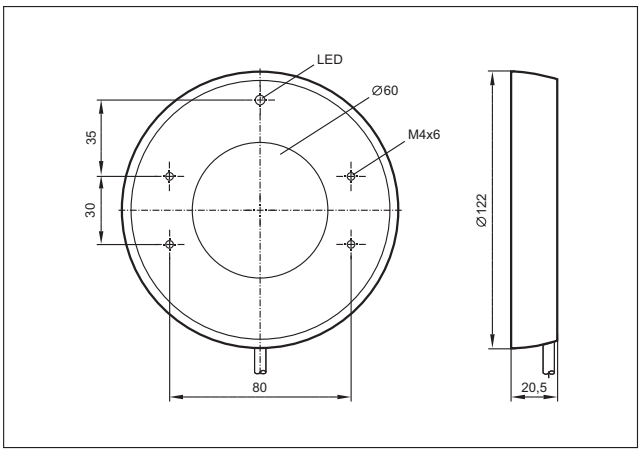

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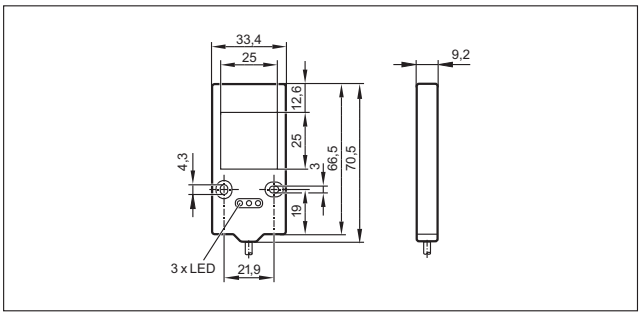

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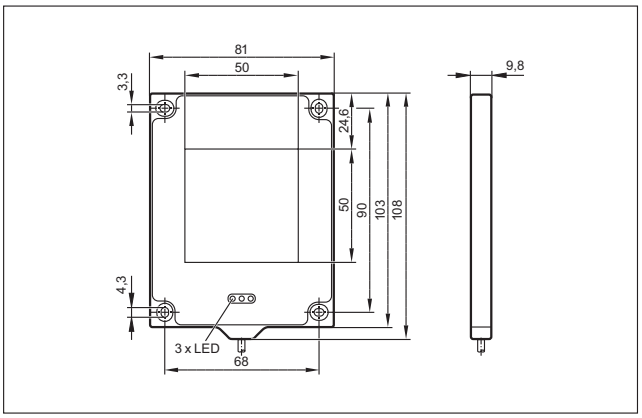

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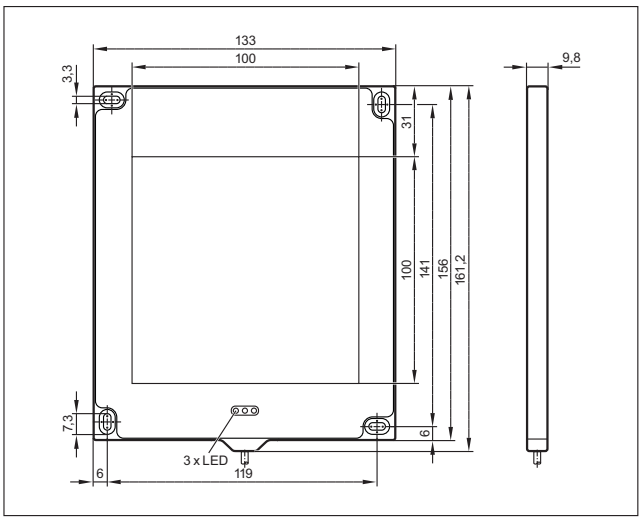

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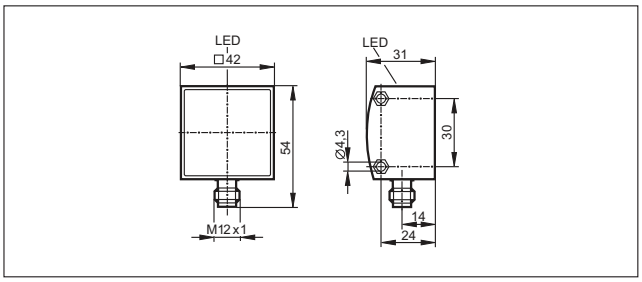

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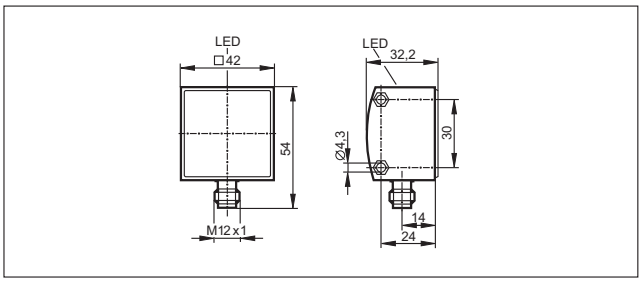


Functional safety

Area monitoring by means of safety light grids.

Applications

Today, automation technology can no longer be imagined without Functional Safety – not least because of the new EC Machinery Directive (2006/42/EC).

Its primary objective is to protect operators as stipulated by the Machinery Directive, whereby machinery should not present a risk. Moreover safety technology is an important guarantor of process protection and, in particular, of machine protection.

Approvals

A series of standards relates to the subject of Functional Safety. They specify different Safety Integrity Levels.

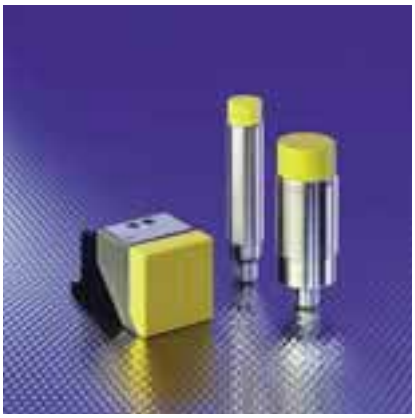
- IEC 61508: This standard is regarded as the basic safety standard and classifies safety products for automation by "Safety Integrity Levels" (SIL 1 – SIL 3).
- IEC 62061: This standard is based on IEC 61508 and determines "Safety Integrity Level Claim Limits" (SIL CL1 – SIL CL 3). These are comparable to the Safety Integrity Levels of IEC 61508. This standard specifies the design of control systems.
- ISO 13849-1: This standard is the successor to the previously applicable standard EN 954-1. In this standard "Performance Levels" (PL a to PL e) can be achieved. PL b-c correspond to SIL 1, PL d corresponds to SIL 2 and PL e corresponds to SIL 3. This standard covers the machinery sector.
- IEC 61496: This standard specifies general requirements for Electro-Sensitive Protective Equipment (ESPE) such as safety light grids. Variants are types 2 to 4.

Output versions

Output options include safe output stages such as OSSD outputs (Output Signal Switching Devices), outputs with a safe clock cycle that can be connected in series as well as relay outputs.

OSSD and pulsed outputs are the ideal choice for local safety-related tasks associated with controllers. Relay outputs are used to switch contactors. Moreover safe bus systems such as AS-i Safety at Work or CANopen Safety are available. Here the safe output stages can be directly connected to a safe bus. The safety-relevant information either remains in the local bus or can be transmitted up to the highest control level via bus couplers.

	Fail-safe inductive sensors	366 - 369
	Safety light curtains	370 - 390
	Safety light grids	392 - 400
	Safety relays	402 - 404
	Safety controllers	406 - 407
	AS-Interface Safety at Work	408 - 413



Fail-safe inductive sensors

Here you will find the first electronic fail-safe sensors approved up to TÜV category 4, SIL 3 and PL e, which do not require a special counterpart but switch directly on the door or a stainless steel or mild steel target. They are wear-free and largely independent from mounting tolerances after a longer use of the doors.

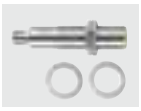
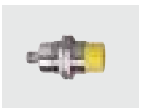
System overview	Page
Fail-safe inductive sensors to IEC 61508 SIL 3, IEC 62061 SILcl 3 and ISO 13849-1 PL e with the possibility of connection in series	*366*
Inductive sensors for safety-related applications, 2 x OSSD, SIL 2, PL d	*367*
Inductive sensors for safety-related applications, 2 x OSSD, SIL 3, PL e	*367*
Accessories	*368*
Wiring diagrams	*368*
Scale drawings / drawing no. – CAD download: www.ifm.com	*368 - 369*

Fail-safe inductive sensors to IEC 61508 SIL 3, IEC 62061 SILcl 3 and ISO 13849-1 PL e with the possibility of connection in series

Type	Length [mm]	Enable zone [mm]	Housing material	U_b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 3 · Connector groups 123, 125, 150								
	55	3...6 nf	High-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	1	**GG505S**
	65	1...4 f	Brass	24	IP 68 / IP 69K	≤ 20 / ≤ 200	2	**GG507S**
	39	6...12 nf	High-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	3	**GI505S**
	39	6...12 nf	High-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	3	**GI506S**
	66	10...15 nf	PPE	24	IP 65 / IP 67	≤ 20 / ≤ 200	4	**GM504S**
	66	10...20 nf	PPE	24	IP 65 / IP 67	≤ 20 / ≤ 200	4	**GM505S**

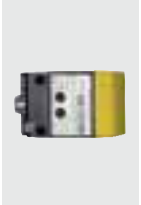
f = flush / nf = non flush

Inductive sensors for safety-related applications, 2 x OSSD, SIL 2, PL d

Type	Length [mm]	Enable zone [mm]	Housing material	U_b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1 · Connector groups 123, 125, 150								
	45	0.5...4 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	5	**GF711S**
	35	1...8 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	6	**GG711S**
	44.5	1...5 f	Brass	24	IP 65 / IP 67	≤ 1 / ≤ 1	7	**GG712S**
M12 connector · Wiring diagram no. 2 · Connector groups 123, 125, 150								
	53	> 10 f	Brass	24	IP 65 / IP 67	≤ 5 / ≤ 5	8	**GG851S**
M12 connector · Wiring diagram no. 1 · Connector groups 123, 125, 150								
	30	1...15 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	9	**GI711S**
	45	1...10 f	High-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	10	**GI712S**

f = flush / nf = non flush

Inductive sensors for safety-related applications, 2 x OSSD, SIL 3, PL e

Type	Length [mm]	Enable zone [mm]	Housing material	U_b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1 · Connector groups 123, 125, 150								
	39	6...12 nf	High-grade st. steel	24	IP 68 / IP 69K	≤ 50 / ≤ 200	3	**GI701S**
	66	10...15 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	4	**GM701S**
	66	4...20 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	4	**GM705S**

f = flush / nf = non flush

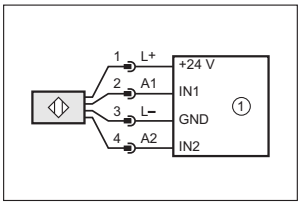
You can find wiring diagrams and scale drawings from page 368

Accessories

Type	Description	Order no.
	Safety T-splitter · M12 socket - 1 M12 connector / 1 M12 socket · T-piece for the pseudo-serial connection of fail-safe sensors · Housing materials: PUR	E11569

Wiring diagrams

1



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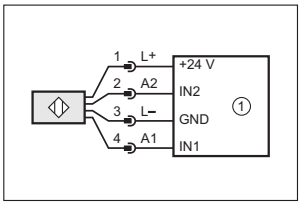

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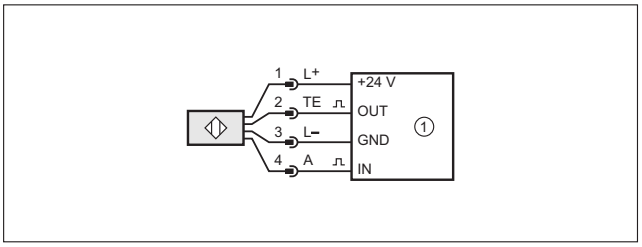
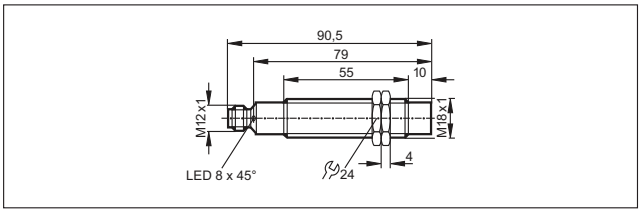


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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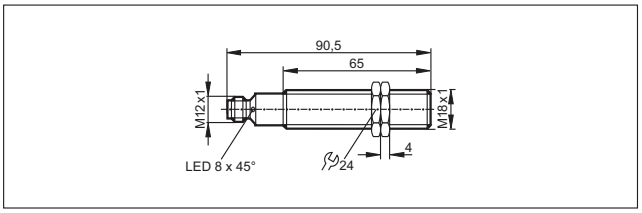

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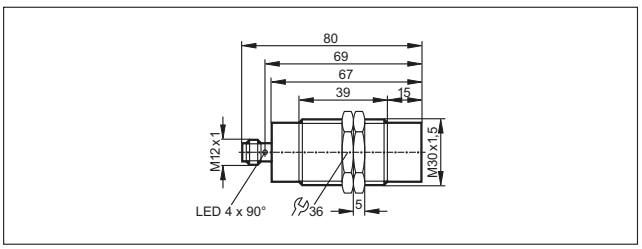

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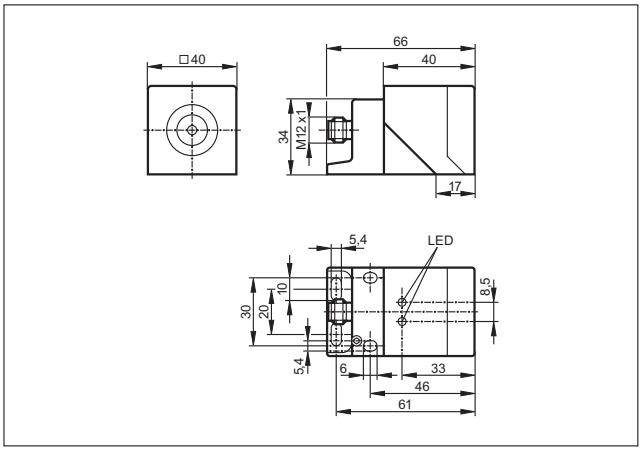

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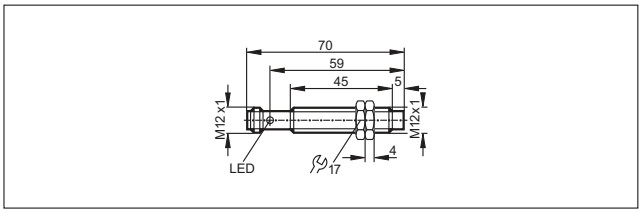
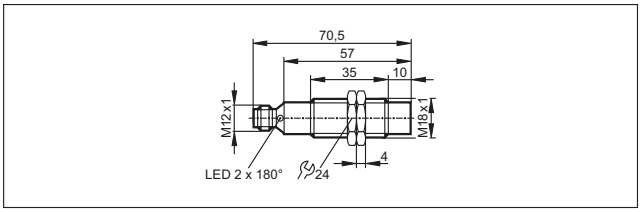


Scale drawings / drawing no. – CAD download: www.ifm.com

6



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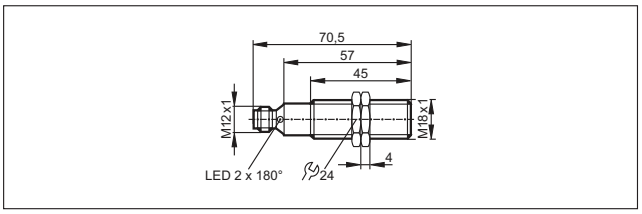

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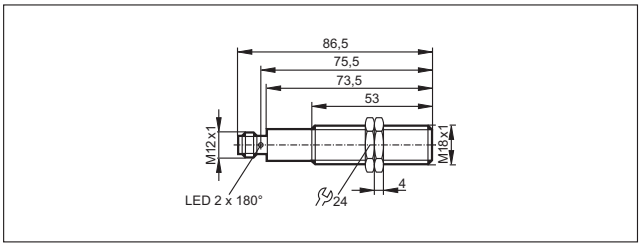

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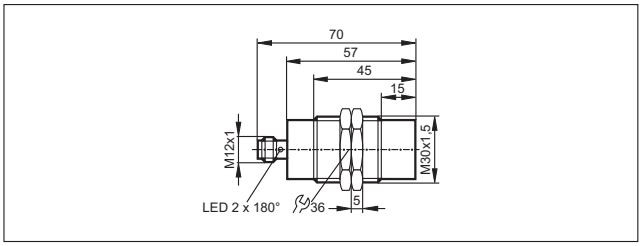

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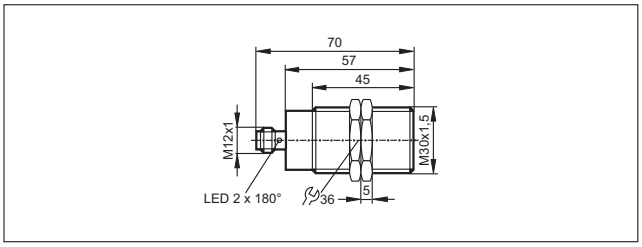

Safety light curtains

Wherever motion of machine parts presents a danger to people or goods, safety light curtains or safety light grids are used.

The protective equipment ensures that the outputs are switched off which results in a machine halt.

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Safety light curtains type 4, SIL 3, PL e, resolution 14 mm, protected area width up to 6 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	14	160	0...3 / 1...6	4	24	1	**OY001S**
	363	14	310	0...3 / 1...6	5.5	24	1	**OY002S**
	513	14	460	0...3 / 1...6	7.5	24	1	**OY003S**
	663	14	610	0...3 / 1...6	9	24	1	**OY004S**
	813	14	760	0...3 / 1...6	11	24	1	**OY005S**
	963	14	910	0...3 / 1...6	13	24	1	**OY006S**
	1113	14	1060	0...3 / 1...6	14.5	24	1	**OY007S**
	1263	14	1210	0...3 / 1...6	16.5	24	1	**OY008S**
	1413	14	1360	0...3 / 1...6	18	24	1	**OY009S**
	1563	14	1510	0...3 / 1...6	20	24	1	**OY010S**

Safety light curtains type 4, SIL 3, PL e, resolution 20 mm, protected area width up to 20 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	20	160	0...10 / 3...20	4	24	1	**OY221S**
	363	20	310	0...10 / 3...20	5.5	24	1	**OY222S**
	513	20	460	0...10 / 3...20	7.5	24	1	**OY223S**
	663	20	610	0...10 / 3...20	9	24	1	**OY224S**
	813	20	760	0...10 / 3...20	11	24	1	**OY225S**
	963	20	910	0...10 / 3...20	13	24	1	**OY226S**
	1113	20	1060	0...10 / 3...20	14.5	24	1	**OY227S**
	1263	20	1210	0...10 / 3...20	16.5	24	1	**OY228S**
	1413	20	1360	0...10 / 3...20	18	24	1	**OY229S**
	1563	20	1510	0...10 / 3...20	20	24	1	**OY230S**

Safety light curtains type 4, SIL 3, PL e, resolution 30 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	30	160	0...4 / 3...12	4	24	2	**OY041S**
	363	30	310	0...4 / 3...12	5.5	24	2	**OY042S**

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	513	30	460	0...4 / 3...12	7.5	24	2	**OY043S**
	663	30	610	0...4 / 3...12	8.5	24	2	**OY044S**
	813	30	760	0...4 / 3...12	10.5	24	2	**OY045S**
	963	30	910	0...4 / 3...12	12	24	2	**OY046S**
	1113	30	1060	0...4 / 3...12	14	24	2	**OY047S**
	1263	30	1210	0...4 / 3...12	15.5	24	2	**OY048S**
	1413	30	1360	0...4 / 3...12	17	24	2	**OY049S**
	1563	30	1510	0...4 / 3...12	18.5	24	2	**OY050S**

Safety light curtains type 4, SIL 3, PL e, resolution 30 mm, protected area width up to 20 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	30	160	0...10 / 3...20	3	24	1	**OY241S**
	363	30	310	0...10 / 3...20	4	24	1	**OY242S**
	513	30	460	0...10 / 3...20	5	24	1	**OY243S**
	663	30	610	0...10 / 3...20	6	24	1	**OY244S**
	813	30	760	0...10 / 3...20	6.5	24	1	**OY245S**

You can find wiring diagrams and scale drawings from page 387

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	963	30	910	0...10 / 3...20	7.5	24	1	**OY246S**
	1113	30	1060	0...10 / 3...20	8.5	24	1	**OY247S**
	1263	30	1210	0...10 / 3...20	9.5	24	1	**OY248S**
	1413	30	1360	0...10 / 3...20	10	24	1	**OY249S**
	1563	30	1510	0...10 / 3...20	11	24	1	**OY250S**

Safety light curtains type 4, SIL 3, PL e, resolution 40 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	40	160	0...4 / 3...12	3.5	24	2	**OY061S**
	363	40	310	0...4 / 3...12	4.5	24	2	**OY062S**
	513	40	460	0...4 / 3...12	5.5	24	2	**OY063S**
	663	40	610	0...4 / 3...12	6.5	24	2	**OY064S**
	813	40	760	0...4 / 3...12	7.5	24	2	**OY065S**
	963	40	910	0...4 / 3...12	9	24	2	**OY066S**
	1113	40	1060	0...4 / 3...12	10	24	2	**OY067S**
	1263	40	1210	0...4 / 3...12	11	24	2	**OY068S**

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	1413	40	1360	0...4 / 3...12	12	24	2	**OY069S**
	1563	40	1510	0...4 / 3...12	13	24	2	**OY070S**

Safety light curtains type 4, SIL 3, PL e, resolution 40 mm, protected area width up to 20 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	40	160	0...10 / 3...20	3	24	1	**OY261S**
	363	40	310	0...10 / 3...20	3.5	24	1	**OY262S**
	513	40	460	0...10 / 3...20	4	24	1	**OY263S**
	663	40	610	0...10 / 3...20	4.5	24	1	**OY264S**
	813	40	760	0...10 / 3...20	5	24	1	**OY265S**
	963	40	910	0...10 / 3...20	6	24	1	**OY266S**
	1113	40	1060	0...10 / 3...20	6.5	24	1	**OY267S**
	1263	40	1210	0...10 / 3...20	7	24	1	**OY268S**
	1413	40	1360	0...10 / 3...20	7.5	24	1	**OY269S**
	1563	40	1510	0...10 / 3...20	8	24	1	**OY270S**

You can find wiring diagrams and scale drawings from page 387

Safety light curtains type 4, SIL 3, PL e, resolution 50 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	363	50	310	0...4 / 3...12	4	24	2	**OY082S**
	513	50	460	0...4 / 3...12	4.5	24	2	**OY083S**
	663	50	610	0...4 / 3...12	5.5	24	2	**OY084S**
	813	50	760	0...4 / 3...12	6.5	24	2	**OY085S**
	963	50	910	0...4 / 3...12	7.5	24	2	**OY086S**
	1113	50	1060	0...4 / 3...12	8.5	24	2	**OY087S**
	1263	50	1210	0...4 / 3...12	9	24	2	**OY088S**
	1413	50	1360	0...4 / 3...12	10	24	2	**OY089S**
	1563	50	1510	0...4 / 3...12	11	24	2	**OY090S**

Safety light curtains type 4, SIL 3, PL e, resolution 50 mm, protected area width up to 20 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	363	50	310	0...10 / 3...20	3	24	1	**OY282S**
	513	50	460	0...10 / 3...20	3.5	24	1	**OY283S**
	663	50	610	0...10 / 3...20	4	24	1	**OY284S**

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	813	50	760	0...10 / 3...20	4.5	24	1	**OY285S**
	963	50	910	0...10 / 3...20	5	24	1	**OY286S**
	1113	50	1060	0...10 / 3...20	5.5	24	1	**OY287S**
	1263	50	1210	0...10 / 3...20	6	24	1	**OY288S**
	1413	50	1360	0...10 / 3...20	6.5	24	1	**OY289S**
	1563	50	1510	0...10 / 3...20	7	24	1	**OY290S**

Safety light curtains type 4, SIL 3, PL e, resolution 90 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	663	90	610	0...4 / 3...12	4	24	2	**OY104S**
	813	90	760	0...4 / 3...12	4.5	24	2	**OY105S**
	963	90	910	0...4 / 3...12	5	24	2	**OY106S**
	1113	90	1060	0...4 / 3...12	5.5	24	2	**OY107S**
	1263	90	1210	0...4 / 3...12	5.5	24	2	**OY108S**
	1413	90	1360	0...4 / 3...12	6	24	2	**OY109S**
	1563	90	1510	0...4 / 3...12	6.5	24	2	**OY110S**

You can find wiring diagrams and scale drawings from page 387

Safety light curtains type 4, SIL 3, PL e, resolution 90 mm, protected area width up to 20 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	663	90	610	0...10 / 3...20	3	24	1	**OY204S**
	813	90	760	0...10 / 3...20	3.5	24	1	**OY205S**
	963	90	910	0...10 / 3...20	3.5	24	1	**OY206S**
	1113	90	1060	0...10 / 3...20	3.5	24	1	**OY207S**
	1263	90	1210	0...10 / 3...20	4	24	1	**OY208S**
	1413	90	1360	0...10 / 3...20	4	24	1	**OY209S**
	1563	90	1510	0...10 / 3...20	4.5	24	1	**OY210S**

Safety light curtains type 2, SIL 2, PL d, resolution 30 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	30	160	0...4 / 3...12	4.5	24	2	**OY031S**
	363	30	310	0...4 / 3...12	6	24	2	**OY032S**
	513	30	460	0...4 / 3...12	8	24	2	**OY033S**
	663	30	610	0...4 / 3...12	9.5	24	2	**OY034S**
	813	30	760	0...4 / 3...12	11	24	2	**OY035S**

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	963	30	910	0...4 / 3...12	12.5	24	2	**OY036S**
	1113	30	1060	0...4 / 3...12	14.5	24	2	**OY037S**
	1263	30	1210	0...4 / 3...12	16	24	2	**OY038S**
	1413	30	1360	0...4 / 3...12	17.5	24	2	**OY039S**
	1563	30	1510	0...4 / 3...12	19.5	24	2	**OY040S**

Safety light curtains type 2, SIL 2, PL d, resolution 40 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	213	40	160	0...4 / 3...12	4	24	2	**OY051S**
	363	40	310	0...4 / 3...12	5	24	2	**OY052S**
	513	40	460	0...4 / 3...12	6	24	2	**OY053S**
	663	40	610	0...4 / 3...12	7	24	2	**OY054S**
	813	40	760	0...4 / 3...12	8	24	2	**OY055S**
	963	40	910	0...4 / 3...12	9.5	24	2	**OY056S**
	1113	40	1060	0...4 / 3...12	10.5	24	2	**OY057S**
	1263	40	1210	0...4 / 3...12	11.5	24	2	**OY058S**

You can find wiring diagrams and scale drawings from page 387

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	1413	40	1360	0...4 / 3...12	12.5	24	2	**OY059S**
	1563	40	1510	0...4 / 3...12	13.5	24	2	**OY060S**

Safety light curtains type 2, SIL 2, PL d, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	363	50	310	0...4 / 3...12	4.5	24	2	**OY072S**
	513	50	460	0...4 / 3...12	5.5	24	2	**OY073S**
	663	50	610	0...4 / 3...12	6	24	2	**OY074S**
	813	50	760	0...4 / 3...12	7	24	2	**OY075S**
	963	50	910	0...4 / 3...12	8	24	2	**OY076S**
	1113	50	1060	0...4 / 3...12	9	24	2	**OY077S**
	1263	50	1210	0...4 / 3...12	10	24	2	**OY078S**
	1413	50	1360	0...4 / 3...12	10.5	24	2	**OY079S**
	1563	50	1510	0...4 / 3...12	11.5	24	2	**OY080S**

Safety light curtains type 2, SIL 2, PL d, resolution 90 mm, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	663	90	610	0...4 / 3...12	4	24	2	**OY094S**
	813	90	760	0...4 / 3...12	4.5	24	2	**OY095S**
	963	90	910	0...4 / 3...12	5	24	2	**OY096S**
	1113	90	1060	0...4 / 3...12	5.5	24	2	**OY097S**
	1263	90	1210	0...4 / 3...12	6	24	2	**OY098S**
	1413	90	1360	0...4 / 3...12	6.5	24	2	**OY099S**
	1563	90	1510	0...4 / 3...12	7	24	2	**OY100S**

Safety light curtains for hygienic and wet areas type 4, SIL 3, PL e, resolution 14 mm, protected area width up to 5 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
Cable 15 m · Wiring diagram no. 4, 5								
	630	14	460	0...2 / 1...5	7.5	24	3	**OY403S**
	930	14	760	0...2 / 1...5	11	24	3	**OY405S**
	1230	14	1060	0...2 / 1...5	14.5	24	3	**OY407S**

You can find wiring diagrams and scale drawings from page 387

Safety light curtains for hygienic and wet areas type 4, SIL 3, PL e, resolution 30 mm, protected area width up to 15 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
Cable 15 m · Wiring diagram no. 4, 5								
	330	30	160	0...7 / 3...15	3	24	3	**OY441S**
	480	30	310	0...7 / 3...15	4	24	3	**OY442S**
	630	30	460	0...7 / 3...15	5	24	3	**OY443S**
	780	30	610	0...7 / 3...15	6	24	3	**OY444S**
	930	30	760	0...7 / 3...15	6.5	24	3	**OY445S**
	1080	30	910	0...7 / 3...15	7.5	24	3	**OY446S**
	1230	30	1060	0...7 / 3...15	8.5	24	3	**OY447S**
	1380	30	1210	0...7 / 3...15	9.5	24	3	**OY448S**
	1530	30	1360	0...7 / 3...15	10	24	3	**OY449S**
	1680	30	1510	0...7 / 3...15	11	24	3	**OY450S**

Safety light curtains for hygienic and wet areas type 2, SIL 2, PL d, resolution 30 mm, protected area width up to 10 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
Cable 15 m · Wiring diagram no. 4, 5								
	330	30	160	0...3 / 2...10	4.5	24	4	**OY431S**
	480	30	310	0...3 / 2...10	6	24	4	**OY432S**

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
Cable 15 m · Wiring diagram no. 4, 5								
	630	30	460	0...3 / 2...10	8	24	4	**OY433S**
	780	30	610	0...3 / 2...10	9.5	24	4	**OY434S**
	930	30	760	0...3 / 2...10	11	24	4	**OY435S**
	1080	30	910	0...3 / 2...10	12.5	24	4	**OY436S**
	1230	30	1060	0...3 / 2...10	14.5	24	4	**OY437S**
	1380	30	1210	0...3 / 2...10	16	24	4	**OY438S**
	1530	30	1360	0...3 / 2...10	17.5	24	4	**OY439S**
	1680	30	1510	0...3 / 2...10	19.5	24	4	**OY440S**

Safety light curtains with floating blanking type 4, SIL 3, PL e, resolution 14 mm, protected area width up to 5 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 3 · Connector groups 16, 17								
	711	14	610	0...3 / 0...5	11.5	24	5	**OY804S**
	861	14	760	0...3 / 0...5	13.5	24	5	**OY805S**
	1011	14	910	0...3 / 0...5	15.5	24	5	**OY806S**
	1161	14	1060	0...3 / 0...5	17	24	5	**OY807S**
	1311	14	1210	0...3 / 0...5	19	24	5	**OY808S**

You can find wiring diagrams and scale drawings from page 387

Safety light curtains with floating blanking type 4, SIL 3, PL e, resolution 20 mm, protected area width up to 18 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 3 · Connector groups 16, 17								
	711	20	610	0...6 / 3...18	11.5	24	5	**OY815S**
	861	20	760	0...6 / 3...18	13.5	24	5	**OY816S**
	1011	20	910	0...6 / 3...18	15.5	24	5	**OY817S**
	1161	20	1060	0...6 / 3...18	17	24	5	**OY818S**
	1311	20	1210	0...6 / 3...18	19	24	5	**OY819S**

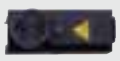
Safety light curtains with floating blanking type 4, SIL 3, PL e, resolution 40 mm, protected area width up to 18 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 3 · Connector groups 16, 17								
	711	40	610	0...6 / 3...18	8.5	24	5	**OY825S**
	861	40	760	0...6 / 3...18	9.5	24	5	**OY826S**
	1011	40	910	0...6 / 3...18	10.5	24	5	**OY827S**
	1161	40	1060	0...6 / 3...18	11.5	24	5	**OY828S**
	1311	40	1210	0...6 / 3...18	12.5	24	5	**OY829S**

Accessories for safety light curtains

Type	Description	Order no.
	Corner mirror · Length: 250 mm · for safety light curtains · Protected area height · 160 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1001**
	Corner mirror · Length: 400 mm · for safety light curtains · Protected area height · 310 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1002**
	Corner mirror · Length: 540 mm · for safety light curtains · Protected area height · 460 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1003**
	Corner mirror · Length: 715 mm · for safety light curtains · Protected area height · 610 mm · for safety light grids · 2 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1004**
	Corner mirror · Length: 885 mm · for safety light curtains · Protected area height · 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1005**
	Corner mirror · Length: 1060 mm · for safety light curtains · Protected area height · 910 mm · for safety light grids · 3 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1006**
	Corner mirror · Length: 1230 mm · for safety light curtains · Protected area height · 1060 mm · for safety light grids · 4 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1007**
	Corner mirror · Length: 1400 mm · for safety light curtains · Protected area height · 1210 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1008**
	Corner mirror · Length: 1450 mm · for safety light curtains · Protected area height · 1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1009**
	Corner mirror · Length: 1600 mm · for safety light curtains · Protected area height · 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1010**
	Vibration damper · for type OY · Housing materials: rubber / metal galvanised	**EY3001**
	Vibration damper · for type OY · Housing materials: rubber / metal galvanised	**EY3002**
	Rotatable brackets · axial ± 90° · for type OY · Housing materials: Angle bracket: steel black	**EY3011**
	Adjustable brackets · axial ± 7° · for type OY · Housing materials: metal galvanised	**EY3004**

You can find wiring diagrams and scale drawings from page 387

Type	Description	Order no.
	Adjustable brackets · axial ± 7° · for type OY · Housing materials: metal galvanised	EY3005
	Test rod · Ø 14 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3006
	Test rod · Ø 20 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3007
	Test rod · Ø 30 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3008
	Test rod · Ø 40 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3009
	Test rod · Ø 50 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3010
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for automatic operation · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3090
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for "long range" · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3091
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for "short range" · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3092
	Laser adjustment aid · for type OY9xxS · for safety light grids · Housing materials: plastics	EY3098
	Laser adjustment aid · for safety light curtains · for type OY · Housing materials: plastics	EY3099

Bases for safety light curtains

Type	Description	Order no.
	Base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2001
	Base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2002

Type	Description	Order no.
	Base · Length: 1680 mm · for safety light curtains · ≤1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY2003**
	Base · Length: 1980 mm · for safety light curtains · ≤ 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY2004**

Bases for safety light curtains with corner mirror

Type	Description	Order no.
	Corner mirror with base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1011**
	Corner mirror with base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1013**
	Corner mirror with base · Length: 1680 mm · for safety light curtains · ≤1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1014**
	Corner mirror with base · Length: 1980 mm · for safety light curtains · ≤ 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1015**

Accessories necessary for bases

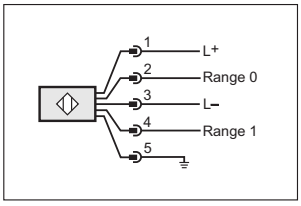
Type	Description	Order no.
	Mounting base · for type OY	**EY2005**

Wiring diagrams

Core colours

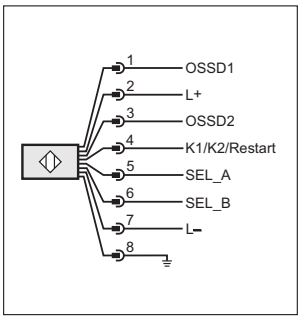
BK	black
BN	brown
BU	blue
GN	green
GY	grey
PK	pink
RD	red
VT	lilac
WH	white
YE	yellow

1



Wiring diagrams

2



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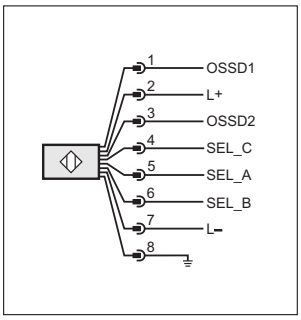

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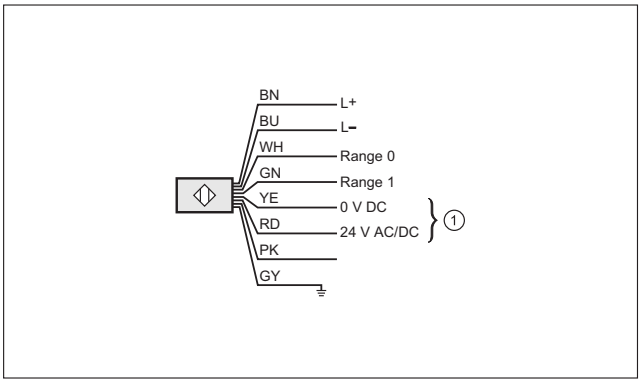

1: Heating, pink: not used

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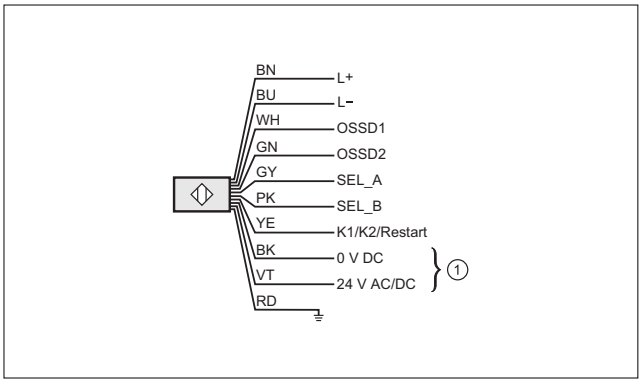
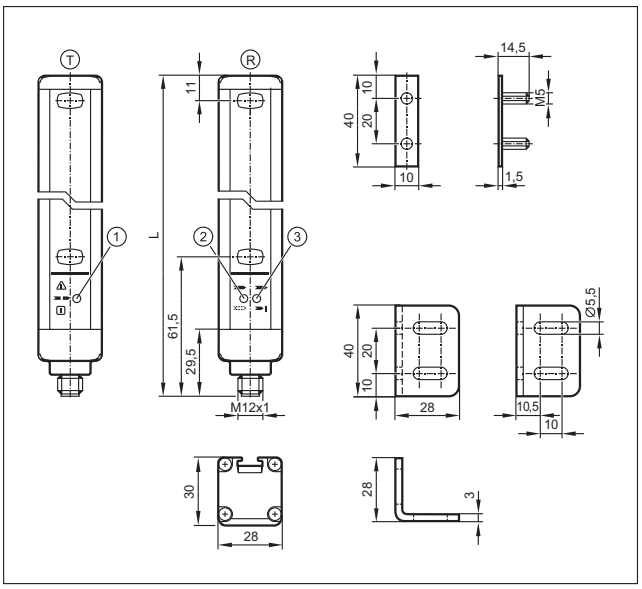


1: Heating

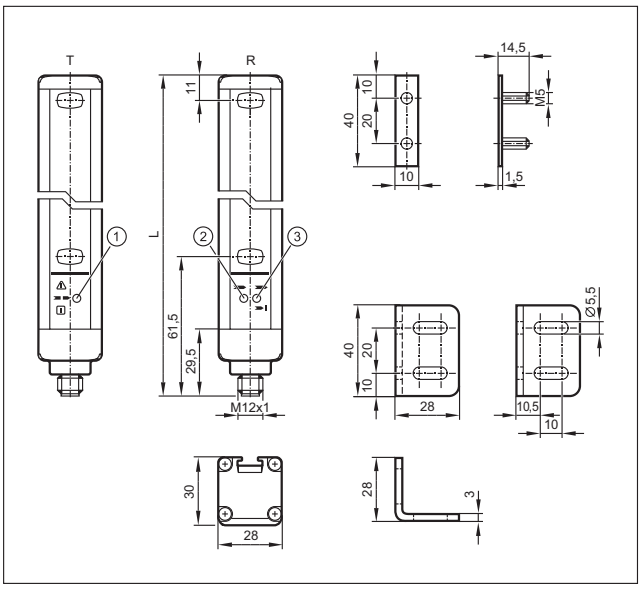
Scale drawings / drawing no. – CAD download: www.ifm.com

1



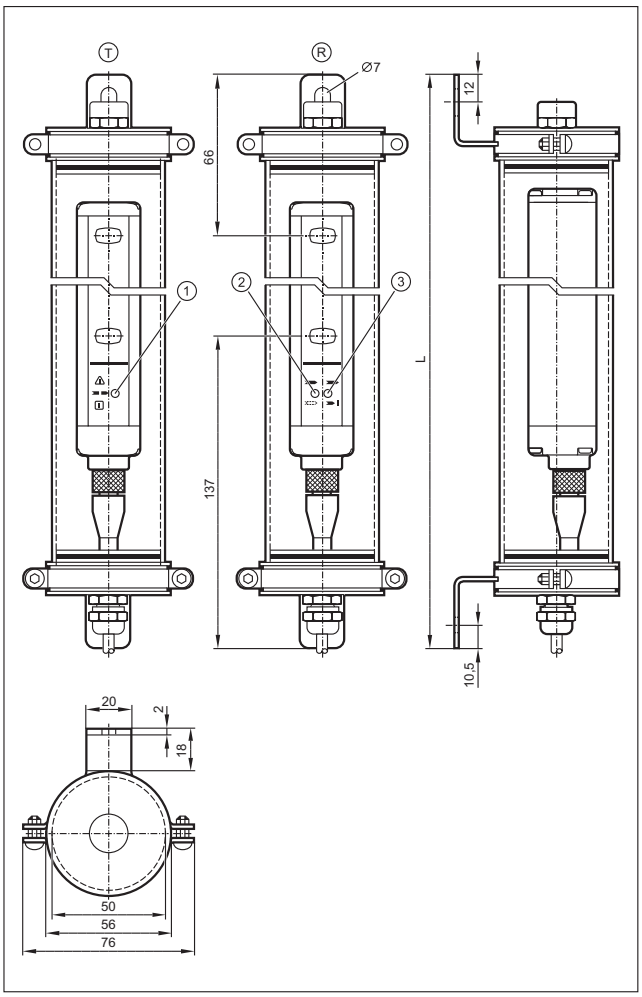
T: Transmitter, R: Receiver, 1: LED 3 colours (red/green/orange),
2: LED 2 colours (yellow/blue), 3: LED 2 colours (red/green)

2



T: Transmitter, R: Receiver, 1: LED 3 colours (red/green/orange),
2: LED (yellow), 3: LED 2 colours (red/green)

3



Scale drawings / drawing no. – CAD download: www.ifm.com

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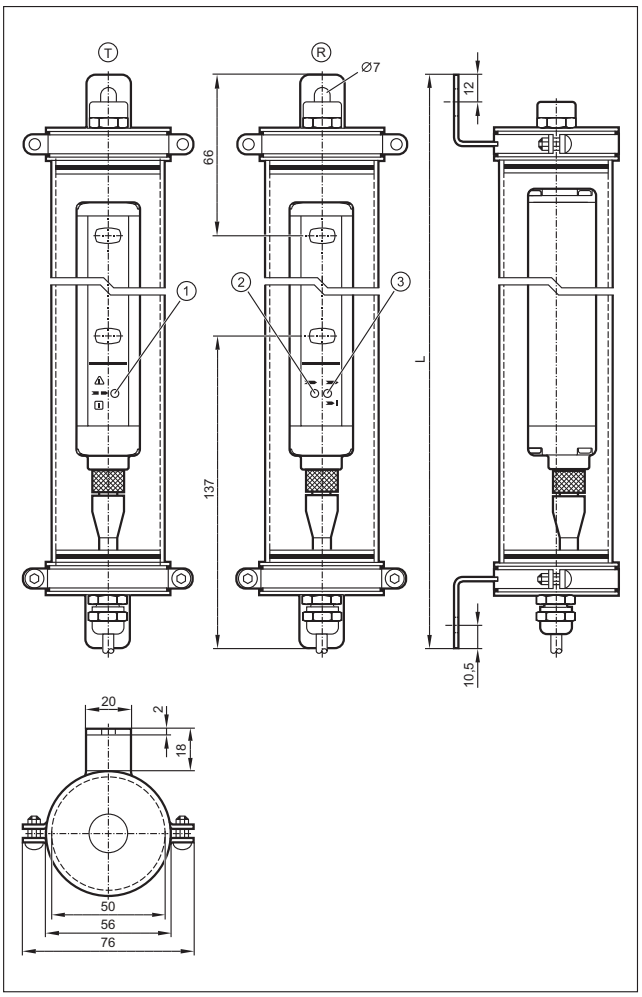

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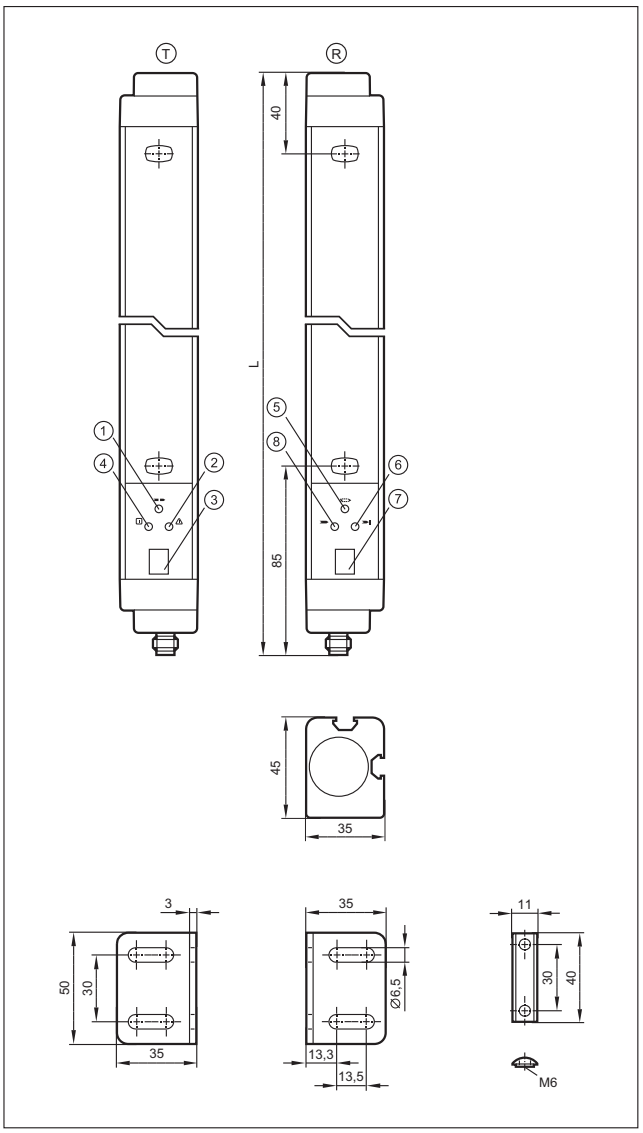

Safety light grids

Wherever motion of machine parts presents a danger to people or goods, safety light curtains or safety light grids are used.

The protective equipment ensures that the outputs are switched off which results in a machine halt.

System overview	Page
Safety light grids type 2, SIL 2, PL d, 2, 3, 4 beams, protected area width up to 10 m	392
Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 12 m	393
Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 20 m	393
Safety light grids for hygienic and wet areas type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 15 m	393
Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 60 m	394
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Safety light grids type 2, SIL 2, PL d, 2, 3, 4 beams, protected area width up to 10 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	L x 28 x 30	2	510	0...4 / 3...12	3	24	1	**OY111S**
	L x 28 x 30	3	810	0...4 / 3...12	3.5	24	1	**OY112S**
	L x 28 x 30	4	910	0...4 / 3...12	3.5	24	1	**OY113S**

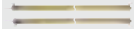
Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 12 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	L x 28 x 30	2	510	0...4 / 3...12	2.5	24	1	**OY114S**
	L x 28 x 30	3	810	0...4 / 3...12	3	24	1	**OY115S**
	L x 28 x 30	4	910	0...4 / 3...12	3	24	1	**OY116S**

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 20 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	L x 28 x 30	2	510	0...10 / 3...20	2.5	24	1	**OY120S**
	L x 28 x 30	3	810	0...10 / 3...20	2.5	24	1	**OY121S**
	L x 28 x 30	4	910	0...10 / 3...20	2.5	24	1	**OY122S**

Safety light grids for hygienic and wet areas type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 15 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Draw-ing no.	Order no.
Cable 15 m · Wiring diagram no. 3, 4								
	L x 76 x 74	2	510	0...7 / 3...15	2.5	24	2	**OY421S**
	L x 76 x 74	3	810	0...7 / 3...15	2.5	24	2	**OY422S**
	L x 76 x 74	4	910	0...7 / 3...15	2.5	24	2	**OY423S**

You can find wiring diagrams and scale drawings from page 397

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 60 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 1, 2 · Connector groups 16, 17								
	L x 50 x 60	2	510	8...30 / 18...60	7	24	3	**OY951S**
	L x 50 x 60	3	810	8...30 / 18...60	7	24	3	**OY952S**
	L x 50 x 60	4	910	8...30 / 18...60	7	24	3	**OY953S**

Safety light grids with active / passive system type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 6 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 2 · Connector groups 16, 17								
	L x 50 x 60	2	510	0...6 / 0...6	10	24	4	**OY901S**
	L x 50 x 60	3	810	0...6 / 0...6	10.5	24	4	**OY902S**
	L x 50 x 60	4	910	0...6 / 0...6	10.5	24	4	**OY903S**

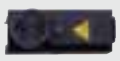
Safety light grids for hygienic and wet areas type 2, SIL 2, PL d, 2, 3, 4 beams, protected area width up to 10 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U_b [V]	Drawing no.	Order no.
Cable 15 m · Wiring diagram no. 3, 4								
	L x 76 x 74	2	510	0...3 / 2...10	3	24	5	**OY411S**
	L x 76 x 74	3	810	0...3 / 2...10	3.5	24	5	**OY412S**
	L x 76 x 74	4	910	0...3 / 2...10	3.5	24	5	**OY413S**

Accessories for safety light curtains

Type	Description	Order no.
	Corner mirror · Length: 250 mm · for safety light curtains · Protected area height · 160 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1001**
	Corner mirror · Length: 400 mm · for safety light curtains · Protected area height · 310 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1002**
	Corner mirror · Length: 540 mm · for safety light curtains · Protected area height · 460 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1003**
	Corner mirror · Length: 715 mm · for safety light curtains · Protected area height · 610 mm · for safety light grids · 2 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1004**
	Corner mirror · Length: 885 mm · for safety light curtains · Protected area height · 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1005**
	Corner mirror · Length: 1060 mm · for safety light curtains · Protected area height · 910 mm · for safety light grids · 3 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1006**
	Corner mirror · Length: 1230 mm · for safety light curtains · Protected area height · 1060 mm · for safety light grids · 4 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1007**
	Corner mirror · Length: 1400 mm · for safety light curtains · Protected area height · 1210 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1008**
	Corner mirror · Length: 1450 mm · for safety light curtains · Protected area height · 1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1009**
	Corner mirror · Length: 1600 mm · for safety light curtains · Protected area height · 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	**EY1010**
	Vibration damper · for type OY · Housing materials: rubber / metal galvanised	**EY3001**
	Vibration damper · for type OY · Housing materials: rubber / metal galvanised	**EY3002**
	Rotatable brackets · axial ± 90° · for type OY · Housing materials: Angle bracket: steel black	**EY3011**
	Adjustable brackets · axial ± 7° · for type OY · Housing materials: metal galvanised	**EY3004**

You can find wiring diagrams and scale drawings from page 397

Type	Description	Order no.
	Adjustable brackets · axial ± 7° · for type OY · Housing materials: metal galvanised	EY3005
	Test rod · Ø 14 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3006
	Test rod · Ø 20 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3007
	Test rod · Ø 30 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3008
	Test rod · Ø 40 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3009
	Test rod · Ø 50 mm · Probe length: 150 mm · for safety light curtains · for type OY · Housing materials: aluminium	EY3010
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for automatic operation · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3090
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for "long range" · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3091
	Adapter cable · straight · For the connection of safety light curtains / safety light grids with OSSD · Configured for "short range" · Free from silicone · Free from halogen · Gold-plated contacts · 0.1 m · Housing materials: TPU orange / PA	EY3092
	Laser adjustment aid · for type OY9xxS · for safety light grids · Housing materials: plastics	EY3098
	Laser adjustment aid · for safety light curtains · for type OY · Housing materials: plastics	EY3099

Bases for safety light curtains

Type	Description	Order no.
	Base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2001
	Base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2002

Type	Description	Order no.
	Base · Length: 1680 mm · for safety light curtains · ≤1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY2003**
	Base · Length: 1980 mm · for safety light curtains · ≤ 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY2004**

Bases for safety light curtains with corner mirror

Type	Description	Order no.
	Corner mirror with base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1011**
	Corner mirror with base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1013**
	Corner mirror with base · Length: 1680 mm · for safety light curtains · ≤1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1014**
	Corner mirror with base · Length: 1980 mm · for safety light curtains · ≤ 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	**EY1015**

Accessories necessary for bases

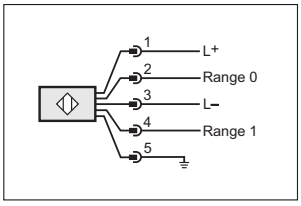
Type	Description	Order no.
	Mounting base · for type OY	**EY2005**

Wiring diagrams

Core colours

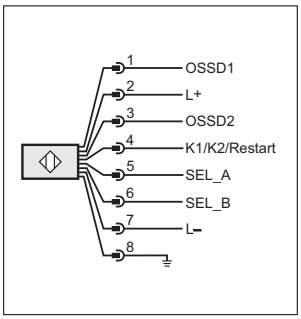
BK	black
BN	brown
BU	blue
GN	green
GY	grey
PK	pink
RD	red
VT	lilac
WH	white
YE	yellow

1



Wiring diagrams

2



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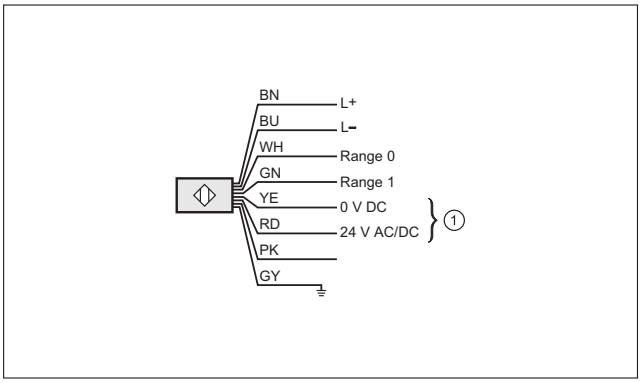
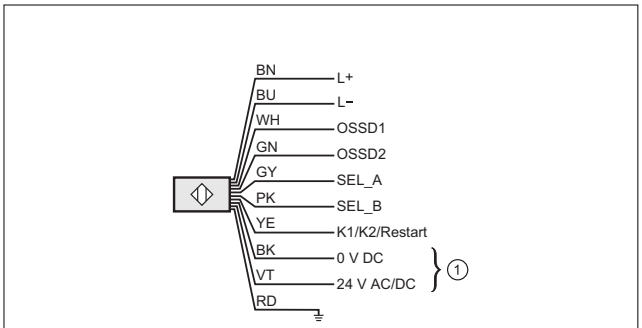


1: Heating, pink: not used

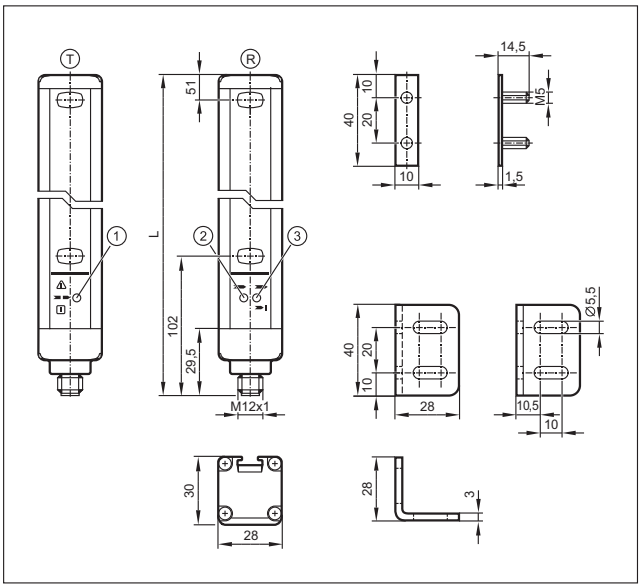
4



1: Heating

Scale drawings / drawing no. – CAD download: www.ifm.com

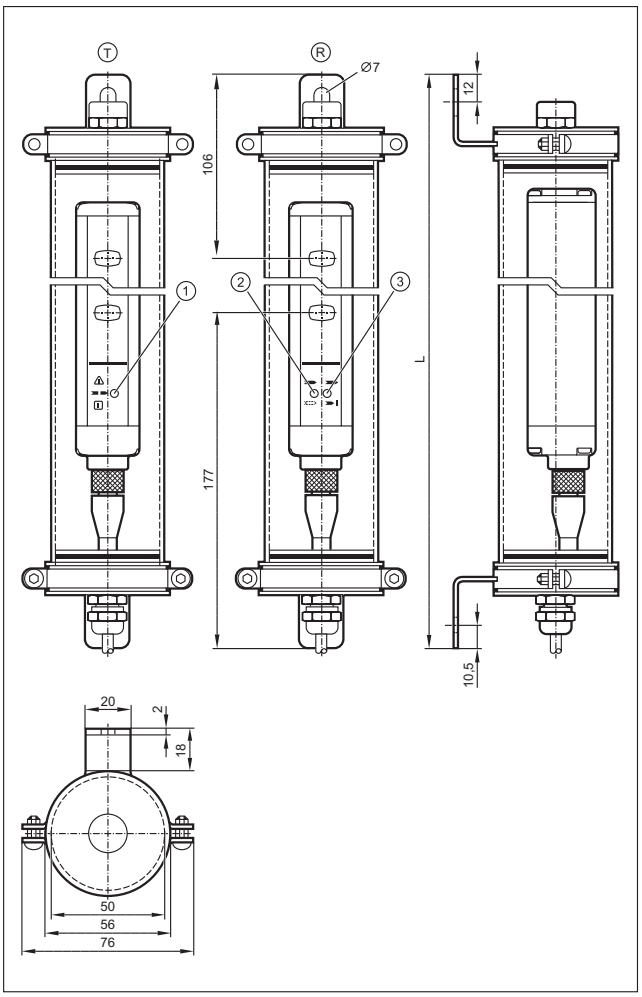
1



T: Transmitter, R: Receiver, 1: LED 3 colours (red/green/orange),
2: LED yellow, 3: LED 2 colours (red/green)

Scale drawings / drawing no. – CAD download: www.ifm.com

2



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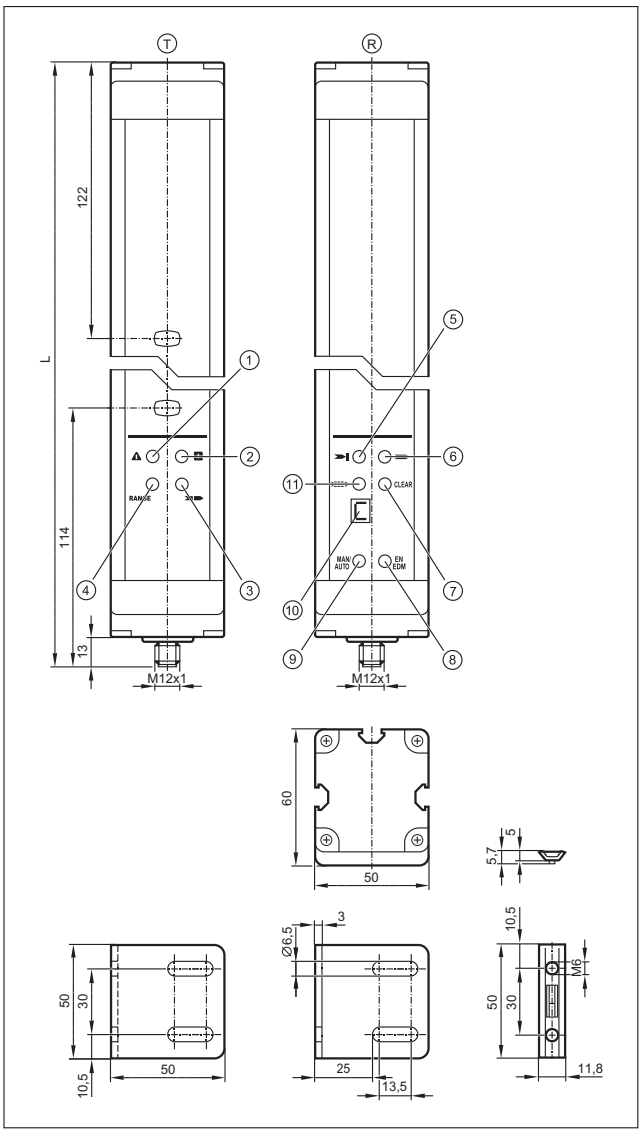
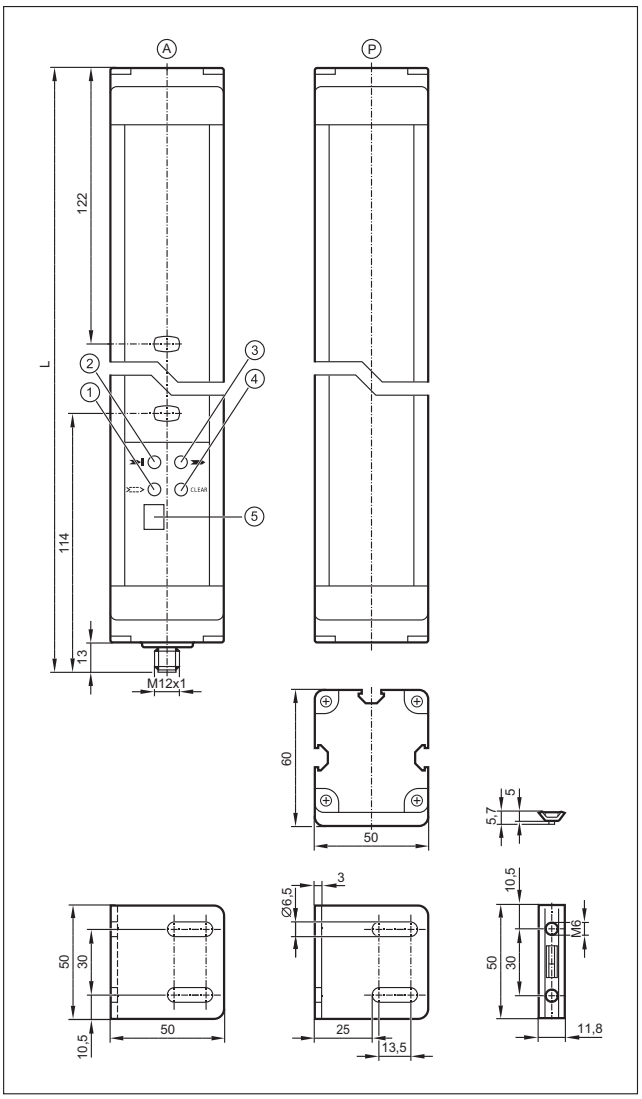


T: Transmitter, R: Receiver, 1: LED (red), 2: LED (green), 3: LED (yellow), 4: LED (orange), 5: LED (red), 6: LED (green), 7: LED (yellow), 8: LED (yellow), 9: LED (yellow), 10: display, 11: LED (orange)

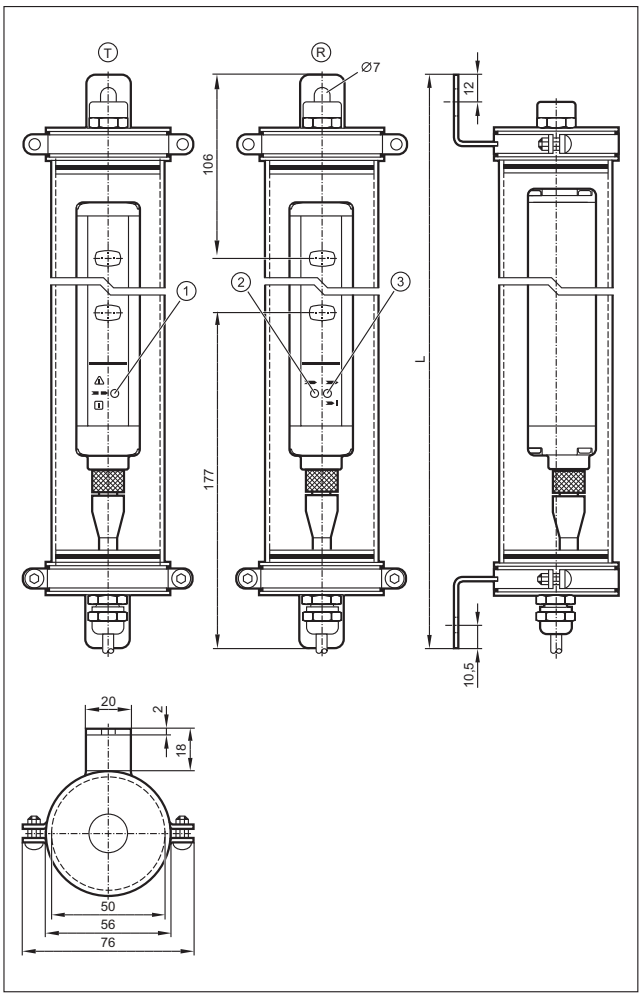
Scale drawings / drawing no. – CAD download: www.ifm.com

4



A: active element, P: passive element, 1: LED (orange), 2: LED (red), 3: LED (green), 4: LED (yellow), 5: display

5



Safety relays

Multifunctional with the advantage on your side: The safety relays provide various connection options for safety light curtains, fail-safe inductive sensors or other non-contact guards. They meet the highest requirement with SIL 3 (IEC 61508). "Monitored" or "automatic start" as well as external muting are only some of numerous functions.

System overview	Page
Safety relays with relay outputs for fail-safe sensors	402
Safety relays with solid state outputs for fail-safe sensors	402
Safety relays for safety light curtains	403
Safety standstill monitors, SIL 3, PL e	403
Accessories	403
Scale drawings / drawing no. – CAD download: www.ifm.com	403 - 404

Safety relays with relay outputs for fail-safe sensors

Type	U_b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Drawing no.	Order no.
	24	Relay	4 / e	3	1	**G1501S**
	24	Relay	4 / e	3	2	**G1502S**

Safety relays with solid state outputs for fail-safe sensors

Type	U_b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Drawing no.	Order no.
	24	Semi-conductor outputs	4 / e	3	3	**G1503S**

Safety relays for safety light curtains

Type	U_b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Drawing no.	Order no.
	24	Relay	4 / e	3	4	**G2001S**

Safety standstill monitors, SIL 3, PL e

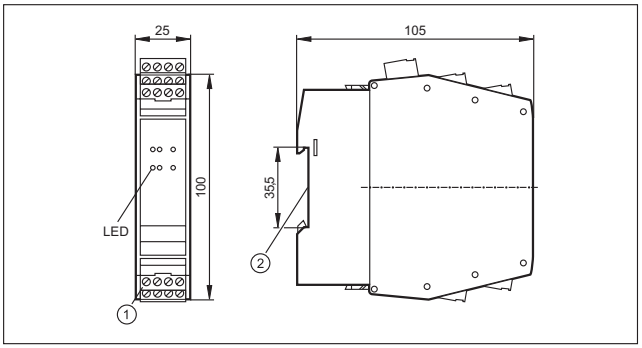
Type	U_b [V]	Inputs	Input function	Setting range [puls. / min.]	Setting range [Hz]	Outputs analog	Outputs relays	Outputs transist.	Drawing no.	Order no.
Monitoring rotational or linear movements for minimum switch point not reached (standstill)										
	24 DC	1	PNP	–	0.2 / 0.5 / 1.0 / 2.0	–	2	1	1	**DA101S**

Accessories

Type	Description	Order no.
	Combicon connector · with cage clamps 4 poles · Housing materials: PA / current carrying parts: copper alloy tin-plated	**E11930**

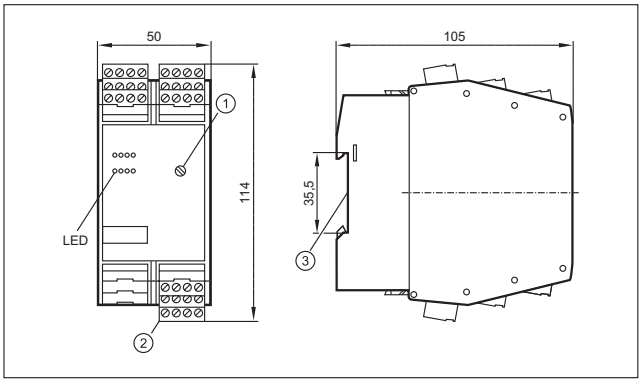
Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: Combicon connector with screw terminals,
2: Mounting on DIN rail

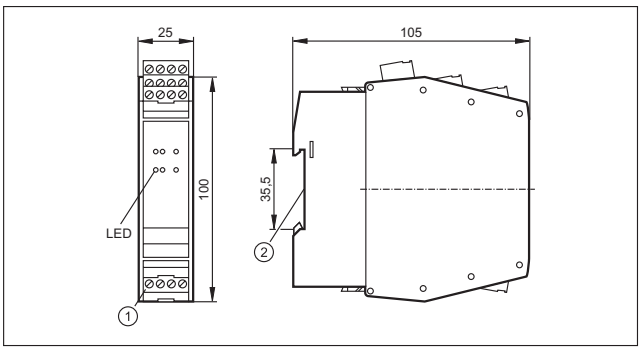
2



1: Rotary switch for switch-off delay, 2: Combicon connector with screw terminals, 3: Mounting on DIN rail

Scale drawings / drawing no. – CAD download: www.ifm.com

3



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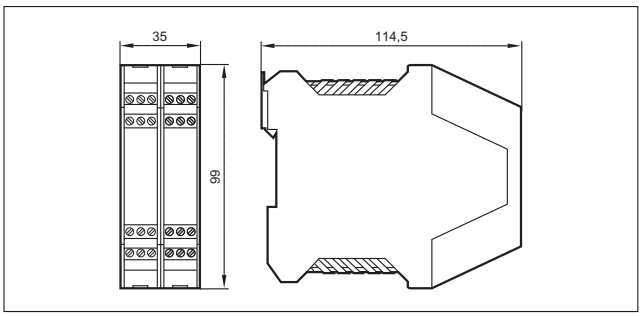


1: Combicon connector with screw terminals,
2: Mounting on DIN rail

Safety controllers

Controllers for safety-related applications up to safety category 3 (EN 954-1) are called "safety controllers". Special test routines for hardware and software monitoring are implemented in the devices. Due to the certification of the hardware, operating system software and programming tools it is easy for the project engineer to get the approval for the machine.

System overview

	Page
16-bit SafetyController	*406*
Accessories and software	*406 - 407*
Scale drawings / drawing no. – CAD download: www.ifm.com	*407*

16-bit SafetyController

Type	Inputs / outputs	Description	Drawing no.	Order no.
	24	SafetyController · 16 Bit · Programmable mobile controller type R 360 · for safety applications · SILcl 2 (IEC 62061) · PL d (EN ISO 13849-1) · 2 nd CAN interface for gateway function according to SAE J 1939 · Configurable input / output functions · Programming according to IEC 61131-3 · 24 inputs/outputs · 10...32 V DC	1	**CR7506**
	40	SafetyController · 16 Bit · Programmable mobile controller type R 360 · for safety applications · SILcl 2 (IEC 62061) · PL d (EN ISO 13849-1) · 2 nd CAN interface for gateway function according to SAE J 1939 · Configurable input / output functions · Programming according to IEC 61131-3 · 40 inputs/outputs · 10...32 V DC	1	**CR7021**
	80	SafetyController · 16 Bit · Programmable mobile controller type R 360 · for safety applications · SILcl 2 (IEC 62061) · PL d (EN ISO 13849-1) · 2 nd CAN interface for gateway function according to SAE J 1939 · Configurable input / output functions · Programming according to IEC 61131-3 · 80 inputs/outputs · 10...32 V DC	2	**CR7201**

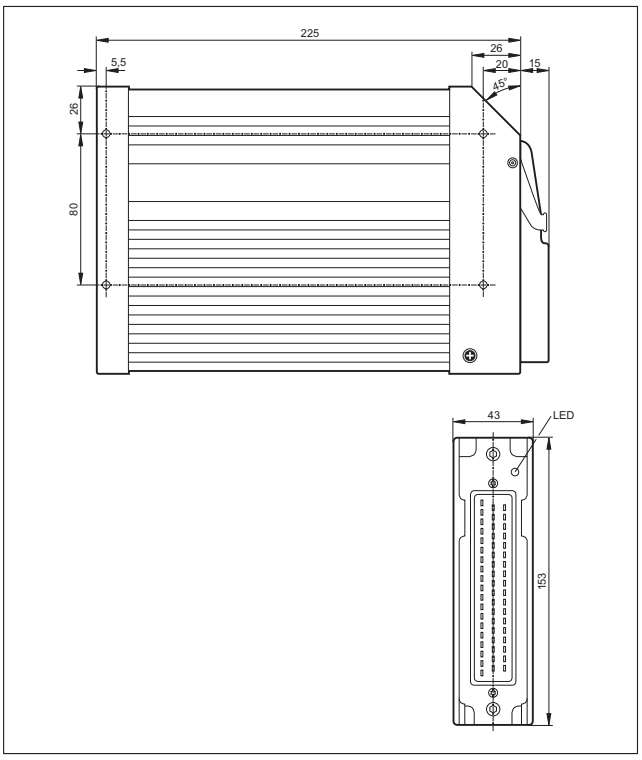
Accessories and software

Type	Description	Order no.
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · German version · incl. the DVD "Software, tools and documentation"	**CP9006**
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · English version · incl. the DVD "Software, tools and documentation"	**CP9008**

Type	Description	Order no.
	Connector AMP 55-pole · wirable · with contacts (Junior Power Timer)	**EC2013**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Cores sealed individually · Core cross-section 1 mm²	**EC2084**
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Cores sealed individually · Core cross-section 1 mm²	**EC2097**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC2086**
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Core cross-section 1 mm²	**EC2046**

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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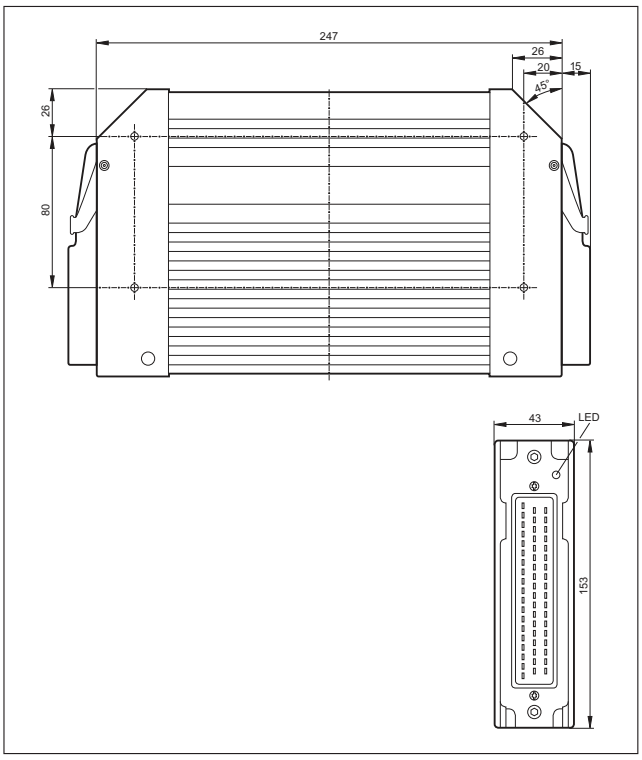


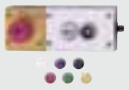
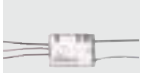
AS-Interface Safety at Work

The sophisticated AS-i technology and the extended diagnostic possibilities provide high reliability and machine uptime. "Safety at Work" is the extension of the AS-interface by safety-related components. Safety components up to the highest control category 4 to EN 954-1, SIL 3 to IEC 61508 and EN ISO 13849 - 1 / PL e can be connected to AS-i.

System overview	Page
Safety at Work	408 - 410
Accessories Safety at Work	410 - 411
AS-i manuals	411
Scale drawings / drawing no. – CAD download: www.ifm.com	411 - 413

Safety at Work

Type	Description	Drawing no.	Order no.
	AS-i safety monitor · Basic version · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC001S
	AS-i safety monitor · Basic version · 2-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC002S
	AS-i safety monitor · Extended functionality · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC003S
	AS-i safety monitor · Extended functionality · 2-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC004S
	AS-i safety monitor · Extended functionality · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	2	AC031S
	AS-i safety monitor · Extended functionality and integrated safe slave for triggering a safe AS-i output · 2-channel · Control category 4 to EN954-1, IEC 61508 / SIL 3 and EN ISO 13849 - 1 PL e · Configuration and setup by configuration software ASIMON V3.0 · Screw terminal · polyamide black · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	2	AC032S
	AS-i safety monitor · 2 safe semi-conductor outputs · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · Chip card to save the configuration data · Configuration and setup by configuration software ASIMON V3 G2 · USB 2.0 interface · Chip card and Combicon screw terminals supplied with the device · Screw terminal	3	AC041S
	Safe active AS-i module · Performance Level e to EN ISO 13849-1 et IEC 61508 / SIL 3 for the connection of mechanical contacts · Combicon connection · PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	4	AC009S

Type	Description	Drawing no.	Order no.
	Safe active AS-i output module · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · for the safe triggering of actuators · Combicon connection · PA · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	5	**AC030S**
	Safe active AS-i module · Connection via M12x1 sockets or cage clamps · Control category 4 according to EN954-1 and IEC 61508 / SIL 3 · For connection of an electro-sensitive protective equipment (ESPE) type 4 to EN 61496-1 · PA 6 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	6	**AC007S**
	AS-i Safety at Work · Safe AS-i input module 2SI - 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 4* · ISO 13849-1: PL e* · IEC 62061: SILcl 3	7	**AC505S**
	AS-i Safety at Work · Safe AS-i input module 4SI / 2DO T / 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn braid · Complies with the requirements: · ISO 13849-1: PL d · IEC 62061: SILcl 2	7	**AC506S**
	Safe active AS-i ClassicLine module · IR addressing possible · Performance Level e to EN ISO 13849-1 for the connection of mechanical contacts · Sockets M12 x 1 · PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	8	**AC006S**
	Illuminated E-STOP · front mounting · reset by turning · 2 NC contacts / 1 red LED · fool-proof E-STOP to EN ISO 13850	–	**E7007S**
	Illuminated E-STOP with integrated AS-i connection · fool-proof E-STOP to EN ISO 13850 · Pull to reset · AS-i interface via AS-i flat cable IP 67 · PC GF20 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	9	**AC010S**
	Key-release E-STOP with integrated AS-i connection · Connector M12 x 1 · AS-i interface via AS-i flat cable IP 67 · fool-proof E-STOP to EN ISO 13850 · Reset by key operation · PC GF20 · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	10	**AC011S**
	Safe AS-i e-stop operating unit with integrated AS-i connection · AS-i interface via M12 x 1 connector · fool-proof E-STOP to EN ISO 13850 · Pull to reset · interchangeable button inserts	11	**AC012S**
	Safe active AS-i ClassicLine module · AS-i version 2.1 · IR addressing possible · Control category 4 according to EN954-1 · For the connection of fail-safe inductive sensors of the control category 4 · Sockets M12 x 1 · PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	–	**AC016S**
	AS-i safety PCB · Connection of mechanical contact and LED components · Certification according to EN 954-1 / category 4 and IEC 61508 / SIL 3 · Complies with the requirements: · IEC 61508: SIL 3	12	**AC015S**
	Fail-safe inductive sensor · M12 connector, Gold-plated contacts · PPE / diecast zinc · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	13	**GM504S**
	Fail-safe inductive sensor · M12 connector, Gold-plated contacts · PPE / diecast zinc · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	13	**GM505S**
	Fail-safe inductive sensor · M18 x 1 · M12 connector, Gold-plated contacts · high-grade stainless steel / PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	14	**GG505S**
	Fail-safe inductive sensor · M30 x 1.5 · M12 connector, Gold-plated contacts · PEEK / high-grade stainless steel / O-ring: EPDM · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	15	**GI505S**
	Safety switch with guard locking · Normally closed principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply ext. from 24 V DC · M12 connector · thermoplastic reinforced glass-fibre	16	**AC901S**

You can find scale drawings from page 411

Type	Description	Draw-ing no.	Order no.
	Safety switch with guard locking · Normally open principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply ext. from 24 V DC · M12 connector · thermoplastic reinforced glass-fibre	16	**AC902S**
	Safety switch with guard locking · Normally closed principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply from AS-i · M12 connector · thermoplastic reinforced glass-fibre	17	**AC903S**
	Safety switch with guard locking · Normally open principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply from AS-i · M12 connector · thermoplastic reinforced glass-fibre	17	**AC904S**

Accessories Safety at Work

Type	Description	Order no.
	AS-i Safety at Work · ASIMON programming software · Version 3.0 · Configuration, set-up and diagnostics of the AS-i safety monitor	**E7040S**
	Software ASIMON V3 G2 · Configuration, set-up and diagnostics of the AS-i safety monitor · AC041S	**E7050S**
	USB interface cable for the connection of the safety monitor AC041S to the PC · cable length 1.8 m · 1.8 m	**E7051S**
	Chip card to save the configuration data of the AS-i safety monitor AC041S · 256 K	**E7052S**
	Safe contact expander without delay · 2 independent channels · 4 contact blocks (NO) per channel · 1 feedback circuit (NC) per channel · Mounting on DIN rail · Screw terminal	**E7053S**
	Connection cable PC / AS-i safety monitor · Parameter setting cable PC / AS-i safety monitor · Western connector RJ 45 8 poles / D-Sub socket 9 poles · 2.5 m	**E7001S**
	Connection cable AS-i safety monitor / AS-i safety monitor · Download cable AS-i safety monitor / AS-i safety monitor · Western connector RJ 45 8 poles · 0.3 m	**E7002S**
	EMERGENCY STOP label IP66 4 languages D,GB,F,I · EMERGENCY STOP label 4 languages for a safe illuminated EMERGENCY STOP button with integrated AS-i interface AC010S · 50 x 50 mm	**E7003S**
	EMERGENCY STOP protective collar · EMERGENCY STOP protective collar for safe E-STOP AC010S / AC011S / AC012S · Housing materials: PC GF20 RAL 1004	**E7004S**
	Bridging plug for safety modules · Housing materials: PUR	**E7005S**

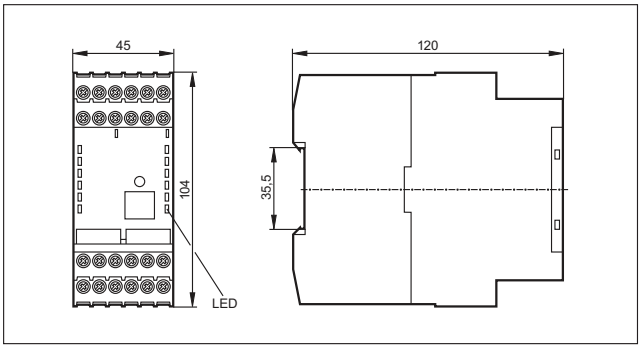
Type	Description	Order no.
	Adapter plug · straight · M20 - M12 · M12 connector · 0.07 m · Housing materials: polyamide	E7006S

AS-i manuals

Type	Description	Order no.
	ecolog asi system · AS-Interface Manual (German)	AC0115
	ecolog asi system · AS-Interface Manual (English)	AC0116

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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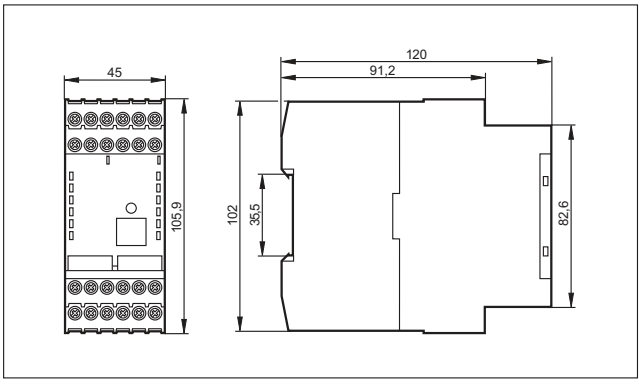
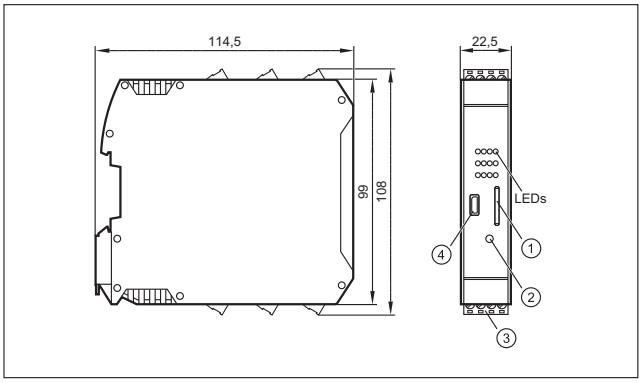
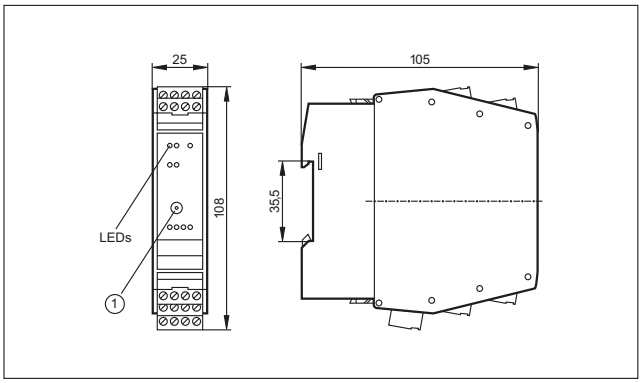


3



1: Chip card, 2: service button, 3: Combicon connector with screw terminals, 4: Micro USB interface

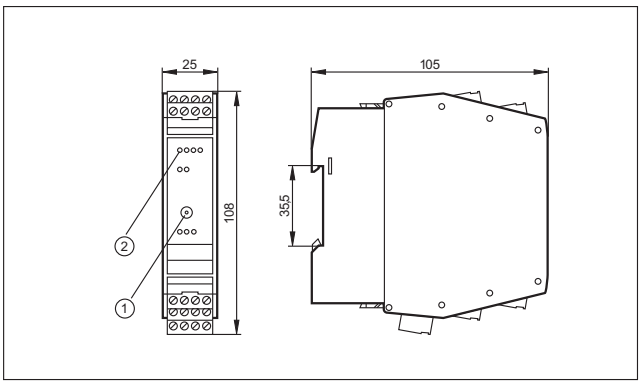
4



1: Addressing socket

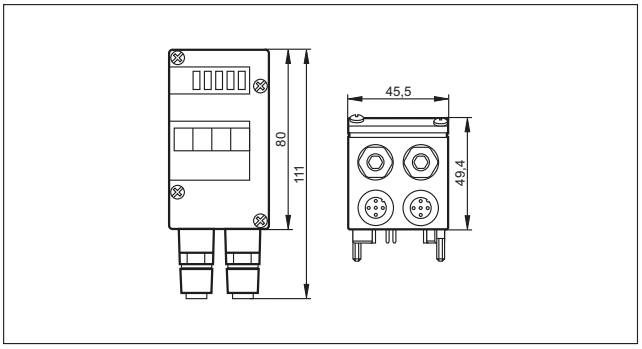
Scale drawings / drawing no. – CAD download: www.ifm.com

5

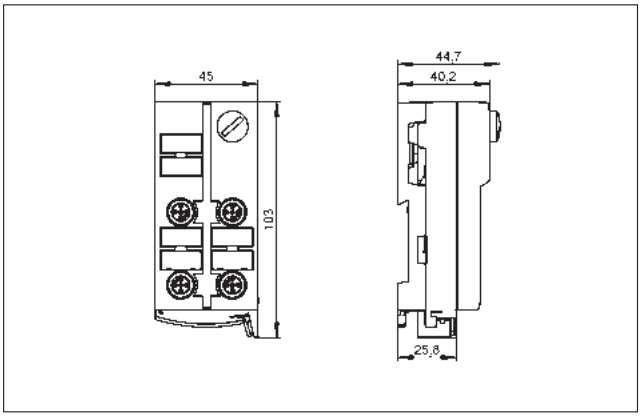


1: Addressing socket, 2: LED

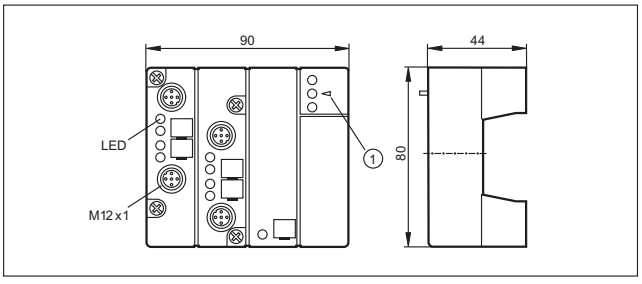
6



7

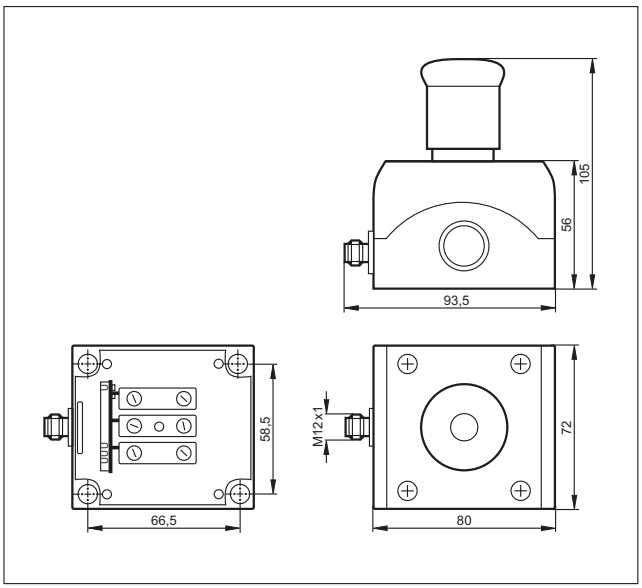


8

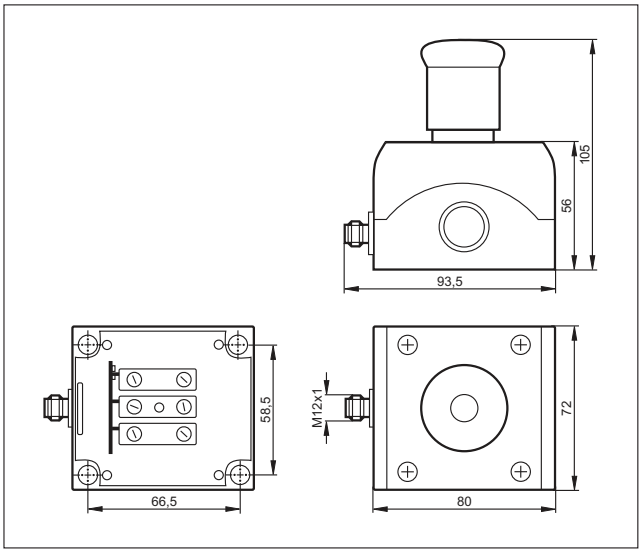


1: fixture infrared adapter

9



10



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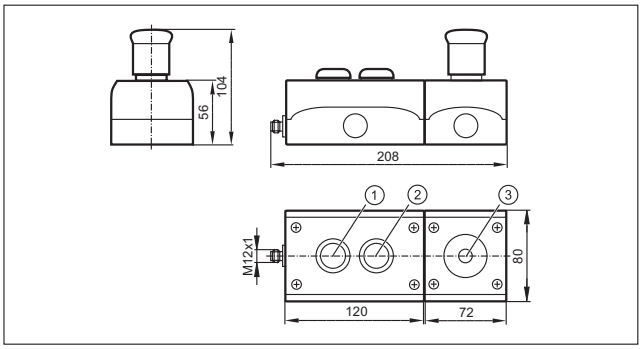
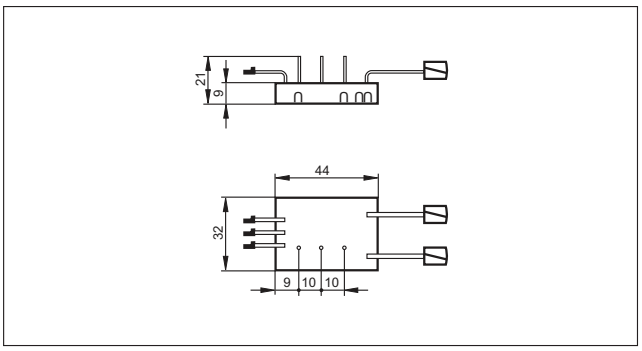


Scale drawings / drawing no. – CAD download: www.ifm.com

12



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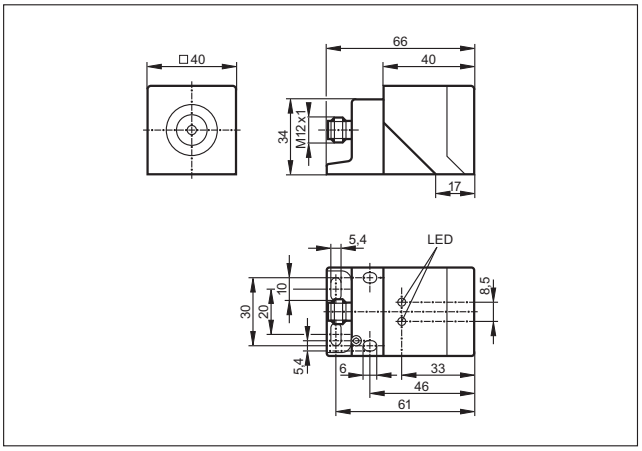

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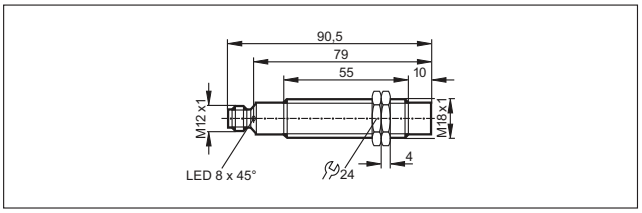

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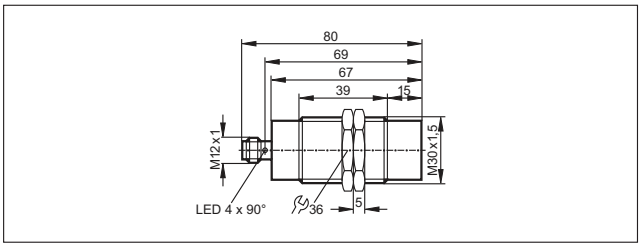

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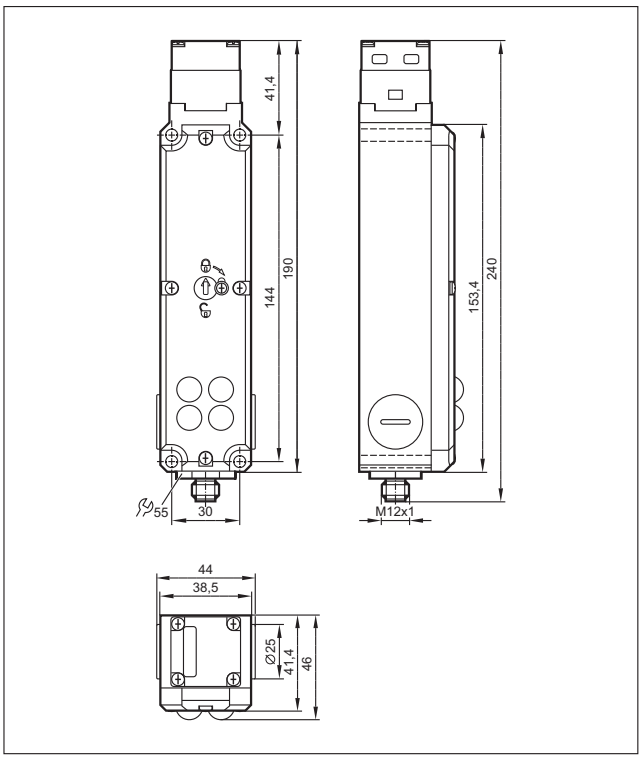

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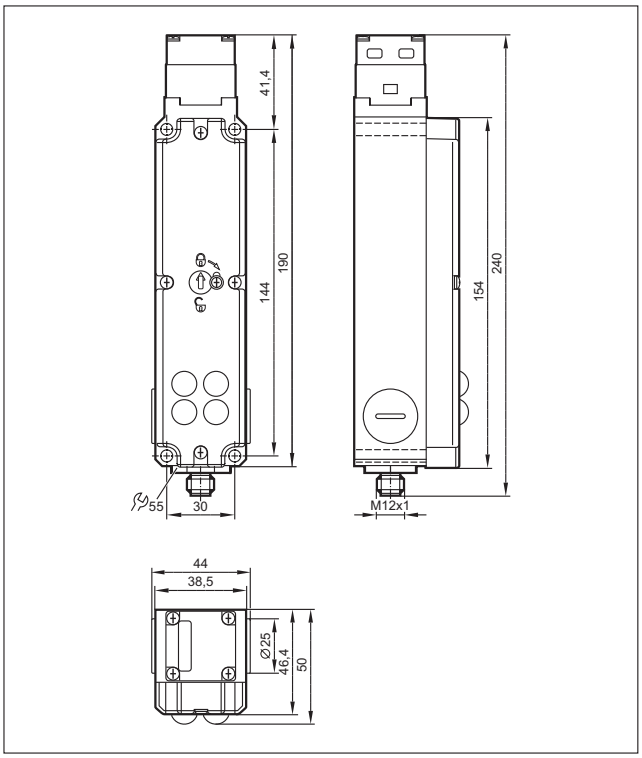

Measuring and monitoring fluids

Pressure, flow, temperature, level and valve sensors for automation in the process industries.

Multiple features

ifm process sensors can be used for control and measurement of the most important parameters of fluids – no matter whether it is pressure, level, flow, temperature or valve position. The range of applications spans from simple monitoring tasks and presence detection of media to accurate and highly repeatable measurements.

The applied microprocessor technology allows for a selection of key parameter settings. A four-digit alphanumeric display and sealed pushbuttons allows local indication and adjustment of the parameters. This can be done with or without the media present, even before arrival on site. Output options include simple switched outputs, pulsed outputs for metering systems, and current or voltage analogue outputs. Most units also have the additional ability to transfer analogue values across IO-Link digitally, without any conversion losses.

As the sensors are mostly in direct contact with the medium, the design of the units and the selection of the materials were driven by the high requirements in the applications. These include in particular resistance to pressure, vibration, shock, media and temperature as well as electromagnetic compatibility and a high ingress protection rating.

Multiple applications

The broad range of ifm fluid sensors can be used across many different applications. The main areas of application are machine building and mobile equipment, hygienic applications (e.g. in the food and beverage industries) and industrial or chemical process plant.

An extensive range of process adapters and mounting accessories guarantees easy mechanical integration of the sensors into the application. Moreover, the units comply with required approvals such as EHEDG, 3A, FDA, KTW, ATEX and e1 for safe use in the application.

Regular examinations in production and high test requirements at the development stage ensure a consistently high quality.

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- **Sensors and transmitters with integrated control monitor**
- **Units with special design for hygienic applications**
- **Measuring principles with overload protection and a good long-term stability**
- **Measuring range from -1…600 bar**
- **Variable process connection and sealing technology via adapter**

Pressure sensors

ifm offers a wide range of electronic pressure and vacuum sensors to meet the requirements of various industrial applications. The ceramic-capacitive measuring cell, tried and tested millions of times, is complemented by a stainless steel measuring cell with thin-film or thick-film wire strain gauges (series PK, PV, PT) and a piezoresistive measuring technique (for pneumatic applications).

All units have robust housings and do not require moving parts such as pistons or springs. The result: the sensors are extremely shock and vibration resistant and operate without any wear or maintenance.

The tried and tested ceramic-capacitive measuring principle is corrosion-resistant and long-term stable. In the long run this guarantees continuous accuracy of the measured values. The sensors are resistant to dynamic pressure peaks and guarantee high overload resistance even in the case of extreme pressure peaks that occur for example with fast closing valves.

Units with wire strain gauge in thin-film or thick-film technology on a stainless steel measuring cell are distinguished by their very compact and robust design. They can be used in almost all industrial areas. The welded stainless steel measuring cell without any seals ensures a high degree of safety, in particular for applications with gas pressures of up to 400 bar as well as in air-conditioning and refrigerating technology where aggressive coolants (freons) are used.

Local display:
the clearly readable LED display shows the current system pressure.

Separate display / programming unit PP2001.

Product selectors and further information can be found at: www.ifm.com

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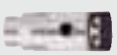
Sensors with switching outputs and analogue outputs and display

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (I / U, scaleable 1:4) · Wiring diagram no. 15 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	-0.25...0.25	10	30	18...32	1	**PY2068**
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4) · Wiring diagram no. 16 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	0...400	600	1000	18...32	2	**PN2020**
	G ¼ I	Display unit	0...250	400	850	18...32	2	**PN2021**
	G ¼ I	Display unit	0...100	300	650	18...32	2	**PN2022**
	G ¼ I	Display unit	-1...25	100	350	18...32	2	**PN2023**
	G ¼ I	Display unit	-1...10	75	150	18...32	2	**PN2024**
	G ¼ I	Display unit	-0.1253...2.5	20	50	18...32	2	**PN2026**
	G ¼ I	Display unit	-0.05...1	10	30	18...32	2	**PN2027**
	G ¼ I	Display unit	-0.0125...0.25	10	30	18...32	2	**PN2028**
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	0...600	800	1200	18...36	3	**PN3060**
	G ¼ I	Display unit	0...400	600	1000	18...36	3	**PN3000**
	G ¼ I	Display unit	0...250	400	850	18...36	1	**PN3001**
	G ¼ I	Display unit	0...100	300	650	18...36	1	**PN3002**
	G ¼ I	Display unit	0...25	150	350	18...36	1	**PN3003**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	-1...10	75	150	18...36	1	**PN3004**
	G ¼ I	Display unit	0...2.5	20	50	18...36	1	**PN3006**
	G ¼ I	Display unit	0...1	10	30	18...36	1	**PN3007**

Sensors with switching outputs and display

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	G ¼ I	Display unit	0...400	600	1000	18...36	3	**PN5000**
	G ¼ I	Display unit	0...250	400	850	18...36	1	**PN5001**
	G ¼ I	Display unit	0...100	300	650	18...36	1	**PN5002**
	G ¼ I	Display unit	0...25	150	350	18...36	1	**PN5003**
	G ¼ I	Display unit	-1...10	75	150	18...36	1	**PN5004**
	G ¼ I	Display unit	0...2.5	20	50	18...36	1	**PN5006**
	G ¼ I	Display unit	0...1	10	30	18...36	1	**PN5007**

You can find wiring diagrams and scale drawings from page 444

Sensors with switching outputs and display with IO-Link

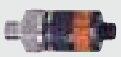
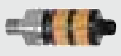
Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 17 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ I	Display unit	0...600	800	1200	18...36	3	**PN7060**
	G ¼ I	Display unit	0...400	600	1000	18...36	3	**PN7000**
	G ¼ I	Display unit	0...250	400	850	18...36	1	**PN7001**
	G ¼ I	Display unit	0...100	300	650	18...36	1	**PN7002**
	G ¼ I	Display unit	0...25	150	350	18...36	1	**PN7003**
	G ¼ I	Display unit	-1...10	75	150	18...36	1	**PN7004**
	G ¼ I	Display unit	0...2.5	20	50	18...36	1	**PN7006**
	G ¼ I	Display unit	0...1	10	30	18...36	1	**PN7007**

Electronic contact manometers with switching output and analogue output

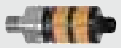
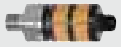
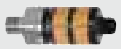
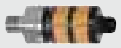
Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ½	Display unit	0...400	800	1200	18...32	4	**PG2450**
	G ½	Display unit	0...250	600	1000	18...32	4	**PG2451**
	G ½	Display unit	0...100	300	700	18...32	4	**PG2452**
	G ½	Display unit	-1...25	100	300	18...32	4	**PG2453**

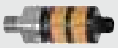
Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ½	Display unit	-1...10	50	150	18...32	4	**PG2454**
	G ½	Display unit	-1...4	30	100	18...32	4	**PG2455**
	G ½	Display unit	-0.125...2.5	20	50	18...32	4	**PG2456**
	G ½	Display unit	-0.05...1	10	30	18...32	4	**PG2457**
	G ½	Display unit	-0.0125...0.25	10	30	18...32	4	**PG2458**
	G ½	Display unit	-0.005...0.1	4	30	18...32	4	**PG2489**

PK sensors with mechanical setting and switching outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	0...400	600	1600	9.6...32	5	**PK5520**
	G ¼ A / M5 I	Operation	0...250	400	1000	9.6...32	5	**PK5521**
	G ¼ A / M5 I	Operation	0...100	200	1000	9.6...32	5	**PK5522**
	G ¼ A / M5 I	Operation	0...25	60	500	9.6...32	5	**PK5523**
	G ¼ A / M5 I	Operation	0...10	25	300	9.6...32	5	**PK5524**
M12 connector · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ A / M5 I	Operation	0...400	600	1600	9.6...32	5	**PK6520**

You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ A / M5 I	Operation	0...250	400	1000	9.6...32	5	**PK6521**
	G ¼ A / M5 I	Operation	0...100	200	1000	9.6...32	5	**PK6522**
	G ¼ A / M5 I	Operation	0...25	60	500	9.6...32	5	**PK6523**
	G¼ male / M5 female	Operation	0...10	25	300	9.6...32	5	**PK6524**
M12 connector · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ A / M5 I	Switching status	0...400	600	1600	9.6...32	5	**PK7520**
	G ¼ A / M5 I	Switching status	0...250	400	1000	9.6...32	5	**PK7521**
	G ¼ A / M5 I	Switching status	0...100	200	1000	9.6...32	5	**PK7522**
	G ¼ A / M5 I	Switching status	0...25	60	500	9.6...32	5	**PK7523**
	G ¼ A / M5 I	Switching status	0...10	25	300	9.6...32	5	**PK7524**
M12 connector · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	R¼ A / M5 I	Operation	0...100	200	1000	9.6...32	6	**PK6732**
	R¼ A / M5 I	Operation	0...10	25	300	9.6...32	6	**PK6734**
M12 connector · Output function normally open / closed complementary · DC NPN · Wiring diagram no. 5 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	R¼ A / M5 I	Operation	0...400	600	1600	9.6...32	6	**PK8730**
	R¼ A / M5 I	Operation	0...250	400	1000	9.6...32	6	**PK8731**
	R¼ A / M5 I	Operation	0...100	200	1000	9.6...32	6	**PK8732**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function normally open / closed complementary · DC NPN · Wiring diagram no. 5 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	R¼ A / M5 I	Operation	0...10	25	300	9.6...32	6	**PK8734**

PP sensors for mobile and industrial applications with switching outputs, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP · Wiring diagram no. 6 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	0...400	600	1000	9.6...36	7	**PP7550**
	G¼ male / M5 female	Operation	0...250	400	850	9.6...36	7	**PP7551**
	G¼ male / M5 female	Operation	0...100	300	650	9.6...36	8	**PP7552**
	G¼ male / M5 female	Operation	0...25	150	350	9.6...36	9	**PP7553**
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	9	**PP7554**
	G¼ male / M5 female	Operation	0...2.5	20	50	9.6...36	9	**PP7556**
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC NPN · Wiring diagram no. 6 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	0...400	600	1000	9.6...36	7	**PP0520**
	G¼ male / M5 female	Operation	0...250	400	850	9.6...36	7	**PP0521**
	G¼ male / M5 female	Operation	0...100	300	650	9.6...36	8	**PP0522**
	G¼ male / M5 female	Operation	0...25	150	350	9.6...36	9	**PP0523**
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	9	**PP0524**

You can find wiring diagrams and scale drawings from page 444

Sensors for pneumatic applications

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 17 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G 1/8 I	Display unit	-1...1	20	30	18...36	10	**PN7809**
	G 1/8 I	Display unit	-1...10	20	30	18...36	10	**PN7834**
M8 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP · Wiring diagram no. 4 · Connector groups 4, 5, 76, 82								
	G 1/8 I	Display unit	-1...1	20	30	18...32	11	**PQ7809**
	G 1/8 I	Display unit	-1...10	20	30	18...32	11	**PQ7834**
M8 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC NPN · Wiring diagram no. 7 · Connector groups 4, 5, 76, 82								
	G 1/8 I	Display unit	-1...1	20	30	18...32	11	**PQ0809**
	G 1/8 I	Display unit	-1...10	20	30	18...32	11	**PQ0834**
M8 connector · Output function 1 x NO / NC programmable + 1 x current output · DC PNP · Wiring diagram no. 8 · Connector groups 4, 5, 76, 82								
	G 1/8 I, M5	Display unit	-0.1...1	20	30	18...32	12	**PQ3809**
	G 1/8 I, M5	Display unit	-1...10	20	30	18...32	12	**PQ3834**

PT sensors for industrial applications with analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 9 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ A	–	0...600	1200	2400	8,5...36	13	**PT5460**
	G ¼ A	–	0...400	800	1700	8,5...36	13	**PT5400**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 9 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ A	–	0...250	500	1200	8,5...36	13	**PT5401**
	G ¼ A	–	0...160	320	1100	8,5...36	13	**PT5412**
	G ¼ A	–	0...100	200	1000	8,5...36	13	**PT5402**
	G ¼ A	–	0...40	80	800	8,5...36	13	**PT5443**
	G ¼ A	–	0...25	60	600	8,5...36	13	**PT5403**
	G ¼ A	–	0...16	32	450	8,5...36	13	**PT5414**
	G ¼ A	–	0...10	25	300	8,5...36	13	**PT5404**
M12 connector · Output function 0...10 V analogue · DC · Wiring diagram no. 10 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ A	–	0...600	1200	2400	16...36	13	**PU5460**
	G ¼ A	–	0...400	800	1700	16...36	13	**PU5400**
	G ¼ A	–	0...250	500	1200	16...36	13	**PU5401**
	G ¼ A	–	0...160	320	1100	16...36	13	**PU5412**
	G ¼ A	–	0...100	200	1000	16...36	13	**PU5402**
	G ¼ A	–	0...40	80	800	16...36	13	**PU5443**
	G ¼ A	–	0...25	60	600	16...36	13	**PU5403**
	G ¼ A	–	0...16	32	450	16...36	13	**PU5414**

You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 0...10 V analogue · DC · Wiring diagram no. 10 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ A	–	0...10	25	300	16...36	13	**PU5404**
	G ¼ A	–	0...6	15	200	16...36	13	**PU5415**

PT sensors for mobile applications with analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 9 · Connector group 150								
	G ¼ A	–	0...400	600	1600	8.5...36	14	**PT3550**
	G ¼ A	–	0...250	400	1000	8.5...36	14	**PT3551**
	G ¼ A	–	0...100	200	1000	8.5...36	14	**PT3552**
	G ¼ A	–	0...25	60	600	8.5...36	14	**PT3553**
	G ¼ A	–	0...10	25	300	8.5...36	14	**PT3554**
M12 connector · Output function 0...10 V analogue · DC · Wiring diagram no. 10 · Connector group 150								
	G ¼ A	–	0...400	600	1600	16...36	14	**PT9550**
	G ¼ A	–	0...250	400	1000	16...36	14	**PT9551**
	G ¼ A	–	0...100	200	1000	16...36	14	**PT9552**
	G ¼ A	–	0...25	60	600	16...36	14	**PT9553**
	G ¼ A	–	0...10	25	300	16...36	14	**PT9554**

PA / PPA sensors for industrial applications with analogue outputs / AS-i

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA · DC · Wiring diagram no. 9 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	0...600	800	1200	9.6...32	15	**PA3060**
	G ¼ I	–	0...400	600	1000	9.6...32	16	**PA3020**
	G ¼ I	–	0...250	400	850	9.6...32	16	**PA3021**
	G ¼ I	–	0...100	300	650	9.6...32	17	**PA3022**
	G ¼ I	–	0...25	150	350	9.6...32	17	**PA3023**
	G ¼ I	–	0...10	75	150	9.6...32	17	**PA3024**
	G ¼ I	–	0...2.5	20	50	9.6...32	17	**PA3026**
	G ¼ I	–	0...1	10	30	9.6...32	17	**PA3027**
	G ¼ I	–	0...0.25	10	30	9.6...32	17	**PA3028**
	G¼ male / M5 female	–	0...250	400	850	9.6...32	18	**PA3521**
	G¼ male / M5 female	–	0...100	300	650	9.6...32	18	**PA3522**
	G¼ male / M5 female	–	0...25	150	350	9.6...32	18	**PA3523**
	G¼ male / M5 female	–	0...10	75	150	9.6...32	18	**PA3524**
	G¼ male / M5 female	–	0...2.5	20	50	9.6...32	18	**PA3526**
	G¼ male / M5 female	–	0...0.25	10	30	9.6...32	18	**PA3528**

You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 0...10 V · DC · Wiring diagram no. 10 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	0...600	800	1200	16...32	15	**PA9060**
	G ¼ I	–	0...400	600	1000	16...32	16	**PA9020**
	G ¼ I	–	0...250	400	850	16...32	17	**PA9021**
	G ¼ I	–	0...100	300	650	16...32	17	**PA9022**
	G ¼ I	–	0...25	150	350	16...32	17	**PA9023**
	G ¼ I	–	0...10	75	150	16...32	17	**PA9024**
	G ¼ I	–	0...2.5	20	50	16...32	17	**PA9026**
	G ¼ I	–	0...1	10	30	16...32	17	**PA9027**
	G ¼ I	–	0...0.25	10	30	16...32	17	**PA9028**
M12 connector · AS-i · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	-	0...400	600	1000	18...31.6	19	**PPA020**

Part seat monitoring

Type	Description	Order no.
	Control unit for part seat monitoring · Setting by adjustment of the pneumatic bridge · Integrated pressure sensor with 2 switching outputs · and 4-digit alphanumerical display for trend display or display of current pressure · Cable	**PS7570**

Sensors for hydrostatic level monitoring

Type	Measuring range [bar]	Cable length / material	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
Output function 4...20 mA analogue · Wiring diagram no. 12							
	0...0.25	5 m PUR cable	2	2.4	10...30	20	**PS3208**
	0...0.6	10 m PUR cable	4	4.8	10...30	20	**PS3407**
	0...0.6	15 m PUR cable	4	4.8	10...30	20	**PS3427**
	0...1	15 m PUR cable	5	6	10...30	20	**PS3417**
	0...0.6	30 m PUR cable	4	4.8	10...30	20	**PS3607**
	0...1	30 m PUR cable	5	6	10...30	20	**PS3617**

Sensors for hydrostatic level monitoring ATEX category 1G/1D

Type	Measuring range [bar]	Cable length / material	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
Output function 4...20 mA analogue · Wiring diagram no. 13							
	0...0.25	5 m FEP cable	2	2.4	10...30	21	**PS308A**
	0...0.6	10 m FEP cable	4	4.8	10...30	21	**PS307A**
	0...1	15 m FEP cable	5	6	10...30	21	**PS317A**

You can find wiring diagrams and scale drawings from page 444

PNI sensors with analogue input

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN · Wiring diagram no. 14 · Connector groups 15, 16, 17								
	G ¼ I	Display unit	0...250	400	850	18...30	1	**PNI021**
	G ¼ I	Display unit	0...100	300	650	18...30	1	**PNI022**
	G ¼ I	Display unit	0...25	100	350	18...30	1	**PNI023**
	G ¼ I	Display unit	0...10	50	150	18...30	1	**PNI024**

Sensors with ATEX approval 3D

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · DC PNP · Wiring diagram no. 1 · Connector groups 147, 149								
	G ¼ I	Display unit	-1...10	75	150	18...36	22	**PN004A**
	G ¼ I	Display unit	0...2.5	20	50	18...36	22	**PN006A**
	G ¼ I	Display unit	0...1	10	30	18...36	22	**PN007A**
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 17 · Connector groups 147, 149								
	G ¼ I	Display unit	-1...10	75	150	18...36	22	**PN014A**
	G ¼ I	Display unit	0...2.5	20	50	18...36	22	**PN016A**

Sensors with ATEX approval 3D/3G

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (I / U, scaleable 1:4) · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 147, 149								
	G1 A sealing cone	Display unit	-1...25	100	350	18...32	23	**PI003A**
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	18...32	23	**PI008A**

Full metal sensors for hygienic and wet areas with switching and analogue outputs, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 18 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-1...25	100	350	20...32	24	**PI2793**
	Aseptoflex Vario	Display unit	-1...10	50	150	20...32	24	**PI2794**
	Aseptoflex Vario	Display unit	-1...4	30	100	20...32	24	**PI2795**
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	20...32	24	**PI2796**
	Aseptoflex Vario	Display unit	-0.05...1	10	30	20...32	24	**PI2797**
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	20...32	24	**PI2798**
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	20...32	24	**PI2789**
	G1 A sealing cone	Display unit	-1...25	100	350	20...32	25	**PI2893***
	G1 A sealing cone	Display unit	-1...10	50	150	20...32	25	**PI2894***
	G1 A sealing cone	Display unit	-1...4	30	100	20...32	25	**PI2895***

You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 18 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	20...32	25	**PI2896***
	G1 A sealing cone	Display unit	-0.05...1	10	30	20...32	25	**PI2897***
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	20...32	25	**PI2898***
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	20...32	25	**PI2889***

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

Full metal high-temperature sensors for hygienic and wet areas with switching and analogue outputs, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 18 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Clamp DN 38 / 1½"	Display unit	-1...25	80	150	20...32	26	**PI2203**
	Clamp DN 38 / 1½"	Display unit	-1...10	50	100	20...32	26	**PI2204**
	Clamp DN 38 / 1½"	Display unit	-1...4	30	50	20...32	26	**PI2205**
	Clamp DN 38 / 1½"	Display unit	-0.124...2.5	20	50	20...32	26	**PI2206**
	Clamp DN 38 / 1½"	Display unit	-0.05...1	10	30	20...32	26	**PI2207**
	Clamp DN 38 / 1½"	Display unit	-1...1	10	30	20...32	26	**PI2209**

Electronic contact manometers for hygienic and wet areas with switching and analogue outputs

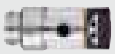
Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-1...25	100	350	18...32	28	**PG2793**
	Aseptoflex Vario	Display unit	-1...10	50	150	18...32	28	**PG2794**
	Aseptoflex Vario	Display unit	-1...4	30	100	18...32	28	**PG2795**
	Aseptoflex Vario	Display unit	-1...1	10	30	18...32	28	**PG2799**
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	18...32	28	**PG2796**
	Aseptoflex Vario	Display unit	-0.05...1	10	30	18...32	28	**PG2797**
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	18...32	28	**PG2798**
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	18...32	28	**PG2789**
	G1 A sealing cone	Display unit	-1...25	100	350	18...32	29	**PG2893***
	G1 A sealing cone	Display unit	-1...10	50	150	18...32	29	**PG2894***
	G1 A sealing cone	Display unit	-1...4	30	100	18...32	29	**PG2895***
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	18...32	29	**PG2896***
	G1 A sealing cone	Display unit	-0.05...1	10	30	18...32	29	**PG2897***
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	18...32	29	**PG2898***
	G1 A sealing cone	Display unit	-1...1	10	30	18...32	29	**PG2899***

You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Draw-ing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	18...32	29	**PG2889***

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

PF sensors for hygienic and wet areas with switching and analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Draw-ing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4) · Wiring diagram no. 16 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex	Switching status	-1...25	100	350	20...30	30	**PF2053**
	Aseptoflex	Switching status	-0.5...10	50	150	20...30	30	**PF2054**
	Aseptoflex	Switching status	-0.13...2.5	20	50	20...30	30	**PF2056**
	Aseptoflex	Switching status	-0.05...1	10	30	20...30	30	**PF2057**
	Aseptoflex	Switching status	-0.013...0.25	10	30	20...30	30	**PF2058**
	G1 A sealing cone	Switching status	-1...100	200	650	20...30	31	**PF2652**
	G1 A sealing cone	Switching status	-1...25	100	350	20...30	32	**PF2653**
	G1 A sealing cone	Switching status	-0.5...10	50	150	20...30	32	**PF2654**
	G1 A sealing cone	Switching status	-0.13...2.5	20	50	20...30	32	**PF2656**
	G1 A sealing cone	Switching status	-0.05...1	10	30	20...30	32	**PF2657**
	G1 A sealing cone	Switching status	-0.013...0.25	10	30	20...30	32	**PF2658**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4) · Wiring diagram no. 16 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¾ A	Switching status	-1...25	100	200	20...30	33	**PF2953**
	G ¾ A	Switching status	-0.5...10	50	150	20...30	33	**PF2954**
	G ¾ A	Switching status	-0.13...2.5	20	50	20...30	33	**PF2956**
	G ¾ A	Switching status	-0.05...1	10	30	20...30	33	**PF2957**

PL / PM sensors without display for hygienic and wet areas with analogue output

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · 3-wire DC; 2-wire DC · Wiring diagram no. 19 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Aseptoflex	–	-1...25	100	350	14...30	34	**PL2053**
	Aseptoflex	–	-0.5...10	50	150	14...30	34	**PL2054**
	Aseptoflex	–	-0.13...2.5	20	50	14...30	34	**PL2056**
	Aseptoflex	–	-0.05...1	10	30	14...30	34	**PL2057**
	Aseptoflex	–	-0.0125...0.25	10	30	14...30	34	**PL2058**
	G1 A sealing cone	–	-1...100	200	650	14...30	35	**PL2652**
	G1 A sealing cone	–	-1...25	100	350	14...30	36	**PL2653**
	G1 A sealing cone	–	-0.5...10	50	150	14...30	36	**PL2654**
	G1 A sealing cone	–	-0.13...2.5	20	50	14...30	36	**PL2656**

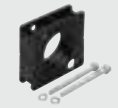
You can find wiring diagrams and scale drawings from page 444

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · 3-wire DC; 2-wire DC · Wiring diagram no. 19 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1 A sealing cone	–	-0.05...1	10	30	14...30	36	**PL2657**
	G1 A sealing cone	–	-0.0125...0.25	10	30	14...30	36	**PL2658**
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 19 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Aseptoflex	–	-1...25	100	350	14...30	37	**PM2053**
	Aseptoflex	–	-0.5...10	50	150	14...30	37	**PM2054**
	Aseptoflex	–	-0.99...4	30	100	14...30	37	**PM2055**
	Aseptoflex	–	-0.13...2.5	20	50	14...30	37	**PM2056**
	Aseptoflex	–	-0.05...1	10	30	14...30	37	**PM2057**
	Aseptoflex	–	-0.0125...0.25	10	30	14...30	37	**PM2058**
M12 connector · Output function 4...20 mA analogue · 3-wire DC; 2-wire DC · Wiring diagram no. 19 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1 A sealing cone	–	-1...25	100	350	14...30	38	**PM2653**
	G1 A sealing cone	–	-0.5...10	50	150	14...30	38	**PM2654**
	G1 A sealing cone	–	-0.99...4	30	100	14...30	38	**PM2655**
	G1 A sealing cone	–	-0.13...2.5	20	50	14...30	38	**PM2656**
	G1 A sealing cone	–	-0.05...1	10	30	14...30	38	**PM2657**
	G1 A sealing cone	–	-0.0125...0.25	10	30	14...30	38	**PM2658**

PE sensors with display with 2 switching outputs or switching and analogue output

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 17 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ I	Display unit	-1...10	75	150	18...36	1	**PE7004**
	G ¼ I	Display unit	0...2.5	20	50	18...36	1	**PE7006**
	G ¼ I	Display unit	0...25	150	350	18...36	1	**PE7003**
	G ¼ I	Display unit	0...100	300	650	18...36	1	**PE7002**
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	0...400	600	1000	18...36	3	**PE3000**
	G ¼ I	Display unit	0...250	400	850	18...36	1	**PE3001**
	G ¼ I	Display unit	0...100	300	650	18...36	1	**PE3002**
	G ¼ I	Display unit	0...25	150	350	18...36	1	**PE3003**
	G ¼ I	Display unit	-1...10	75	150	18...36	1	**PE3004**
	G ¼ I	Display unit	0...2.5	20	50	18...36	1	**PE3006**

Fixing components for pressure sensors

Type	Description	Order no.
	Mounting clamp · Ø 34 mm · Housing materials: PBT	**E10017**
	Mounting clamp · Ø 34 mm · Housing materials: PA	**E10193**

You can find wiring diagrams and scale drawings from page 444

Type	Description	Order no.
	Mounting device 2 way · for fluid sensors · Housing materials: POM	E30078
	Mounting device 3 way · for fluid sensors · Housing materials: POM	E30079

Accessories and software

Type	Description	Order no.
	Protective cover · for fluid sensors with M12 connector · Housing materials: polyurethane	E30006
	Protective cover · for fluid sensors · stainless steel with transparent Teflon window · Housing materials: stainless steel 316Ti / 1.4571 / PFA / FKM / ventilation strip: Teflon film 0.32 mm / O-ring: FKM	E30101
	Protective cover · for fluid sensors · stainless steel with transparent Teflon window · Housing materials: stainless steel 316Ti / 1.4571 / PFA / EPDM / ventilation strip: Teflon film 0.32 mm / O-ring: EPDM	E30104
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	E30398
	Teach button · for sensors PP0xE, PP052x, PP755x · for memory plug (E30398) · 0.9 m · Housing materials: stainless steel / PA / PMMA	E30405
	Programming/ display unit · for EPS and IO-Link sensors · Connector · Housing materials: stainless steel 316L / 1.4404 / PC copolymer / PBT / FPM	PP2001
	Protective cover · with lead seal option · for pressure sensors type PK · for temperature sensors type TK · for vibration sensors type VK · Housing materials: PP transparent	E30094
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	E30396
	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	E30390
	ifm Container · FDT frame software · for parameter setting and analysis of units with DTM specification · e.g. ifm sensors with EPS programming interface, · sensors with IO-Link	E30110
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	ZGS210

Type	Description	Order no.
	Cable clamp fastener · for submersible pressure transmitter PS3 · Housing materials: steel / plastics	**E30399**
	Filter element · for submersible pressure transmitter PS3 · for fixing on the capillary tube	**E30400**
	Splitter box · with ventilation and terminal block · for submersible pressure transmitter PS3 · Housing materials: plastics	**E30401**
	Additional weight · for submersible pressure transmitter PS3 · Housing materials: stainless steel 316Ti / 1.4571	**E30402**
	DIN rail clip · Housing materials: stainless steel	**E37340**
	Connector · QS-G 1/8-6 · with hexagonal socket 4 mm a/f · for tube with Ø 6 mm · Housing materials: steel / PBT / Brass / aluminium	**E30076**
	Connector · QS-G 1/8-8 · with hexagonal socket 5 mm a/f · for tube with Ø 8 mm · Housing materials: steel / PBT / Brass / aluminium	**E30077**
Factory calibration certificate for pressure sensors (and flow sensors, see below) · Number of measuring points: 6-point factory calibration · Measurement points: in 20 % steps of the measuring range (according to ISO 9001) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		**ZC0004**
DAkkS calibration certificate for pressure sensors · Number of measuring points: 11-point DAkkS calibration · Measurement points: in 10 % steps of the measuring range (according to directive DAkkS-DKD-R 6-1) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		**ZC0005**

Adapters and accessories for adapters

Type	Description	Order no.
	Adapter · R1/8 - R1/8 · rotatable · Housing materials: Brass nickel-plated	**E37350**
	T-pipe mounting set · G1/2 · with reducer G1/2 - G1/8, adapter R1/8 - R1/8 rotatable, seal G1/2 · Housing materials: Brass nickel-plated	**E37360**
	Flange adapter · G ¼ · Hole spacing · 31.1 mm · Housing materials: sealing: NBR, acrylonitrile-butadiene-rubber / flange: aluminium / hollow screw: Brass	**E30003**
	Adapter · G ¼ - G ½ · Housing materials: stainless steel / sealing: FPM	**E30000**

You can find wiring diagrams and scale drawings from page 444

Type	Description	Order no.
	Adapter · G ¼ - G ¼ · Housing materials: stainless steel / FPM	E30007
	Adapter · G ¼ - M20 x 1.5 · Housing materials: stainless steel / FPM	E30010
	Adapter · G ¼ - G ½ · Housing materials: stainless steel / sealing: FPM	E30050
	Adapter · ¼" NPT - G ¼ · Housing materials: stainless steel 316Ti / 1.4571	E30058
	Adapter · ¼" NPT - G ½ · Housing materials: stainless steel 316Ti / 1.4571	E30059
	Adapter · G ¼ - DN16 · G¼ small flange DIN 28403 DN16 · Housing materials: stainless steel	E30065
	Flange adapter · G ¼ · for pressure sensors type PP7 / type PK · Housing materials: stainless steel / O-ring: NBR	E30063
	Adapter · G 1 - G ½ · Housing materials: stainless steel 316L / 1.4404 / sealing: FPM	E30116
	Adapter · G ¼ - G ½ · Housing materials: stainless steel 316Ti / 1.4571 / sealing: FPM	E30135
	Damping screw · for pressure sensors with M5 internal thread	E30057
	O-ring · 24 x 2 · Housing materials: FKM FDA compliant	E30123
	Sealing ring · for Aseptoflex Vario adapter · Housing materials: PEEK FDA compliant	E30124

Flange adapters

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33201

Type	Description	Order no.
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33202**
	Clamp adapter · with leakage port · Clamp · 1-1.5" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	**E33208**
	Aseptoflex Vario adapter · with leakage port · Clamp · 2" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	**E33209**
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33701**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33702**
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33211**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33212**
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33213**
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33711**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33712**
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33713**
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33221**
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33222**
	Clamp adapter · Varivent Adapter · with leakage port · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33228**

You can find wiring diagrams and scale drawings from page 444

Type	Description	Order no.
	Clamp adapter · Varivent Adapter · with leakage port · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33229
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33721
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33722
	pipe fitting · SMS pipe fitting · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33731
	pipe fitting · SMS pipe fitting · pipe fitting · DN50 (2") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33732
	Flange adapter · DRD adapter · flange · DRD · D = 65 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33242
	pipe fitting · universal process adapter · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33340
	Welding adapter · Ø 50 mm · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30122
	Welding adapter · Ø 50 mm · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30130
	sealing plug · sealing plug · Housing materials: adapter: stainless steel 316L / 1.4435 / sealing ring: FKM	E30128
	Aseptoflex adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	E33001
	Aseptoflex adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	E33002
	Aseptoflex adapter · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	E33012
	Aseptoflex adapter · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	E33013

Type	Description	Order no.
	Aseptoflex adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33022**
	Aseptoflex adapter · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33031**
	Aseptoflex adapter · NEUMO BioConnect flange form V · 4 holes · DN40 · pipe connection to DIN 11866 line A DIN 11850 · Housing materials: stainless steel 316L / 1.4435	**E33131**
	Welding adapter · Ø 50 mm · with Aseptoflex thread · Housing materials: stainless steel 316L / 1.4404 / O-ring: FPM FDA compliant	**E30052**
	Adapter plug for welding adapter with Aseptoflex thread · Housing materials: high-grade stainless steel	**E30064**
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	**E33601**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	**E33612**
	Welding adapter · G 1 - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404	**E30013**
	Welding adapter · G 1 - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404 / O-ring: FKM / O-ring: EPDM	**E30072**
	sealing plug · G 1 · Housing materials: high-grade stainless steel	**E30070**
	Welding adapter · G ¾ - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404	**E30009**
	sealing plug · G ¾ · Housing materials: high-grade stainless steel	**E30071**

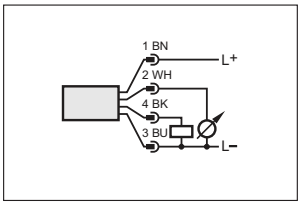
You can find wiring diagrams and scale drawings from page 444

Wiring diagrams

Core colours

BN	brown
GY	grey
WH	white
BU	blue
GN	green

1



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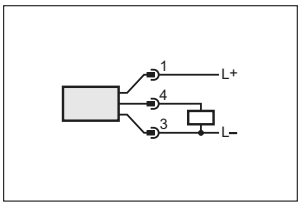

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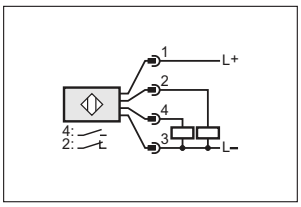

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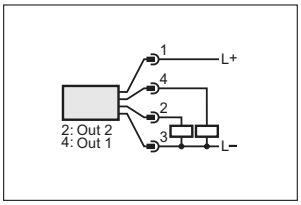

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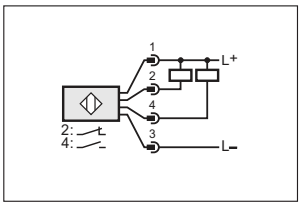

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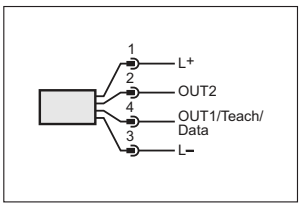

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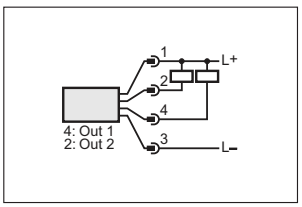

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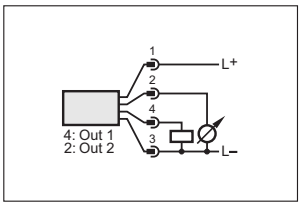

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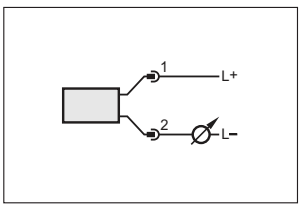

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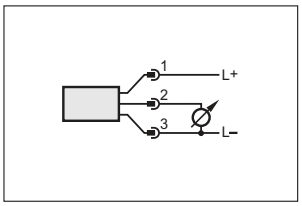

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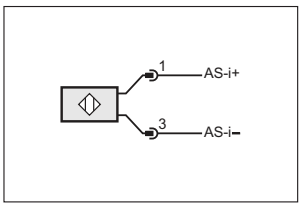

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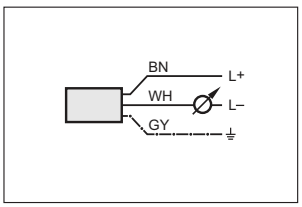

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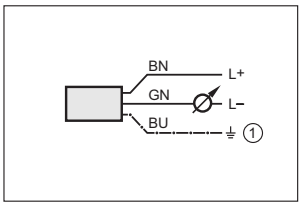
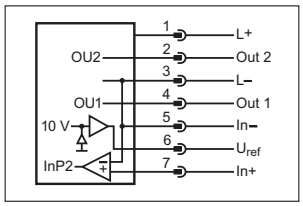


1: screen (connected to the housing)

14



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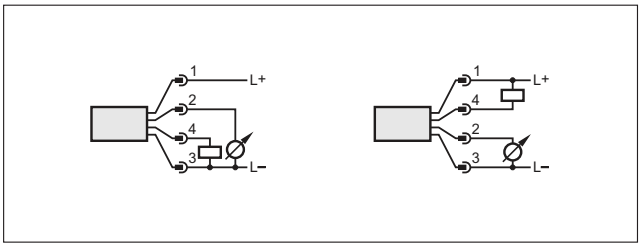

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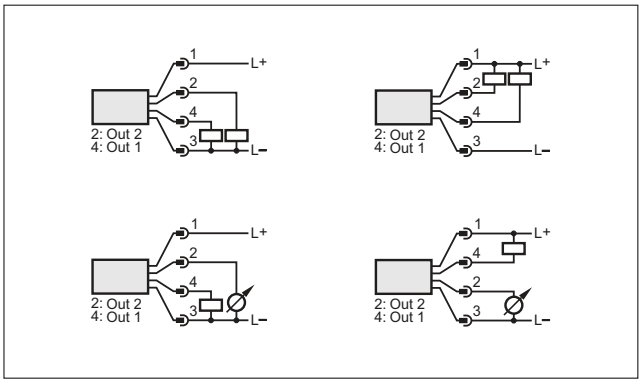
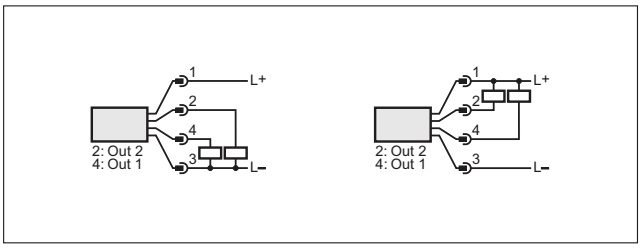


Wiring diagrams

17



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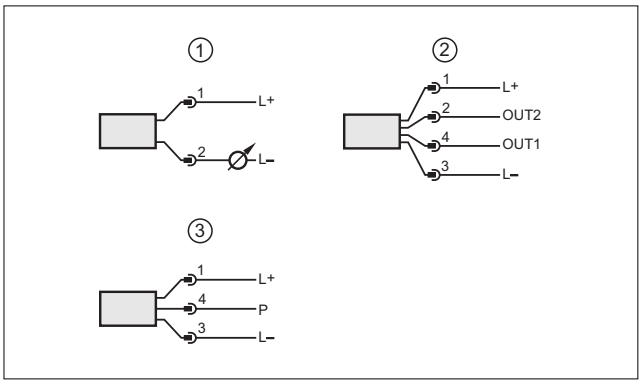
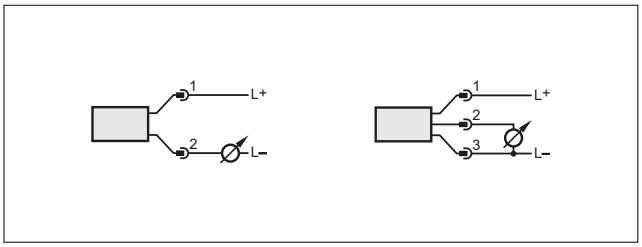


1: connection for 2-wire operation, 2: connection for 3-wire operation, 3: connection for IO-Link parameter setting (P = communication via IO-Link)

19



Scale drawings / drawing no. – CAD download: www.ifm.com

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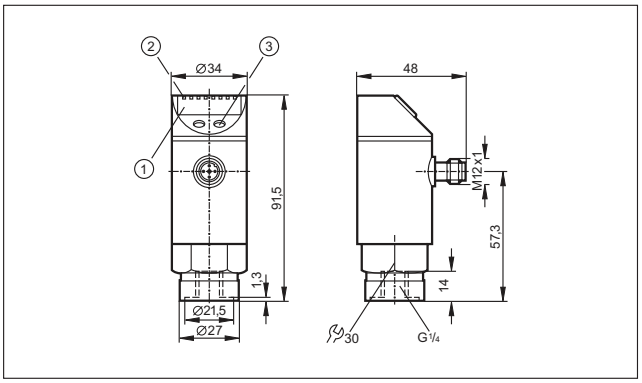
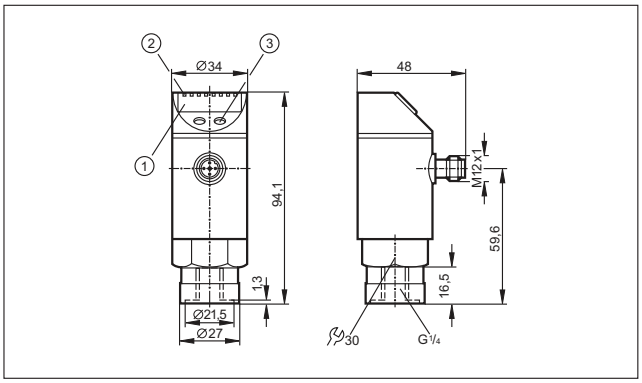


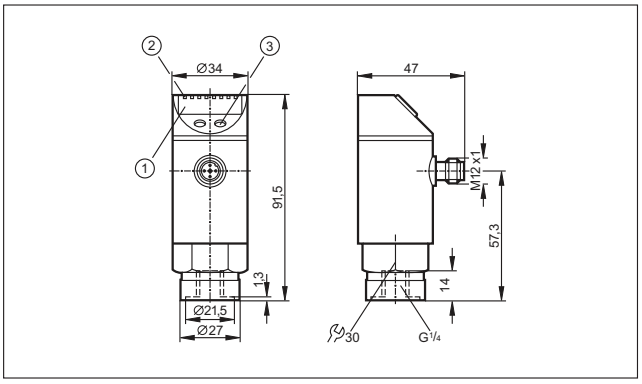
1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

3



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

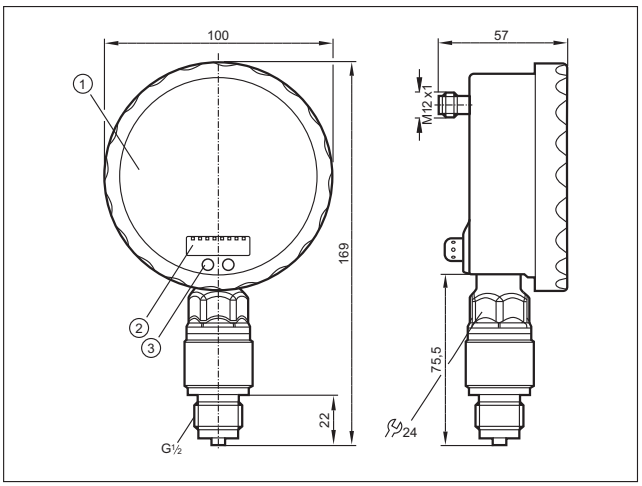
2



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

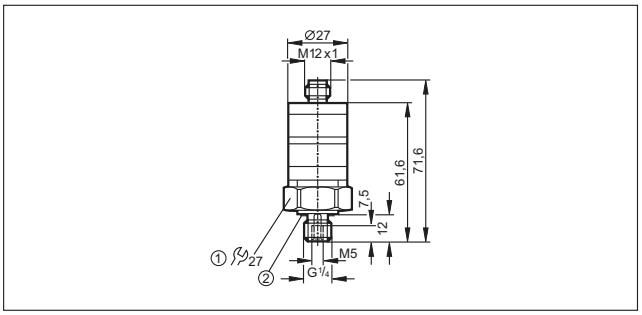
Scale drawings / drawing no. – CAD download: www.ifm.com

4



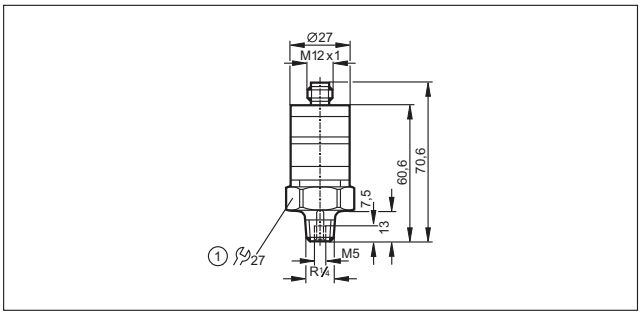
1: Analogue display, 2: 4-digit alphanumeric display, 3: Touch button (programming button)

5



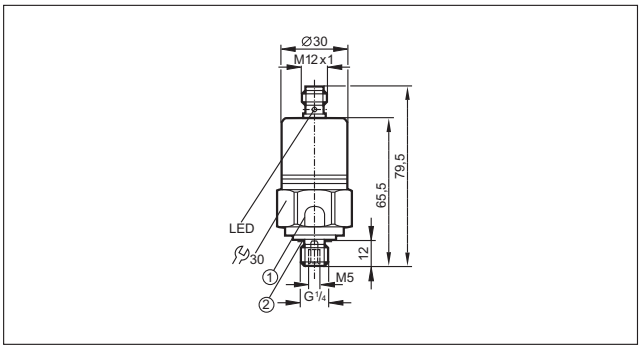
1: tightening torque 25 Nm, 2: sealing FPM / DIN 3869-14

6



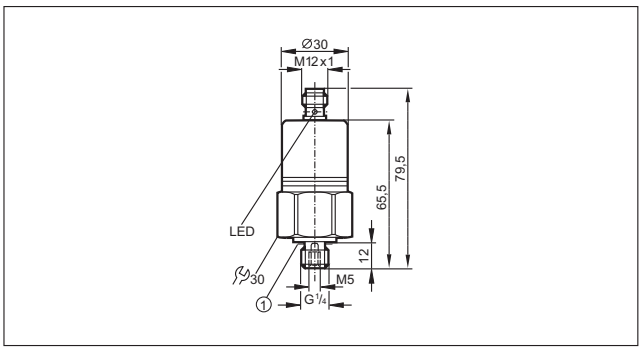
1: tightening torque 25 Nm

7



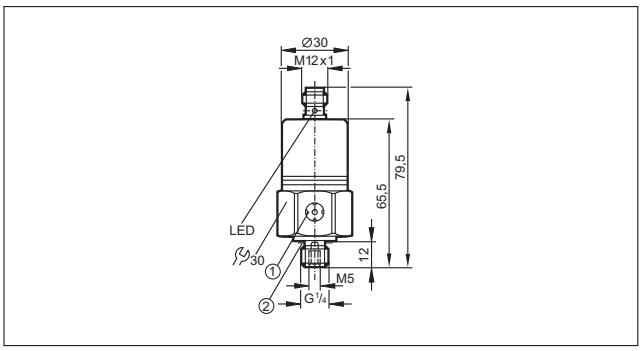
1: Pressure relief mechanism, No mechanical force must be exerted on the pressure relief mechanism., 2: sealing FPM / DIN 3869-14

8



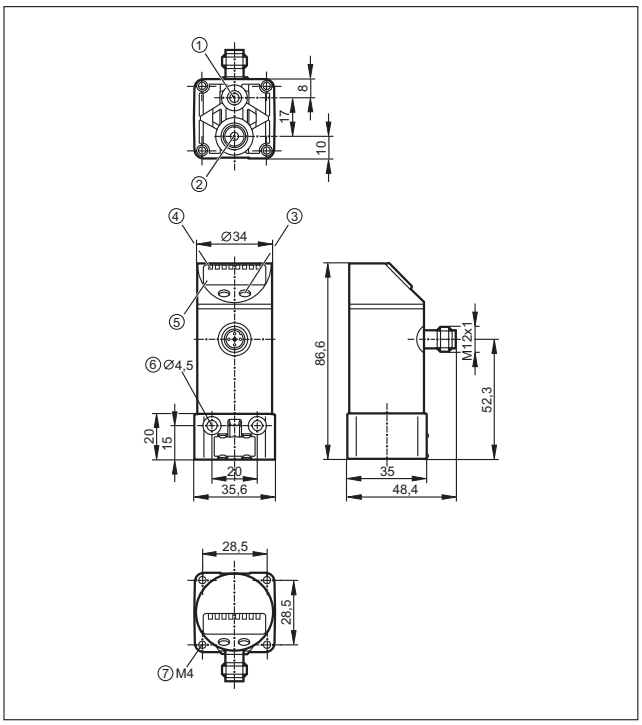
1: sealing FPM / DIN 3869-14

9



1: ventilation, 2: sealing FPM / DIN 3869-14

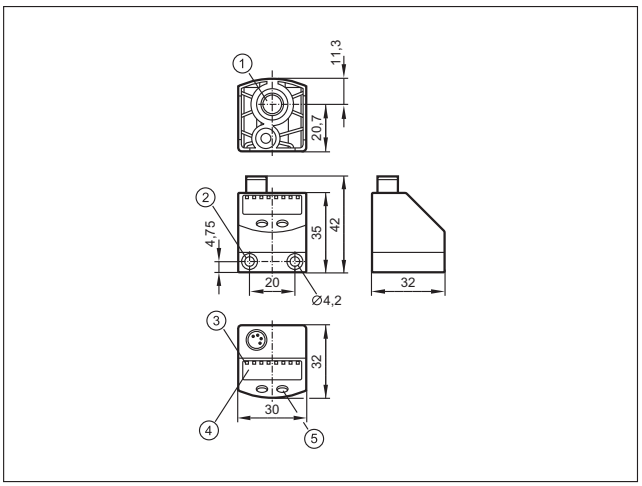
10



1: ventilation connection M5; max. tightening torque 2.5 Nm, 2: main pressure connection G 1/8; tightening torque max. 8 Nm, 3: Programming button, 4: LEDs (display unit / switching status), 5: 4-digit alphanumeric display, 6: for mounting screw M4; max. tightening torque 2.5 Nm, 7: for mounting screw M4; max. tightening torque 2.5 Nm

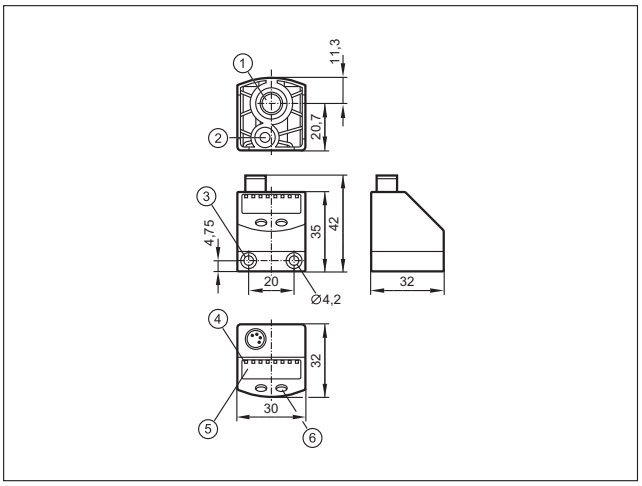
Scale drawings / drawing no. – CAD download: www.ifm.com

11



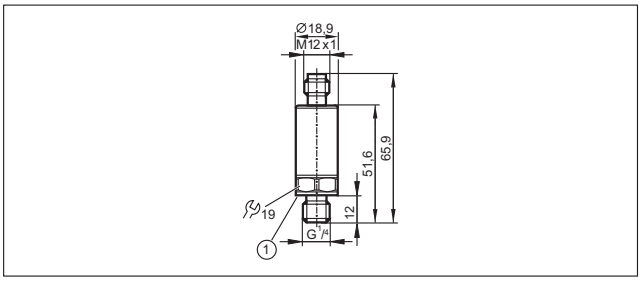
1: main pressure connection G 1/8; tightening torque max. 8 Nm, thread length max: 7.5 mm, 2: for mounting screw M4; max. tightening torque 2.5 Nm, 3: LEDs (display unit / switching status), 4: 4-digit alphanumeric display, 5: Programming button

12



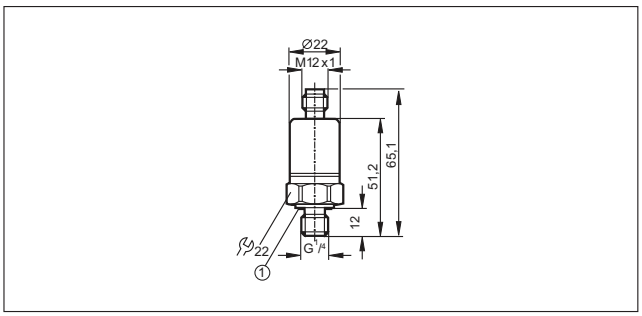
1: Main pressure connection G 1/8; Tightening torque max. 8 Nm, insertion depth max. 7.5 mm, 2: Auxiliary pressure connection M5; Tightening torque max. 2.5 Nm, insertion depth max. 7.5 mm, 3: for mounting screw M4; max. tightening torque 2.5 Nm, 4: LEDs (display unit / switching status), 5: 4-digit alphanumeric display, 6: Programming button

13



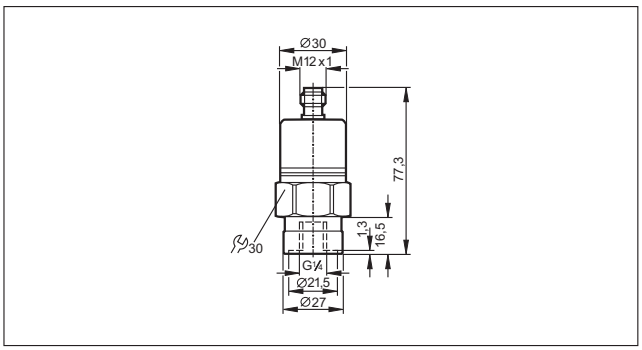
1: FKM seal / DIN 3869-14

14



1: FKM seal / DIN 3869-14, tightening torque 25 Nm

15



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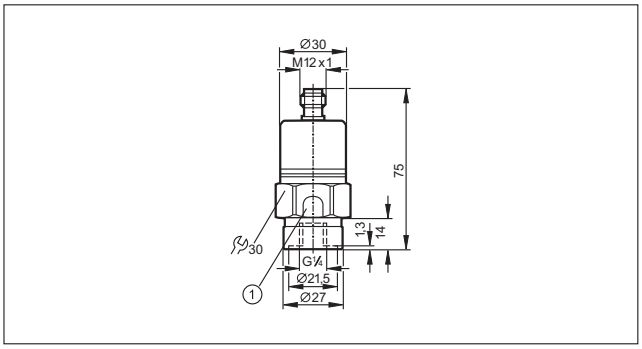
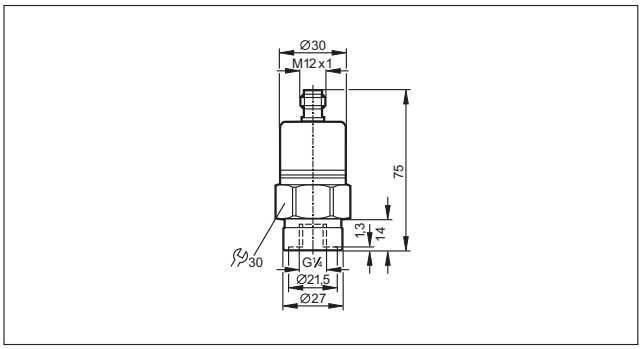


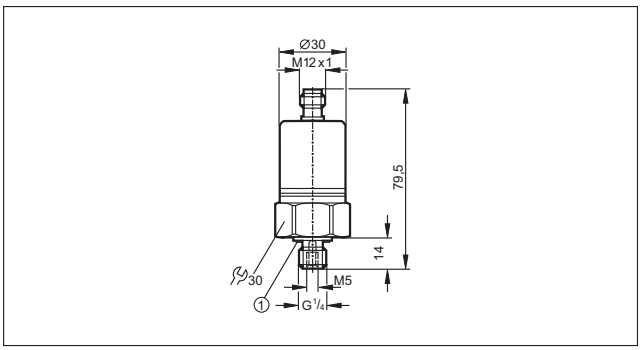
1: Pressure relief mechanism, No mechanical force must be exerted on the pressure relief mechanism.

17



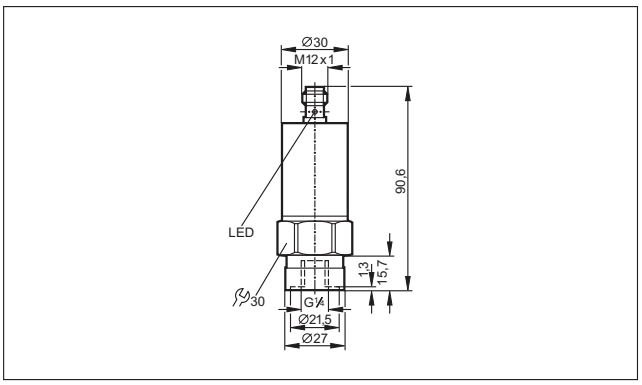
Scale drawings / drawing no. – CAD download: www.ifm.com

18



1: sealing FPM / DIN 3869-14

19



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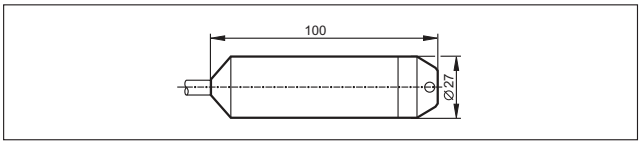

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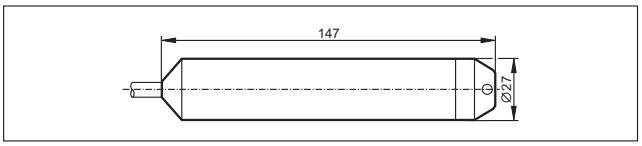

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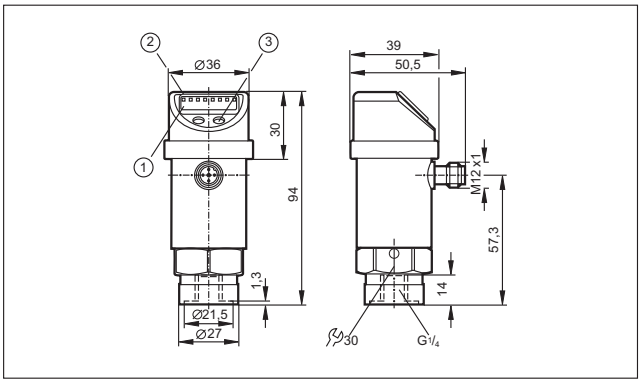
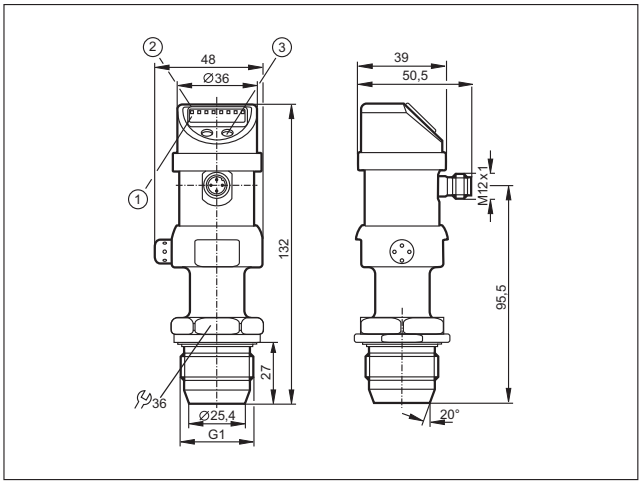


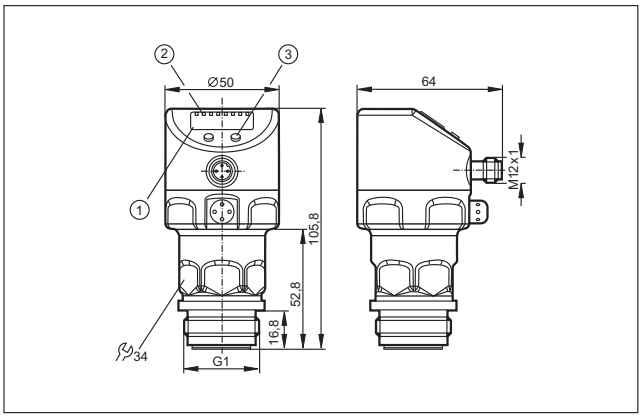
1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

23



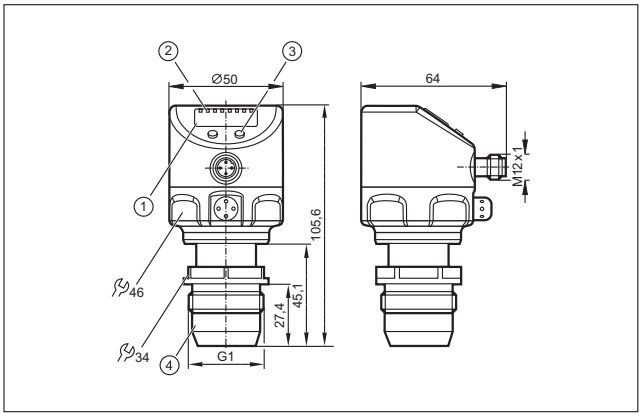
1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button

24



1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button

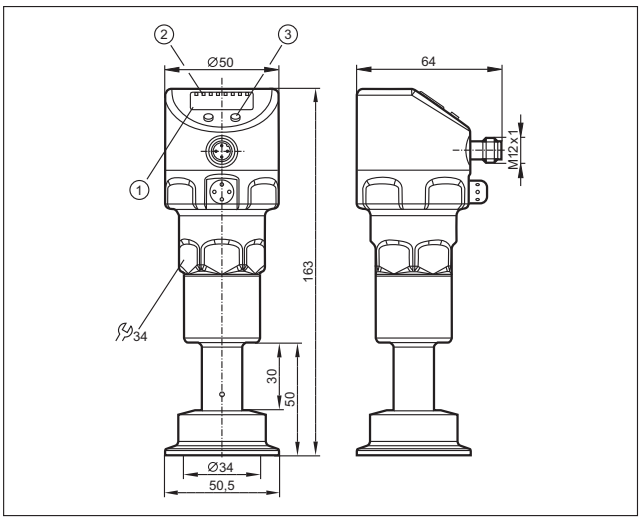
25



1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

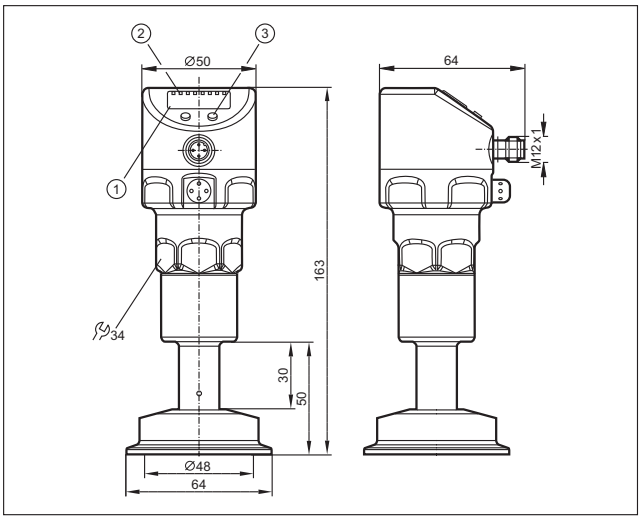
Scale drawings / drawing no. – CAD download: www.ifm.com

26

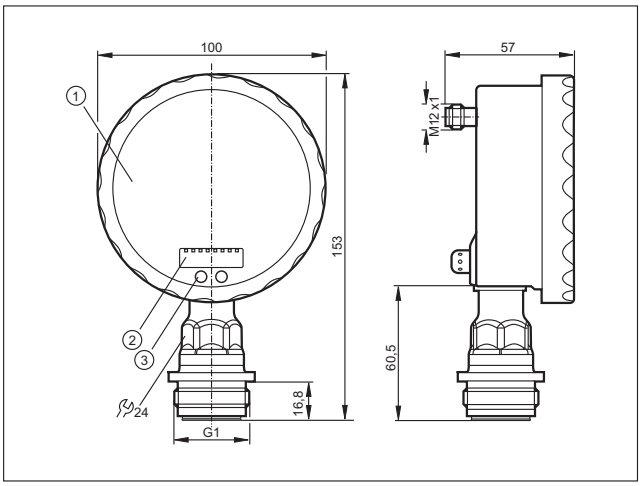


1:: 4-digit alphanumeric display, 2: : LEDs, 3: : Programming button

27

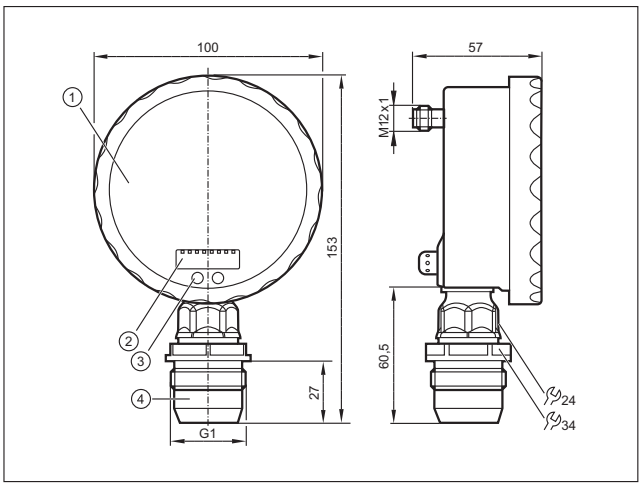


28



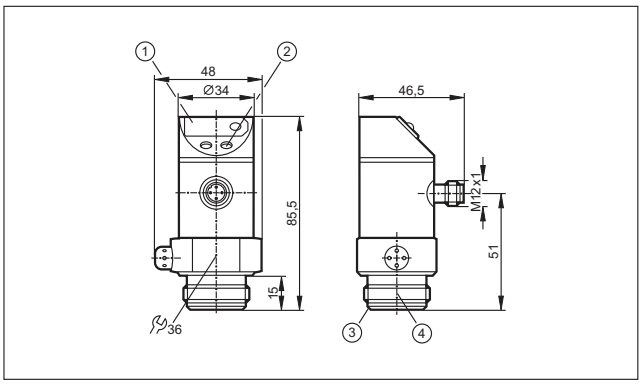
1: Analogue display, 2: 4-digit alphanumeric display, 3: Programming button

29



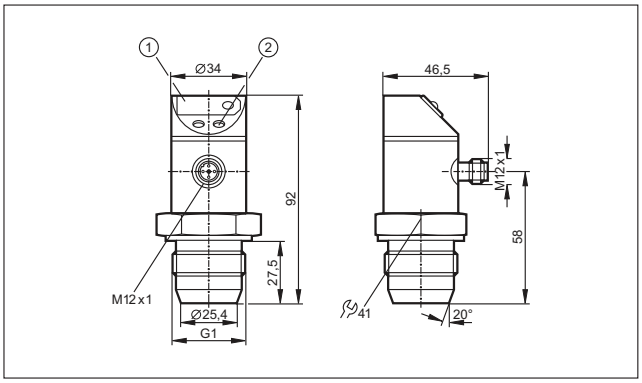
1: Analogue display, 2: 4-digit alphanumeric display, 3: Touch button (programming button), 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

30



1: 7-segment LED display, 2: Programming button, 3: Aseptoflex sealing edge, 4: Aseptoflex thread

31



1: 7-segment LED display, 2: Programming button

Scale drawings / drawing no. – CAD download: www.ifm.com

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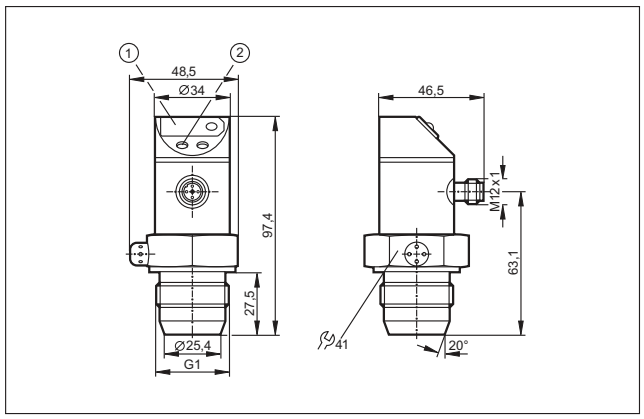
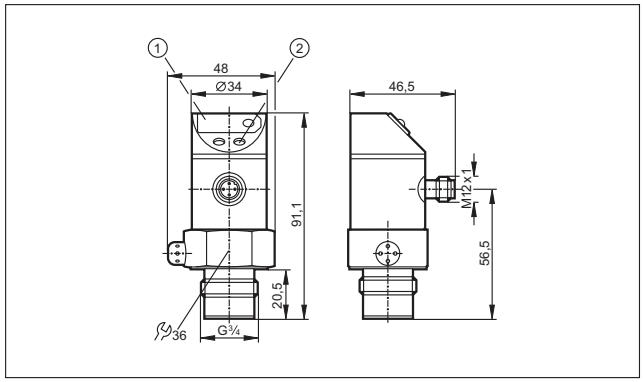


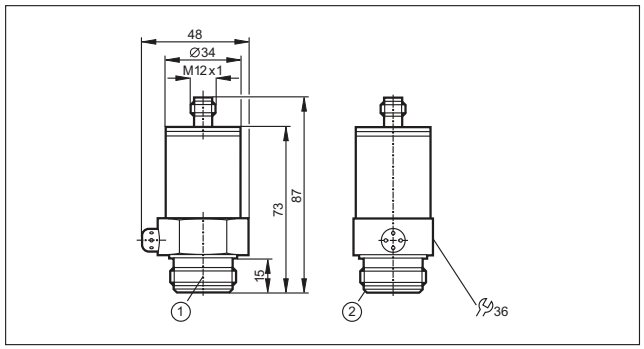
1: 7-segment LED display, 2: Programming button

33



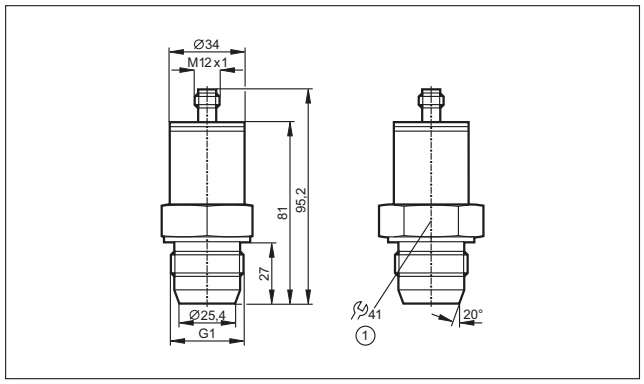
1: 7-segment LED display, 2: Programming button

34



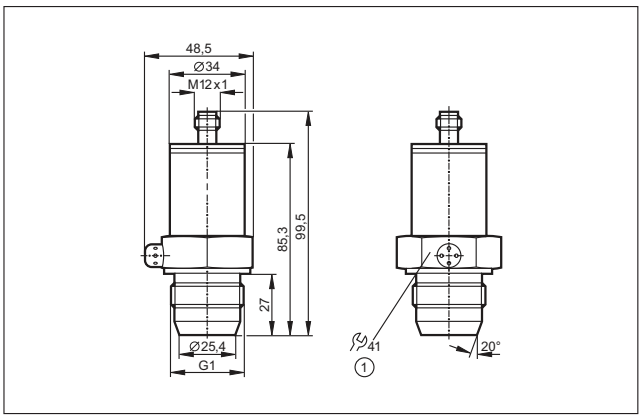
1: Aseptoflex thread, 2: Aseptoflex sealing edge

35



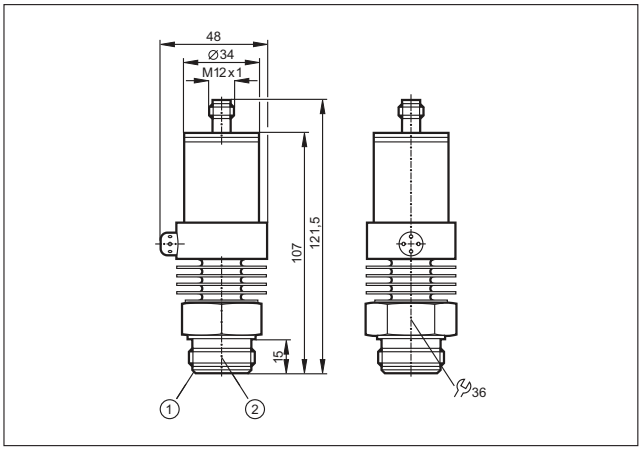
1: tightening torque 20 Nm

36



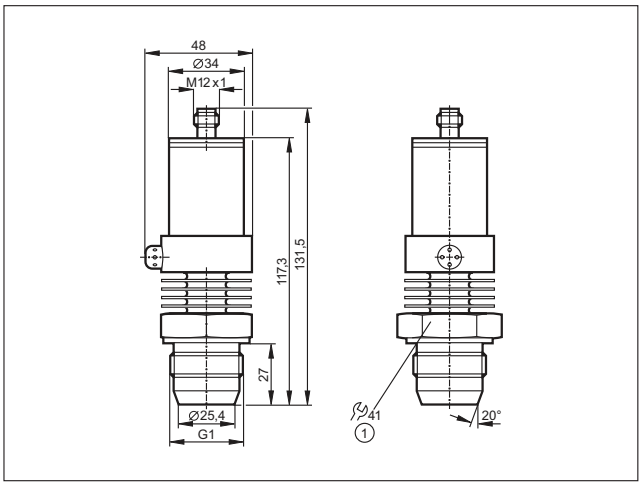
1: tightening torque 20 Nm

37



1: Aseptoflex sealing edge, 2: Aseptoflex thread

38



1: tightening torque 20 Nm

- **Switches and transmitters with integrated control monitor**
- **Specific versions for industrial and hygienic applications**
- **Excellent overload protection and long-term stability**
- **Combination of vacuum and positive pressure measurement in one unit**
- **Compact and low weight design with programmable 2-colour display**

Vacuum sensors

Solid state vacuum sensors from ifm electronic are used for pressure measurements in the range of -1 to 10 bar gauge. The ability to withstand and reliably measure both strong vacuums and high overpressures in the same unit allows fit and forget performance for up to 100 million pressure cycles.

The sensors are available either with or without display for use in hygienic or non-hygienic applications. They are either based on the ceramic-capacitive or Piezo-resistive measuring principle. Both technologies are immune to water and dirt contamination.

The ceramic measuring cell offers a very robust and stable platform for a variety of applications including pressure monitoring on vacuum pumps, filtration systems and evaporation chambers. Other less obvious applications, such as hydrostatic level measurement in vessels, may also experience vacuum conditions when inlet flows are restricted. Easily capable of withstanding negative pressures, these sensors will continue to work correctly when "normal" pressures resume.

Switches based on Piezo-resistive technology have been design-optimised for pneumatic systems. They feature a configurable 2-colour display to easily visualise when a vacuum exceeds or drops below a set value. The -1 to 10 bar units are commonly used across the distributed pneumatic installation to ensure that pressure is available for local plant. The -1 to 1 bar units are often found close to vacuum grippers and lifters in materials handling and packaging applications. Their low weight means they can be mounted close to the suction cups for faster machine cycle times, even directly on moving parts such as robot arms.

All units have robust housings with no moving parts such as pistons or springs. Thus, the sensors are extremely shock and vibration resistant and operate without any wear or maintenance.

Units in the low weight PQ series have a 2-colour display and can be mounted directly onto handling rigs.

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Sensors with switching outputs and display with IO-Link	454
Electronic contact manometers with switching output and analogue output	455
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Sensors with ATEX approval 3D/3G	456
Sensors for pneumatic applications	456
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PF sensors for hygienic and wet areas with switching and analogue outputs	459
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PE sensors with display with 2 switching outputs or switching and analogue output	460
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Accessories and software	461 - 462
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Sensors with switching outputs and analogue outputs and display

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4) · Wiring diagram no. 9 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	-1...25	100	350	18...32	1	**PN2023**
	G ¼ I	Display unit	-1...10	75	150	18...32	1	**PN2024**
	G ¼ I	Display unit	-1...1	20	50	18...32	1	**PN2009**
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	-1...10	75	150	18...36	2	**PN3004**
	G ¼ I	Display unit	-1...0	10	30	18...36	2	**PN3029**

Sensors with switching outputs and display

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	G ¼ I	Display unit	-1...10	75	150	18...36	2	**PN5004**

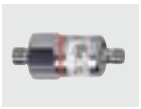
Sensors with switching outputs and display with IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 10 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ I	Display unit	-1...10	75	150	18...36	2	**PN7004**
	G ¼ I	Display unit	-1...1	20	50	18...36	2	**PN7009**

Electronic contact manometers with switching output and analogue output

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 11 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ½	Display unit	-1...25	100	300	18...32	3	**PG2453**
	G ½	Display unit	-1...10	50	150	18...32	3	**PG2454**
	G ½	Display unit	-1...4	30	100	18...32	3	**PG2455**
	G ½	Display unit	-1...1	10	30	18...32	3	**PG2409**

PP sensors for mobile applications with switching outputs, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	4	**PP7554**
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC NPN · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	4	**PP0524**

PA sensors for industrial applications with analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA · DC · Wiring diagram no. 4 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	-1...0	10	30	9.6...32	5	**PA3029**
M12 connector · Output function 0...10 V · DC · Wiring diagram no. 5 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	-1...0	10	30	16...32	5	**PA9029**

You can find wiring diagrams and scale drawings from page 466

Sensors with ATEX approval 3D/3G

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (I / U, scaleable 1:4) · DC PNP/NPN · Wiring diagram no. 11 · Connector groups 147, 149								
	G1 A sealing cone	Display unit	-1...25	100	350	18...32	6	**PI003A**
	G1 A sealing cone	Display unit	-1...1	10	30	18...32	6	**PI009A**

Sensors for pneumatic applications

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 10 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G 1/8 I	Display unit	-1...1	20	30	18...36	7	**PN7809**
	G 1/8 I	Display unit	-1...10	20	30	18...36	7	**PN7834**
M8 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP · Wiring diagram no. 6 · Connector groups 4, 5, 76, 82								
	G 1/8 I	Display unit	-1...1	20	30	18...32	8	**PQ7809**
	G 1/8 I	Display unit	-1...10	20	30	18...32	8	**PQ7834**
M8 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC NPN · Wiring diagram no. 7 · Connector groups 4, 5, 76, 82								
	G 1/8 I	Display unit	-1...1	20	30	18...32	8	**PQ0809**
	G 1/8 I	Display unit	-1...10	20	30	18...32	8	**PQ0834**
M8 connector · Output function 1 x NO / NC programmable + 1 x current output · DC PNP · Wiring diagram no. 8 · Connector groups 4, 5, 76, 82								
	G 1/8 I, M5	Display unit	-0.1...1	20	30	18...32	9	**PQ3809**
	G 1/8 I, M5	Display unit	-1...10	20	30	18...32	9	**PQ3834**

PI sensors for hygienic and wet areas with switching and analogue output

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (I / U, scaleable 1:4) · DC PNP/NPN · Wiring diagram no. 11 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¾ A	Display unit	-1...10	50	150	18...32	10	**PI2994**

PI sensors with 2 switching outputs for hygienic and wet areas

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 10 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¾ A	Display unit	-1...25	100	350	18...32	10	**PI7993**

Full metal sensors for hygienic and wet areas with switching and analogue outputs, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 12 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-1...25	100	350	20...32	11	**PI2793**
	Aseptoflex Vario	Display unit	-1...10	50	150	20...32	11	**PI2794**
	Aseptoflex Vario	Display unit	-1...4	30	100	20...32	11	**PI2795**
	Aseptoflex Vario	Display unit	-1...1	10	30	20...32	11	**PI2799**
	G1 A sealing cone	Display unit	-1...25	100	350	20...32	12	**PI2893***
	G1 A sealing cone	Display unit	-1...10	50	150	20...32	12	**PI2894***
	G1 A sealing cone	Display unit	-1...4	30	100	20...32	12	**PI2895***

You can find wiring diagrams and scale drawings from page 466

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 12 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1 A sealing cone	Display unit	-1...1	10	30	20...32	12	**PI2899***
	Clamp DN 38 / 1½"	Display unit	-1...25	80	150	20...32	13	**PI2203**
	Clamp DN 38 / 1½"	Display unit	-1...10	50	100	20...32	13	**PI2204**
	Clamp DN 38 / 1½"	Display unit	-1...4	30	50	20...32	13	**PI2205**
	Clamp DN 38 / 1½"	Display unit	-1...1	10	30	20...32	13	**PI2209**

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

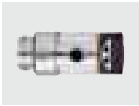
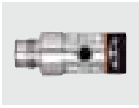
Electronic contact manometers for hygienic and wet areas with switching and analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 11 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-1...25	100	350	18...32	14	**PG2793**
	Aseptoflex Vario	Display unit	-1...10	50	150	18...32	14	**PG2794**
	Aseptoflex Vario	Display unit	-1...4	30	100	18...32	14	**PG2795**
	Aseptoflex Vario	Display unit	-1...1	10	30	18...32	14	**PG2799**
	G1 A sealing cone	Display unit	-1...25	100	350	18...32	15	**PG2893***
	G1 A sealing cone	Display unit	-1...10	50	150	18...32	15	**PG2894***
	G1 A sealing cone	Display unit	-1...4	30	100	18...32	15	**PG2895***

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN · Wiring diagram no. 11 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1 A sealing cone	Display unit	-1...1	10	30	18...32	15	**PG2899***

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

PF sensors for hygienic and wet areas with switching and analogue outputs

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4) · Wiring diagram no. 9 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex	Switching status	-1...25	100	350	20...30	16	**PF2053**
	G1 A sealing cone	Switching status	-1...100	200	650	20...30	17	**PF2652**
	G1 A sealing cone	Switching status	-1...25	100	350	20...30	18	**PF2653**
	G1 A sealing cone	Switching status	-0.99...1	20	50	20...30	18	**PF2609**
	G ¾ A	Switching status	-1...25	100	200	20...30	19	**PF2953**

PL / PM sensors without display for hygienic and wet areas with analogue output

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · 3-wire DC; 2-wire DC · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Aseptoflex	–	-1...25	100	350	14...30	20	**PL2053**
	G1 A sealing cone	–	-1...100	200	650	14...30	21	**PL2652**
	G1 A sealing cone	–	-1...25	100	350	14...30	22	**PL2653**

You can find wiring diagrams and scale drawings from page 466

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Aseptoflex	–	-1...25	100	350	14...30	23	**PM2053**
	Aseptoflex	–	-0.99...4	30	100	14...30	23	**PM2055**
M12 connector · Output function 4...20 mA analogue · 3-wire DC; 2-wire DC · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1 A sealing cone	–	-1...25	100	350	14...30	24	**PM2653**
	G1 A sealing cone	–	-0.99...4	30	100	14...30	24	**PM2655**

PE sensors with display with 2 switching outputs or switching and analogue output

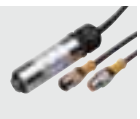
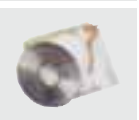
Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · DC PNP/NPN · Wiring diagram no. 10 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G ¼ I	Display unit	-1...1	20	50	18...36	2	**PE7009**
	G ¼ I	Display unit	-1...10	75	150	18...36	2	**PE7004**
M12 connector · Output function normally open / closed programmable; 4...20 mA or 0...10 V · DC PNP · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ I	Display unit	-1...10	75	150	18...36	2	**PE3004**
	G ¼ I	Display unit	-1...0	10	30	18...36	2	**PE3029**
	G ¼ I	Display unit	-1...1	20	50	18...36	2	**PE3009**

Fixing components for pressure sensors

Type	Description	Order no.
	Mounting clamp · Ø 34 mm · Housing materials: PBT	**E10017**

Type	Description	Order no.
	Mounting clamp · Ø 34 mm · Housing materials: PA	**E10193**
	Mounting device 2 way · for fluid sensors · Housing materials: POM	**E30078**
	Mounting device 3 way · for fluid sensors · Housing materials: POM	**E30079**

Accessories and software

Type	Description	Order no.
	Protective cover · for fluid sensors with M12 connector · Housing materials: polyurethane	**E30006**
	Protective cover · for fluid sensors · stainless steel with transparent Teflon window · Housing materials: stainless steel 316Ti / 1.4571 / PFA / FKM / ventilation strip: Teflon film 0.32 mm / O-ring: FKM	**E30101**
	Protective cover · for fluid sensors · stainless steel with transparent Teflon window · Housing materials: stainless steel 316Ti / 1.4571 / PFA / EPDM / ventilation strip: Teflon film 0.32 mm / O-ring: EPDM	**E30104**
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	**E30398**
	Teach button · for sensors PP0xE, PP052x, PP755x · for memory plug (E30398) · 0.9 m · Housing materials: stainless steel / PA / PMMA	**E30405**
	Programming/ display unit · for EPS and IO-Link sensors · Connector · Housing materials: stainless steel 316L / 1.4404 / PC copolymer / PBT / FPM	**PP2001**
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	**E30396**
	ifm Container · FDT frame software · for parameter setting and analysis of units with DTM specification · e.g. ifm sensors with EPS programming interface, · sensors with IO-Link	**E30110**
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	**ZGS210**
	DIN rail clip · Housing materials: stainless steel	**E37340**

You can find wiring diagrams and scale drawings from page 466

Type	Description	Order no.
	Connector · QS-G 1/8-6 · with hexagonal socket 4 mm a/f · for tube with Ø 6 mm · Housing materials: steel / PBT / Brass / aluminium	E30076
	Connector · QS-G 1/8-8 · with hexagonal socket 5 mm a/f · for tube with Ø 8 mm · Housing materials: steel / PBT / Brass / aluminium	E30077
	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software “ifm Container” or software “LINERECORDER SENSOR”	E30390
Factory calibration certificate for pressure sensors (and flow sensors, see below) · Number of measuring points: 6-point factory calibration · Measurement points: in 20 % steps of the measuring range (according to ISO 9001) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		ZC0004
DAkkS calibration certificate for pressure sensors · Number of measuring points: 11-point DAkkS calibration · Measurement points: in 10 % steps of the measuring range (according to directive DAkkS-DKD-R 6-1) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		ZC0005

Adapters and accessories for adapters

Type	Description	Order no.
	Adapter · R1/8 - R1/8 · rotatable · Housing materials: Brass nickel-plated	E37350
	T-pipe mounting set · G1/2 · with reducer G1/2 - G1/8, adapter R1/8 - R1/8 rotatable, seal G1/2 · Housing materials: Brass nickel-plated	E37360
	Flange adapter · G ¼ · Hole spacing · 31.1 mm · Housing materials: sealing: NBR, acrylonitrile-butadiene-rubber / flange: aluminium / hollow screw: Brass	E30003
	Adapter · G ¼ - G ½ · Housing materials: stainless steel / sealing: FPM	E30000
	Adapter · G ¼ - G ¼ · Housing materials: stainless steel / FPM	E30007
	Adapter · G ¼ - M20 x 1.5 · Housing materials: stainless steel / FPM	E30010
	Adapter · G ¼ - G ½ · Housing materials: stainless steel / sealing: FPM	E30050
	Adapter · ¼" NPT - G ¼ · Housing materials: stainless steel 316Ti / 1.4571	E30058

Type	Description	Order no.
	Adapter · ¼" NPT - G ½ · Housing materials: stainless steel 316Ti / 1.4571	**E30059**
	Adapter · G ¼ - DN16 · G¼ small flange DIN 28403 DN16 · Housing materials: stainless steel	**E30065**
	Flange adapter · G ¼ · for pressure sensors type PP7 / type PK · Housing materials: stainless steel / O-ring: NBR	**E30063**
	Adapter · G 1 - G ½ · Housing materials: stainless steel 316L / 1.4404 / sealing: FPM	**E30116**
	Damping screw · for pressure sensors with M5 internal thread	**E30057**
	O-ring · 24 x 2 · Housing materials: FKM FDA compliant	**E30123**
	Sealing ring · for Aseptoflex Vario adapter · Housing materials: PEEK FDA compliant	**E30124**

Flange adapters

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33201**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33202**
	Clamp adapter · with leakage port · Clamp · 1-1.5" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	**E33208**
	Aseptoflex Vario adapter · with leakage port · Clamp · 2" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	**E33209**
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33701**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33702**

You can find wiring diagrams and scale drawings from page 466

Type	Description	Order no.
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33211
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33212
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33213
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33711
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33712
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33713
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33221
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33222
	Clamp adapter · Varivent Adapter · with leakage port · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33228
	Clamp adapter · Varivent Adapter · with leakage port · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33229
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33721
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33722
	pipe fitting · SMS pipe fitting · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33731
	pipe fitting · SMS pipe fitting · pipe fitting · DN50 (2") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33732

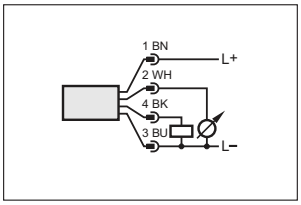
Type	Description	Order no.
	Flange adapter · DRD adapter · flange · DRD · D = 65 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33242**
	pipe fitting · universal process adapter · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33340**
	Welding adapter · Ø 50 mm · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E30122**
	Welding adapter · Ø 50 mm · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E30130**
	sealing plug · sealing plug · Housing materials: adapter: stainless steel 316L / 1.4435 / sealing ring: FKM	**E30128**
	Aseptoflex adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33001**
	Aseptoflex adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33002**
	Aseptoflex adapter · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33012**
	Aseptoflex adapter · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33013**
	Aseptoflex adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33022**
	Aseptoflex adapter · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex adapter · Housing materials: stainless steel 316L / 1.4404	**E33031**
	Aseptoflex adapter · NEUMO BioConnect flange form V · 4 holes · DN40 · pipe connection to DIN 11866 line A DIN 11850 · Housing materials: stainless steel 316L / 1.4435	**E33131**
	Welding adapter · Ø 50 mm · with Aseptoflex thread · Housing materials: stainless steel 316L / 1.4404 / O-ring: FPM FDA compliant	**E30052**
	Adapter plug for welding adapter with Aseptoflex thread · Housing materials: high-grade stainless steel	**E30064**

You can find wiring diagrams and scale drawings from page 466

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	**E33601**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	**E33612**
	Welding adapter · G 1 - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404	**E30013**
	Welding adapter · G 1 - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404 / O-ring: FKM / O-ring: EPDM	**E30072**
	sealing plug · G 1 · Housing materials: high-grade stainless steel	**E30070**
	Welding adapter · G ¾ - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404	**E30009**
	sealing plug · G ¾ · Housing materials: high-grade stainless steel	**E30071**

Wiring diagrams

1



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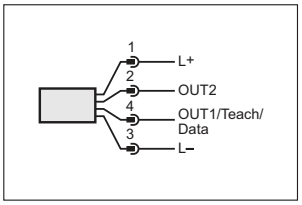

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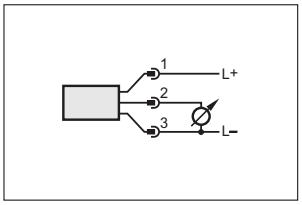

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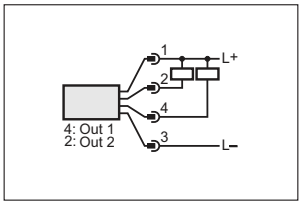

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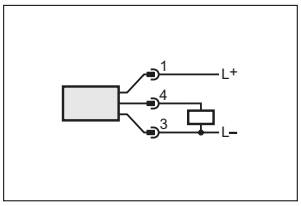

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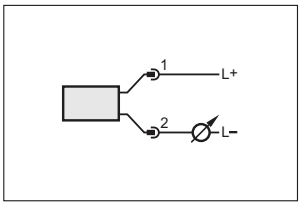

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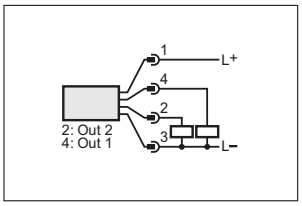

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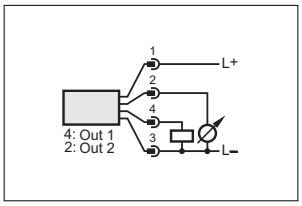
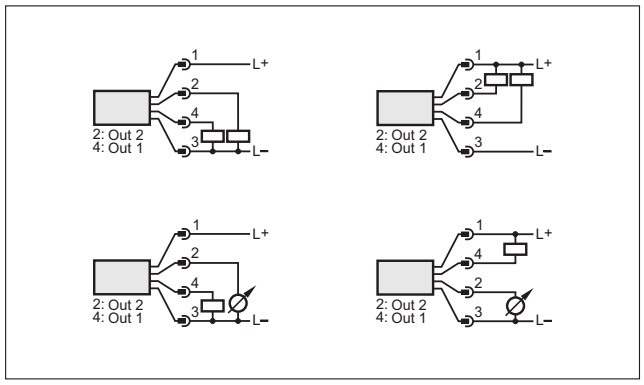


Wiring diagrams

9



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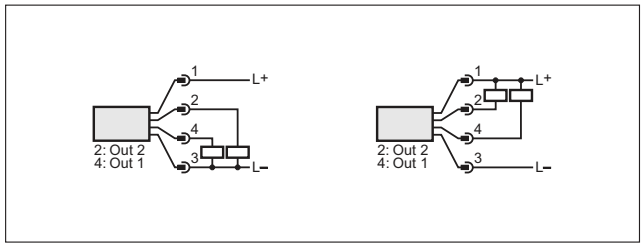

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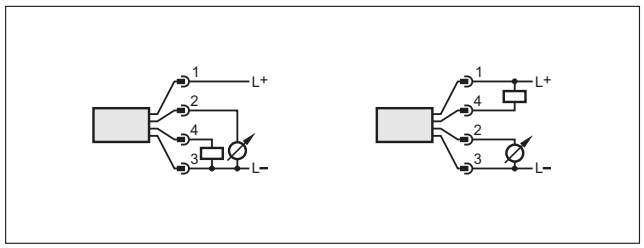

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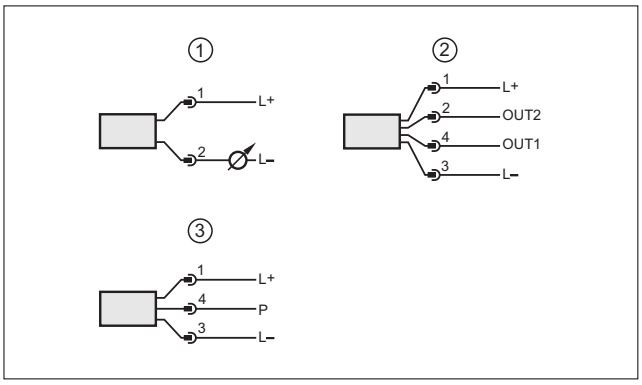
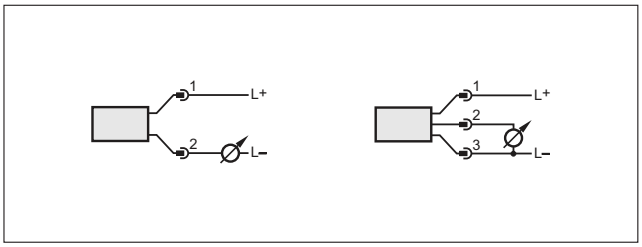


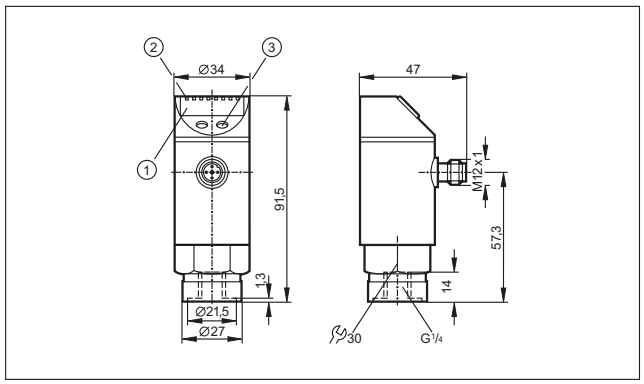
1: connection for 2-wire operation, 2: connection for 3-wire operation, 3: connection for IO-Link parameter setting (P = communication via IO-Link)

13



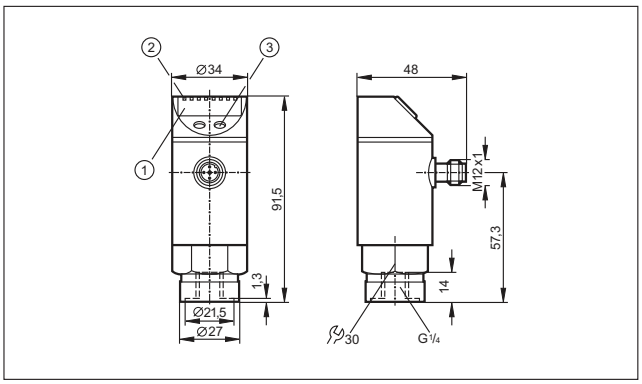
Scale drawings / drawing no. – CAD download: www.ifm.com

1



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

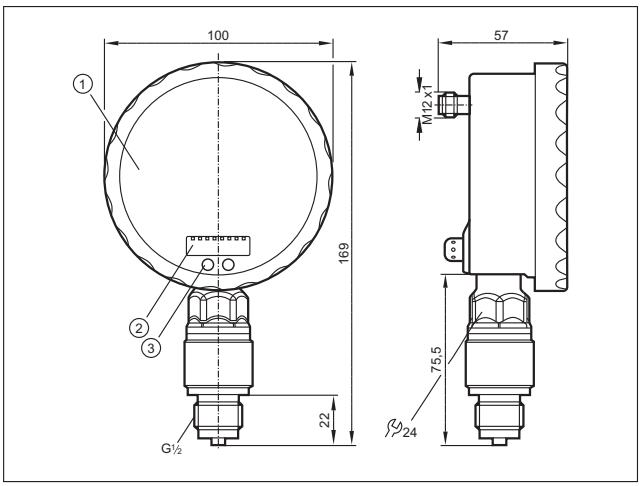
2



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

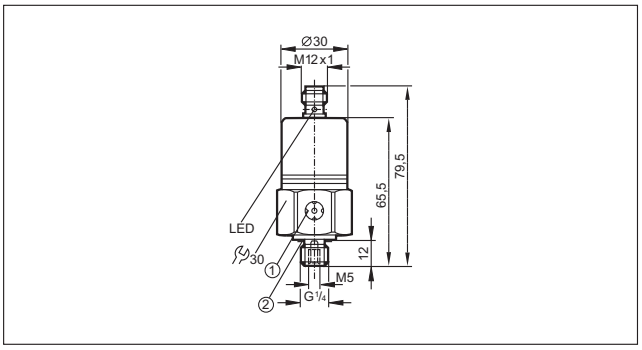
Scale drawings / drawing no. – CAD download: www.ifm.com

3



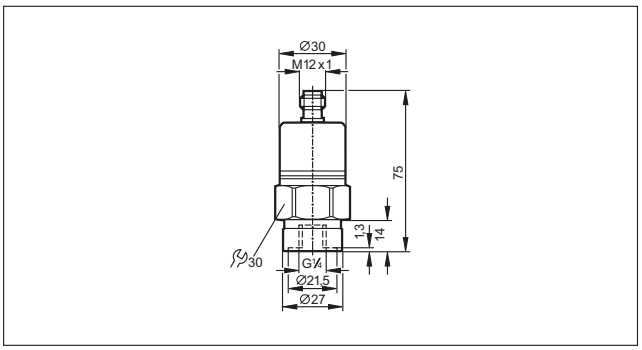
1: Analogue display, 2: 4-digit alphanumeric display, 3: Touch button (programming button)

4



1: ventilation, 2: sealing FPM / DIN 3869-14

5



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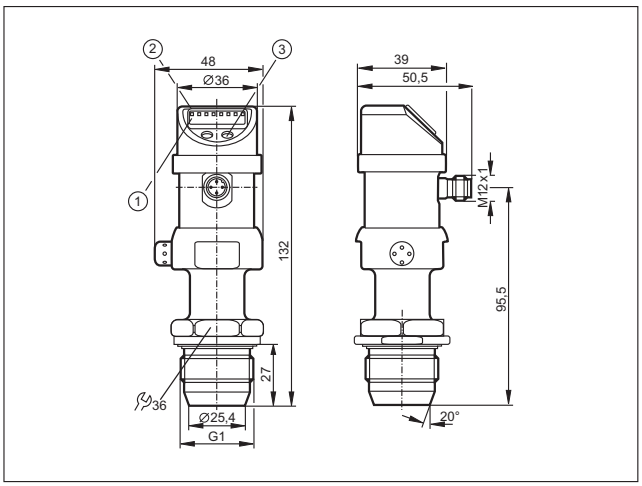
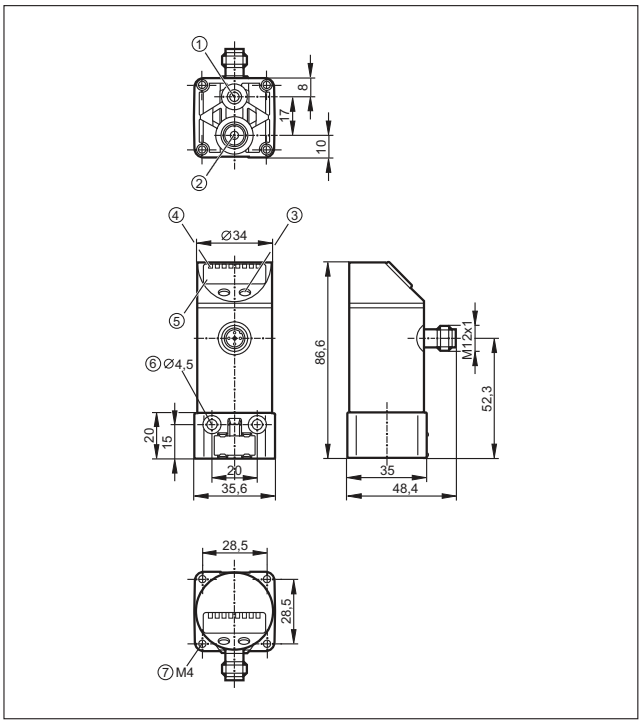


1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button

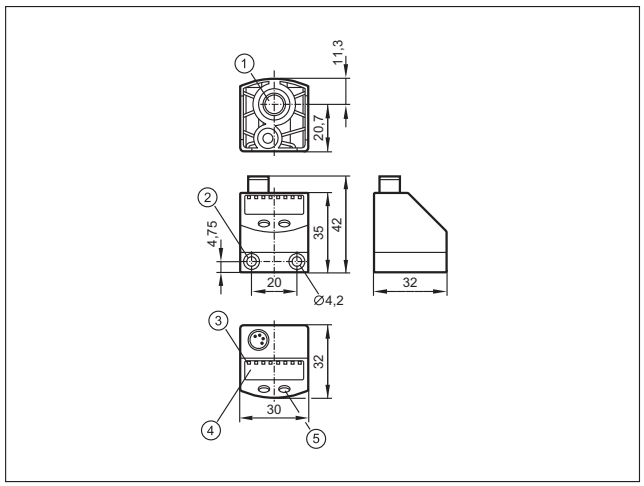
7



1: ventilation connection M5; max. tightening torque 2.5 Nm,
2: main pressure connection G 1/8; tightening torque max. 8 Nm,
3: Programming button, 4: LEDs (display unit / switching status),
5: 4-digit alphanumeric display, 6: for mounting screw M4; max. tightening torque 2.5 Nm, 7: for mounting screw M4; max. tightening torque 2.5 Nm

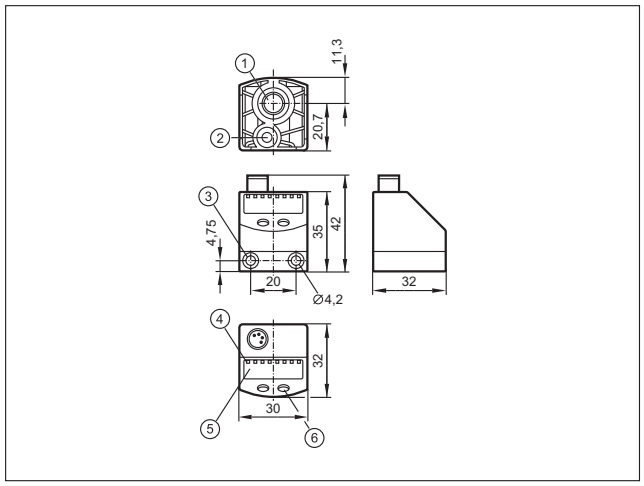
Scale drawings / drawing no. – CAD download: www.ifm.com

8



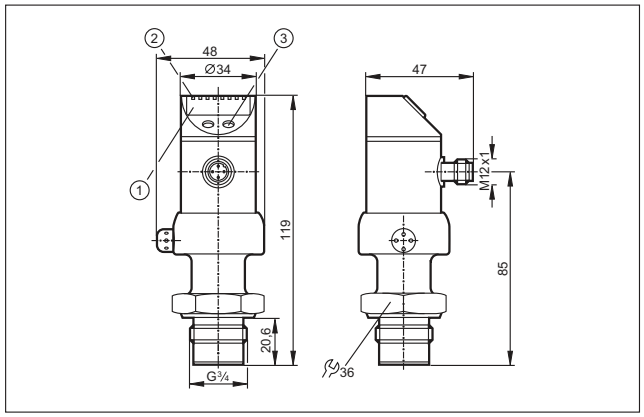
1: main pressure connection G 1/8; tightening torque max. 8 Nm, thread length max: 7.5 mm, 2: for mounting screw M4; max. tightening torque 2.5 Nm, 3: LEDs (display unit / switching status), 4: 4-digit alphanumeric display, 5: Programming button

9



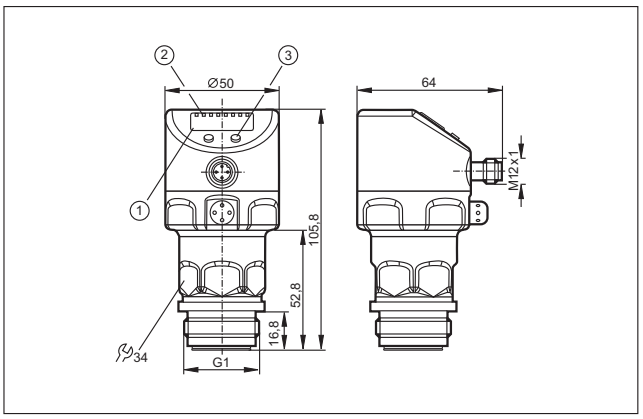
1: Main pressure connection G 1/8; Tightening torque max. 8 Nm, insertion depth max. 7.5 mm, 2: Auxiliary pressure connection M5; Tightening torque max. 2.5 Nm, insertion depth max. 7.5 mm, 3: for mounting screw M4; max. tightening torque 2.5 Nm, 4: LEDs (display unit / switching status), 5: 4-digit alphanumeric display, 6: Programming button

10



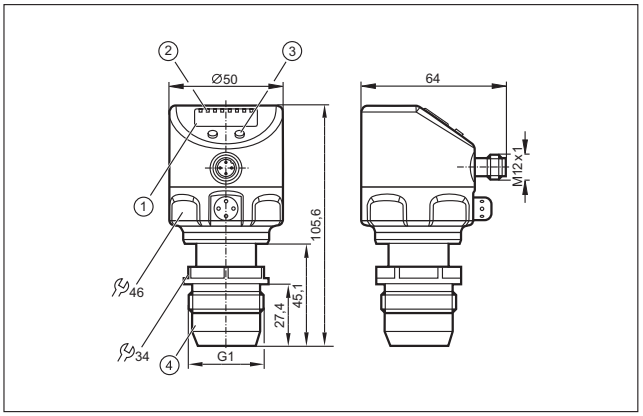
1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming button

11



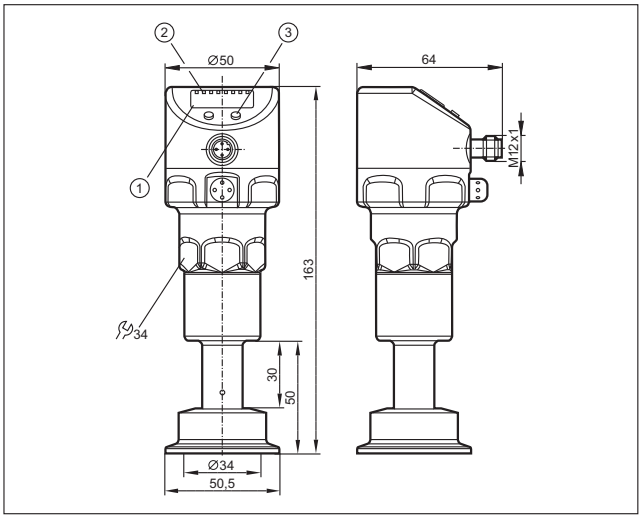
1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button

12



1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

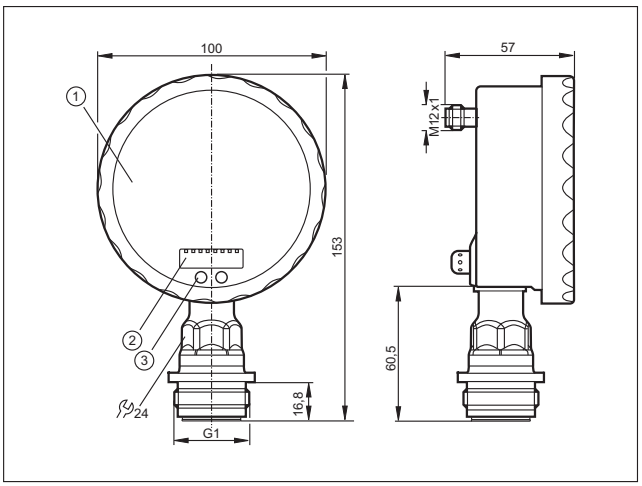
13



1:: 4-digit alphanumeric display, 2: : LEDs, 3: : Programming button

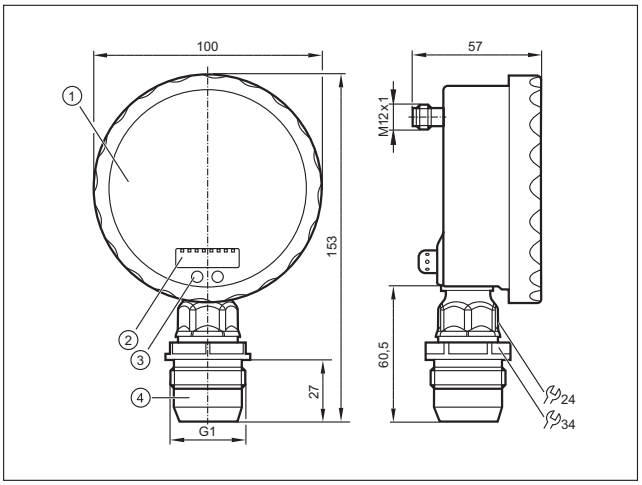
Scale drawings / drawing no. – CAD download: www.ifm.com

14



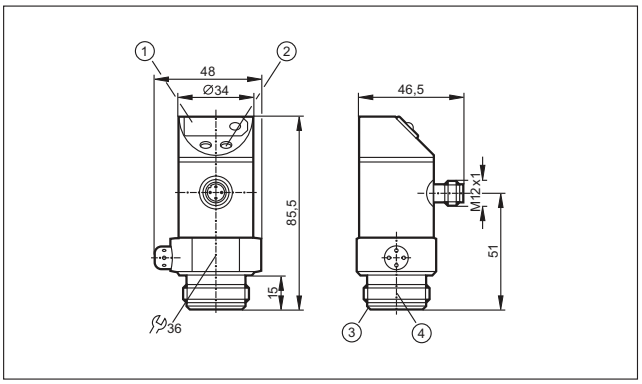
1: Analogue display, 2: 4-digit alphanumeric display, 3: Programming button

15



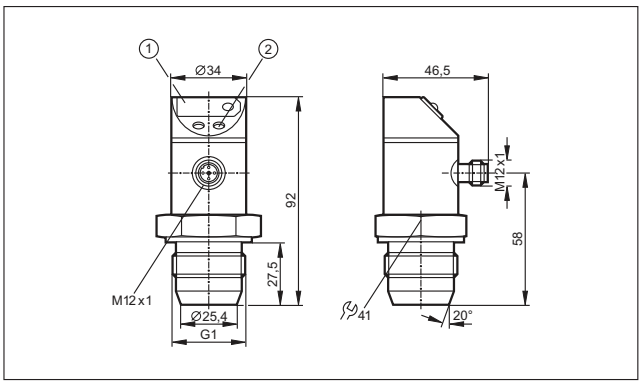
1: Analogue display, 2: 4-digit alphanumeric display, 3: Touch button (programming button), 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

16



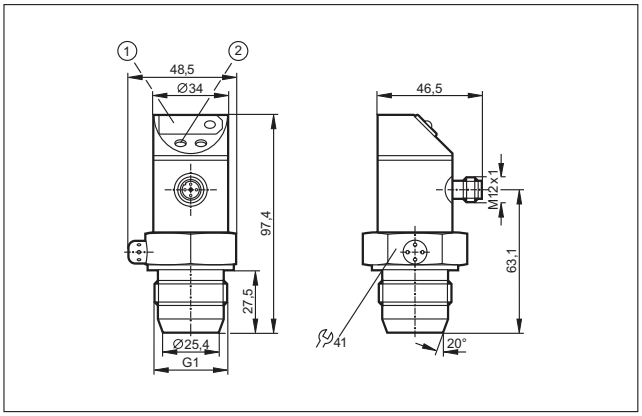
1: 7-segment LED display, 2: Programming button, 3: Aseptoflex sealing edge, 4: Aseptoflex thread

17



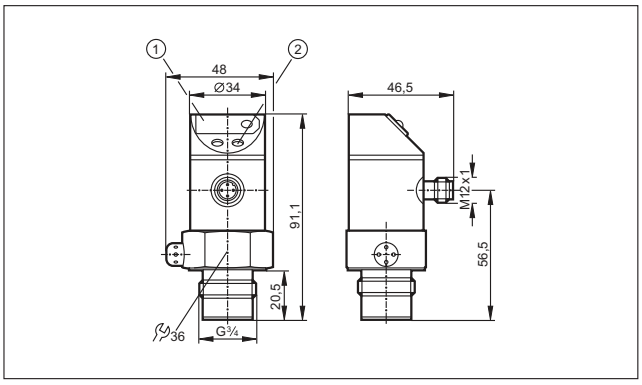
1: 7-segment LED display, 2: Programming button

18



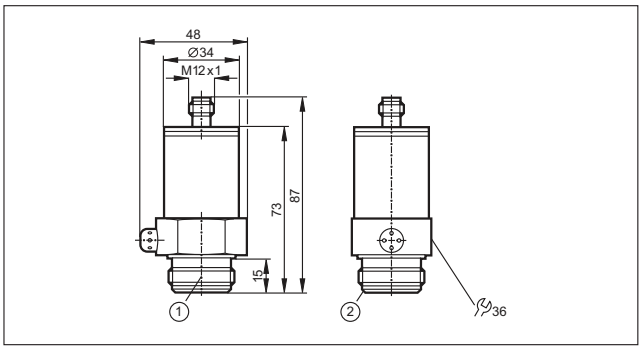
1: 7-segment LED display, 2: Programming button

19



1: 7-segment LED display, 2: Programming button

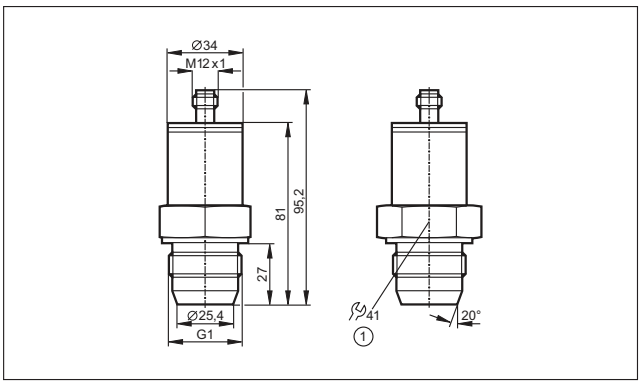
20



1: Aseptoflex thread, 2: Aseptoflex sealing edge

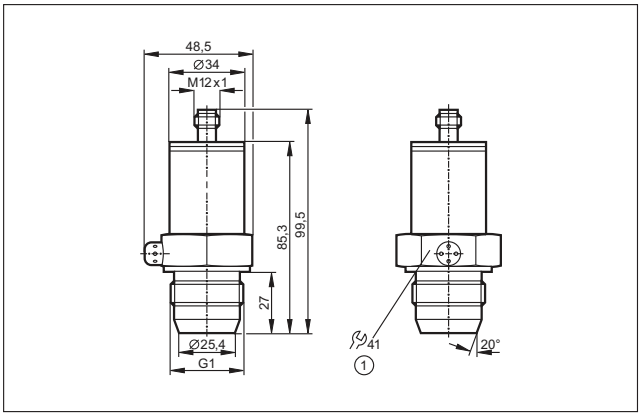
Scale drawings / drawing no. – CAD download: www.ifm.com

21



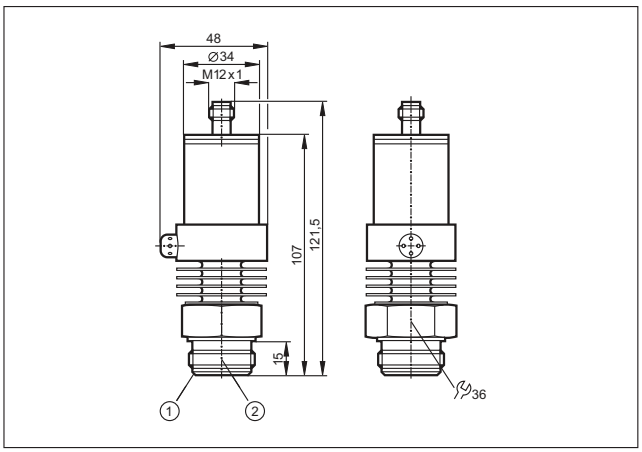
1: tightening torque 20 Nm

22



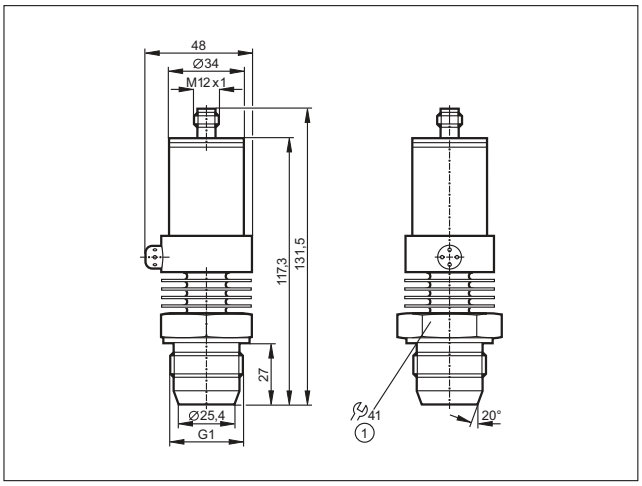
1: tightening torque 20 Nm

23



1: Aseptoflex sealing edge, 2: Aseptoflex thread

24



1: tightening torque 20 Nm

- **For liquids and gases**
- **Special versions for food applications and hazardous areas**
- **Optional fittings for variable process connection**
- **Flow monitoring also for aggressive media**

Flow sensors

In almost all fields of process and plant engineering liquids or gases are used for coolant and lubricant supply of machines and units, ventilation of installations and buildings and the processing of products. In case of no flow of these media considerable damage and downtime may result. Thus it is very important to monitor these media. In modern installations electronic flow monitors are used for this purpose. They work without wear and tear and without mechanical components. This guarantees reliable monitoring even in case of difficult media over a long period.

Operating principle

Electronic flow sensors from ifm electronic operate with different measurement techniques. They meet all requirements from a simple monitoring function to the exact detection of flow quantities.

Harmonised operating menus ensure that operators who use different flow sensors can quickly and precisely carry out settings on the sensors. Some flow sensors feature an integrated temperature monitor which makes an additional measuring point unnecessary. This enables to control processes in the optimum operating status especially with regard to energy savings.

Analogue, binary and pulse outputs offer various possibilities to process the measured data. Due to the flexible programming by means of pushbuttons the flow sensors can be adapted to different conditions. The sensors are mounted via adapters.

Monitoring very small flow rates: Flow monitor with flow adapter.

Optimised consumption of compressed air.

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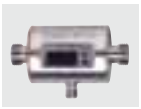
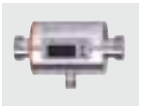
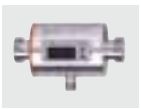
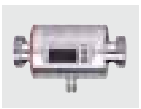
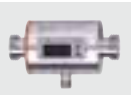
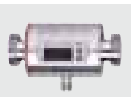
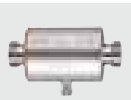
Magnetic-inductive flow meters with integrated temperature measurement (sealing material FKM)

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G½	0.25...25.00	-10...70	16	< 0.150	19...30	1	**SM6000**
Output function 2 x analogue (4...20 mA scalable) · Wiring diagram no. 2 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G½	0.1...25.00	-10...70	16	< 0.150	20...30	1	**SM6004**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G¾	0.5...50.0	-10...70	16	< 0.150	19...30	2	**SM7000**
Output function 2 x analogue (4...20 mA scalable) · Wiring diagram no. 2 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G¾	0.2...50.0	-10...70	16	< 0.150	20...30	2	**SM7004**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1	0.7...100.0	-10...70	16	< 0.150	19...30	3	**SM8000**
Output function OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection · Wiring diagram no. 3 · Connector groups 8, 9, 10, 12, 13, 18, 19, 20, 21, 123, 125, 126, 127, 128, 129, 150, 152								
	G2 flat seal	8...600	-10...70	16	< 0.3	18...32	4	**SM2000**
	G2 flat seal	6.5...300	-10...70	16	< 0.3	18...32	4	**SM9000**
Output function 2 x analogue (4...20 mA scalable) · Wiring diagram no. 2 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1	0.2...100.0	-10...70	16	< 0.150	20...30	3	**SM8004**
Output function OUT1: analogue (4...20 mA) or IO-Link OUT2: Analogue (4...20 mA) · Wiring diagram no. 2								
	G2 flat seal	5...600	-10...70 / 14...158	16	< 0.3	18...32	4	**SM2004**
	G2 flat seal	5...300	-10...70 / 14...158	16	< 0.3	18...32	4	**SM9004**

Magnetic-inductive flow meters with integrated temperature monitoring (sealing material EPDM) KTW / W270 approval

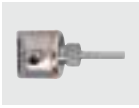
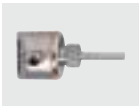
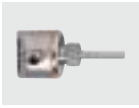
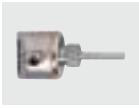
Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Draw-ing no.	Order no.
Output function OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection · Wiring diagram no. 3 · Connector groups 8, 9, 10, 12, 13, 18, 19, 20, 21, 123, 125, 126, 127, 128, 129, 150, 152								
	G2 flat seal	8...600	-10...70	16	< 0.3	18...32	4	**SM2100**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G½	0.25...25.00	-10...70	16	< 0.150	19...30	1	**SM6100**
	G¾	0.5...50.0	-10...70	16	< 0.150	19...30	2	**SM7100**
	G1	0.7...100.0	-10...70	16	< 0.150	19...30	3	**SM8100**
Output function OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection · Wiring diagram no. 3 · Connector groups 8, 9, 10, 12, 13, 18, 19, 20, 21, 123, 125, 126, 127, 128, 129, 150, 152								
	G2 flat seal	6.5...300	-10...70	16	< 0.3	18...32	4	**SM9100**

Magnetic-inductive flow meters (sealing material FKM)

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Draw-ing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 4 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G½	0...25	-10...70	16	< 0.150	19...30	5	**SM6050**
	G¾	0...50	-10...70	16	< 0.150	19...30	6	**SM7050**
	G1	0...100	-10...70	16	< 0.150	19...30	7	**SM8050**

You can find wiring diagrams and scale drawings from page 491

Compact housings for adapters for flow monitoring

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	30	1...10	19...36	8	**SI5000**
M12 connector · Wiring diagram no. 6 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...10	19...36	9	**SI5002**
1/2" UNF-Connector · Wiring diagram no. 7 · Connector group 30								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...10	85...265	10	**SI5006***
M12 connector · Wiring diagram no. 4 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	3...300 / -	stainless steel 316L / 1.4404	-25...80	300	1...10	19...36	9	**SI5004**
M12 connector · Wiring diagram no. 8 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...2 / 1...10	18...36	9	**SI5010**

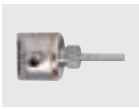
*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

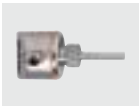
Compact housings can be configured for T-pieces for flow monitoring

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 21 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	0.1...12.0 (NW15) 0.2...24.0 (NW19) 0.4...48.0 (NW24)	stainless steel 316L / 1.4404	0...80	30	5	20...28	11	**SA3010**

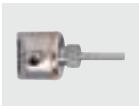
Compact housings for adapters for flow monitoring, Hastelloy sensor tip

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 9 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	Hastelloy C-4 (2.4610)	-25...80	300	1...2 / 1...10	19...36	9	**SI0553**

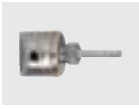
Compact housings for adapters for flow monitoring, titanium sensor tip

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 9 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	titanium (3.7035)	-25...80	300	1...2 / 1...10	19...36	9	**SI5100**

Compact designs for adapter with flow and temperature monitoring

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 6 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...10	19...36	9	**SI5007**

Compact housings for adapters with ATEX approval group II, category 3D / 3G

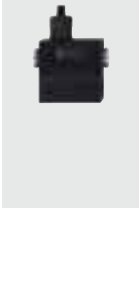
Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 5 · Connector groups 147, 149								
	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	30	1...10	19...36	8	**SI500A**
M12 connector · Wiring diagram no. 6 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300	stainless steel 316L / 1.4404	-15...70	–	1...10	24	9	**SI0521**

You can find wiring diagrams and scale drawings from page 491

Compact housings for adapters for hygienic and wet areas

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	3...300 / 200...3000	stainless steel 316L / 1.4435	-25...95	30	1...10	–	12	**SI6600**
	3...300 / 200...3000	stainless steel 316L / 1.4435	-25...95	30	1...10	54.8	13	**SI6700**
	3...300 / 200...3000	stainless steel 316L / 1.4435	-25...95	30	1...10	–	14	**SI6800**

Mechatronic flow sensors for machine tools

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 10 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ½	0.3...25	0...60	200	< 0.01	24	15	**SBU323**
	G ½	0.3...50	0...60	200	< 0.01	24	15	**SBU324**
	G ½	0.3...75	0...60	200	< 0.01	24	15	**SBU325**
M12 connector · Output function analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ½	0.3...25	0...60	200	< 0.01	24	16	**SBU623**
	G ½	0.3...50	0...60	200	< 0.01	24	16	**SBU624**
	G ½	0.3...75	0...60	200	< 0.01	24	16	**SBU625**

Mechatronic flow sensors for liquids

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 10 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Rp ¾	1...15	0...85	25	< 0.01	24	17	**SBY332**
	Rp ½	2...20	0...85	25	< 0.01	24	18	**SBY323**
	Rp ¾	1...25	0...85	25	< 0.01	24	17	**SBY333**
	Rp ¾	2...50	0...85	25	< 0.01	24	17	**SBY334**
	Rp 1	5...100	0...85	25	< 0.01	24	19	**SBY346**
	Rp 1½	20...200	0...85	25	< 0.01	24	20	**SBY357**
	G ½	1...15	0...85	25	< 0.01	24	21	**SBG332**
	G ½	1...25	0...85	25	< 0.01	24	21	**SBG333**
	G ½	2...50	0...85	25	< 0.01	24	21	**SBG334**
	G ¾	5...100	0...85	25	< 0.01	24	22	**SBG346**
	G 1¼	20...200	0...85	25	< 0.01	24	23	**SBG357**

Mechatronic flow sensors for high temperatures

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
M12 connector · Output function analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Rp ¾	1...25	-10...85	25	< 0.01	24	24	**SBY433**

You can find wiring diagrams and scale drawings from page 491

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Draw-ing no.	Order no.
Cable with connector · Output function analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Rp ¾	0.3...25	20...180	15	< 0.01	24	25	**SBT633**
M12 connector · Output function analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	Rp ¾	2...50	-10...85	25	< 0.01	24	24	**SBY434**
Cable with connector 0.3 m · Output function analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¾	0.3...25	20...180	15	< 0.01	24	26	**SBM613**

Flow sensors for connection to control monitors, industrial applications

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 12 · Connector groups 12, 13, 19, 21, 128, 129, 152								
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	30	30	27	**SF6200**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	30	30	28	**SF6201**
M12 connector · Wiring diagram no. 12 · Connector groups 128, 129, 152								
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	300	29	**SF5200**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	30	30	**SF5201**
Cable 6 m · Wiring diagram no. 13								
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	300	31	**SF5350**
	3...300 / 200...3000	3...60 / 200...800	0...120 / 0...100	1...10	300	300	31	**SF5300**

Flow sensors for connection to control monitors, industrial applications, titanium housing

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Drawing no.	Order no.
Cable 6 m · Wiring diagram no. 13								
	3...300 / 200...3000	3...60 / 200...800	0...120 / 0...100	1...10	300	100	31	**SF5800**
M12 connector · Wiring diagram no. 12 · Connector groups 128, 129, 152								
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	100	29	**SF5700**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	100	32	**SF5701**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	100	33	**SF5702**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	100	34	**SF5703**
	3...300 / 200...3000	3...60 / 200...800	-25...80	1...10	300	100	35	**SF5704**

Flow sensors for connection to control monitors for hygienic and wet areas

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Drawing no.	Order no.
Cable 6 m · Wiring diagram no. 13								
	3...300 / 200...2000	3...60 / 200...800	0...120 / 0...100	1...10	15	30	–	**SF0516**

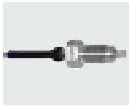
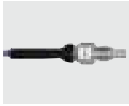
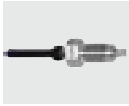
Flow sensors for connection to control monitors for aggressive media, ceramic housing

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 12 · Connector groups 12, 13, 19, 21, 128, 129, 152								
	3...60 / -	3...40 / -	5...70	2...20	7	30	36	**SF2405**
	3...60 / -	3...40 / -	5...70	2...20	7	30	37	**SF3405**

You can find wiring diagrams and scale drawings from page 491

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
Cable 6 m · Wiring diagram no. 13								
	3...60 / -	3...40 / -	5...70	2...20	7	30	38	**SF2410**
	3...60 / -	3...40 / -	5...70	2...20	7	30	39	**SF3410**
Cable 16 m · Wiring diagram no. 13								
	3...60 / 200...1500	3...40 / 200...800	5...70 / -10...80	2...20	7	30	38	**SF0540**

Flow sensors for connection to control monitors with ATEX approval

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
Cable 6 m · Wiring diagram no. 14								
	3...300 / 200...2000	3...60 / 200...800	-20...60	1...10	15	300	40	**SF111A**
	3...300 / 200...2000	3...60 / 200...800	-20...60	1...10	15	300	41	**SF211A**
	3...300 / 200...2000	3...60 / 200...800	-20...60	1...10	15	300	42	**SF311A**
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	43	**SF121A**
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	44	**SF221A**
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	45	**SF321A**
M12 connector · Wiring diagram no. 15 · Connector group 148								
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	46	**SF120A**
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	47	**SF220A**

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
M12 connector · Wiring diagram no. 15 · Connector group 148								
	3...300 / 200...2000	3...60 / 200...800	-20...70	1...10	15	30	48	**SF320A**
	3...300 / 200...3000	3...60 / 200...800	-20...70	1...10	15	30	27	**SF620A**

Flow sensors for connection to control monitors with ATEX approval, ceramic housing

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
Cable 6 m · Wiring diagram no. 14								
	3...60 / -	3...40 / -	5...70	2...20	7	30	38	**SF223A**
	3...60 / -	3...40 / -	5...70	2...20	7	30	39	**SF323A**

Flow sensors for connection to control monitors with ATEX approval 2G

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T_0 gradient [K/min]	Pressure rating [bar]	Draw-ing no.	Order no.
Cable 6 m · Wiring diagram no. 16								
	3...300 / 100...15000	3...100 / 100...7500	-20...70	1...10	30	30	49	**SP321A**

Air flow monitors

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	U_b / tolerance [V] / [%]	Draw-ing no.	Order no.
Cable 2 m · Wiring diagram no. 17							
	100...1000	100...400	-10...50	3...60	80...250 AC	50	**SL0101***

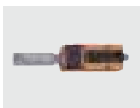
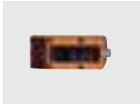
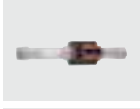
You can find wiring diagrams and scale drawings from page 491

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	U_b / tolerance [V] / [%]	Drawing no.	Order no.
Cable 2 m · Wiring diagram no. 18							
	100...1000	100...400	-10...50	3...60	24 AC	50	**SL0201***
Cable 2 m · Wiring diagram no. 19							
	100...1000	100...400	-10...50	3...60	24 DC ± 25 %	50	**SL5101**

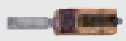
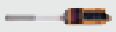
*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

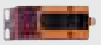
Compressed air meters

Type	Process connection	Setting range [Nm^3/h]	Accuracy within measuring range	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA scaleable) · Wiring diagram no. 3 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ (DN8)	0.12...15.00	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	51	**SD5000**
	R½ (DN15)	0.6...75.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	52	**SD6000**
	G ½ (DN15)	0.6...75	± (15% MW + 1.5% MEW)	16	< 0.1	18...30	53	**SD6050**
	R1 (DN25)	1.8...225.0	A): ± (3% MW + 0,3% MEW) B): ± (6% MW + 0,6% MEW)	16	< 0.1	18...30	54	**SD8000**
	R1½ (DN40)	3.5...410.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	55	**SD9000**
	R2 (DN50)	5...700	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	56	**SD2000**

Compressed air meter for special gases

Type	Process connection	Setting range [Nm³/h]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA scaleable) · Wiring diagram no. 22 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ (DN8)	Ar: 0.08...24.54 / CO_2: 0.047 (0.04)...14.38 / N_2: 0.05 (0.06)...14.94	0...60	16	< 0.1	19...30	51	**SD5100**
	R½ (DN15)	Ar: 0.39 (0.4)...118.2 / CO_2: 0.24 (0.2)...71.7 / N_2: 0.24 (0.2)...73.0	0...60	16	< 0.1	19...30	57	**SD6100**

Inline sensor for small dosing quantities of water and aqueous solutions

Type	Process connection	Measuring range [ml/min]	Display range [ml/min]	Pressure rating [bar]	Medium temp. [°C]	Drawing no.	Order no.
M12 connector · Wiring diagram no. 22 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150							
	G	1...200	0...240	10	0...60	58	**SQ0500**

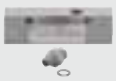
Ultrasonic flow meters for liquids (water, glycol solutions, oils)

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function 2 x normally open / closed programmable · Wiring diagram no. 20 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G¾	0.1...50.0	-10...80	16	< 0.250	19...30	59	**SU7200**
	G1	0.2...100.0	-10...80	16	< 0.250	19...30	60	**SU8200**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G¾	0.1...50.0	-10...80	16	< 0.250	19...30	59	**SU7000**
	G1	0.2...100.0	-10...80	16	< 0.250	19...30	60	**SU8000**
	G1¼	0.4...200.0	-10...80	16	< 0.250	19...30	61	**SU9000**

You can find wiring diagrams and scale drawings from page 491

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function 2 x analogue (4...20 mA scalable) · Wiring diagram no. 2 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1¼	0.0...200.0	-10...80	16	< 0.250	19...30	61	**SU9004**

Accessories for flow sensors and control monitors

Type	Description	Order no.
	T-piece · R½ - M26 x 1.5 - R½ · for sensors and adapters with process connection M26 x 1.5 · Flow rate: 0...10 l/min · Housing materials: stainless steel 316L / 1.4404	**E40136**
	Progressive ring T-piece DIN 2353 · QL 18-18-18 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 18 x 1.5 to DIN 2391/ISO 3304 · Housing materials: stainless steel 316Ti / 1.4571	**E40078**
	Progressive ring T-piece DIN 2353 · QL 22-18-22 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 22 x 1.5 to DIN 2391/ISO 3304 · Housing materials: stainless steel 316Ti / 1.4571	**E40079**
	Progressive ring T-piece DIN 2353 · QL 28-18-28 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 28 x 1.5 to DIN 2391/ISO 3304 · Housing materials: brass	**E40083**
	Adapter block · D10 / G ¼ · for flow sensors type SID, SF5 · Optimised for flow rate · 0.2...2 l/min (SI1xxx) 0.2...3 l/min (SI5xxx) · Housing materials: stainless steel 316L / 1.4404	**E40161**
	Adapter block · D15 / G ½ · for flow sensors type SID, SF5 · Optimised for flow rate · 0.5...5 l/min (SI1xxx) 0.5...7 l/min (SI5xxx) · Housing materials: stainless steel 316L / 1.4404	**E40162**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: titanium	**E40114**
	Adapter · M18 x 1.5 - G ¼ · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: titanium	**E40115**
	Adapter · M18 x 1.5 - L18 · for mounting in T-pieces · Insertion depth of the probe of SID, SFD, TN: · 28.5 mm · Housing materials: nut: stainless steel 316Ti / 1.4571 / adapter: stainless steel 316L / 1.4404 / O-ring: FKM 16 x 1.5 gr 70° Shore A	**E40104**
	Adapter · M18 x 1.5 - M12 x 1 · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: stainless steel 316L / 1.4404	**E40101**
	Adapter · M18 x 1.5 - M12 x 1 · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: brass	**E40100**

Type	Description	Order no.
	Adapter · M18 x 1.5 - ¼" NPT · Insertion depth of the probe of SID, SFD, TN: · 13.9 mm · Housing materials: stainless steel 316L / 1.4404	**E40106**
	Adapter · M18 x 1.5 - G ¼ · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: stainless steel 316L / 1.4404	**E40099**
	Adapter · M18 x 1.5 - G ¼ · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: brass	**E40098**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: stainless steel 316L / 1.4404	**E40096**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: brass	**E40097**
	Mounting adapter · M18 x 1.5 - Ø 23 mm · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: PE-100	**E40138**
	Welding adapter · M18 x 1.5 - Ø 24 mm · Insertion depth of the probe of SID, SFD, TN: · 15 mm · Housing materials: stainless steel 316L / 1.4404	**E40124**
	Welding adapter · Ø 20 mm · for compressed air meter type SD · Housing materials: stainless steel 316L / 1.4404	**E40195**
	Flow adapter (for low flow rates) · M12 x 1 - G 1/8 · for flow sensors and compact flow monitors with adapter · Housing materials: stainless steel 316L / 1.4404	**E40129**
	Combicon connector · with cage clamps 4 poles · Housing materials: current carrying parts: copper alloy tin-plated	**E40171**
	Protective cover · for flow sensors type SI5xxx, SI6xxx, SR59xx · Housing materials: PP uncoloured	**E40203**

Flange adapters for flow sensors

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33201**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33202**

You can find wiring diagrams and scale drawings from page 491

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33701
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33702
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33211
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33212
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33213
	pipe fitting · pipe fitting · pipe fitting · DN32 (1.25") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33711
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33712
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33713
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33221
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33222
	Clamp adapter · Varivent Adapter · Varivent type F · DN25 (1"), D = 50 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33721
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33722
	pipe fitting · SMS pipe fitting · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33731
	pipe fitting · SMS pipe fitting · pipe fitting · DN50 (2") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33732

Type	Description	Order no.
	Flange adapter · DRD adapter · flange · DRD · D = 65 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33242
	Welding adapter · Ø 50 mm · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30122

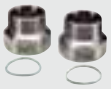
Accessories for airflow monitors

Type	Description	Order no.
	Mounting clamp · Ø 23 mm · for air flow monitor SLG · Housing materials: PBT	E40048

Accessories for flow meters

Type	Description	Order no.
	Adapter · G ½ - R ½ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316Ti / 1.4571	E40199
	Adapter · G ½ - G ¾ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316L / 1.4404	E40189
	Adapter · G ¾ - R ½ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40178
	Adapter · G 1 - R ½ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40179
	Adapter · G 1 - R ¾ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40180
	Adapter · G ¾ I - R½ · for flow monitor type SM7 / SU7 · Housing materials: Brass	E40151
	Adapter · G 1 - R¾ · for flow monitor type SM8 / SU8 · Housing materials: Brass	E40153
	Adapter · G 1¼ - R 1 · for flow monitor type SU9 · Housing materials: stainless steel 316L / 1.4404	E40205

You can find wiring diagrams and scale drawings from page 491

Type	Description	Order no.
	Adapter · G ½ - G ½ · for flow monitor type SM6 · Housing materials: stainless steel 316L / 1.4404	E40213
	Adapter · G ¾ - G ½ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40214
	Adapter · G 1 - G ¾ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40215
	Adapter · G ¾ - G ¾ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40216
	Adapter · G 1 - G 1 · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40217
	Adapter · Victaulic · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40227
	Adapter · 2" NPT · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40228
	Adapter · 1½" NPT · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40229
	Adapter · G 1½ · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40230
	Adapter · R 2" A · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40231

Grounding clamps for magnetic-inductive flow meters

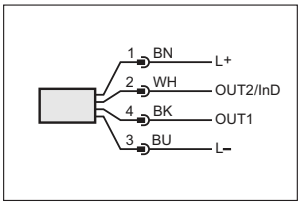
Type	Description	Order no.
	Grounding clamp G½ · for flow monitor type SM6 · Housing materials: stainless steel	E40196
	Grounding clamp G ¾ · for flow monitor type SM7 · Housing materials: stainless steel	E40197
	Grounding clamp G 1 · for flow monitor type SM8 · Housing materials: stainless steel	E40198

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white
GY	grey

1



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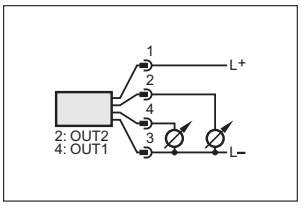

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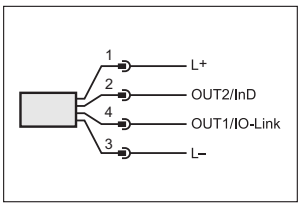

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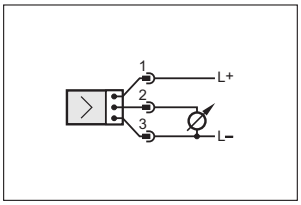

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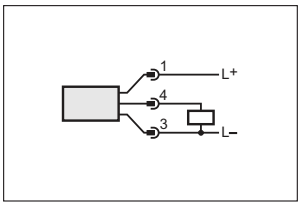

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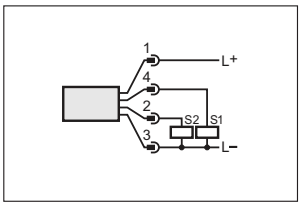

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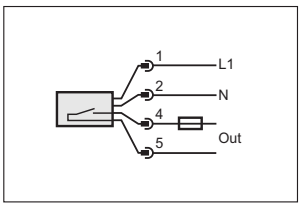

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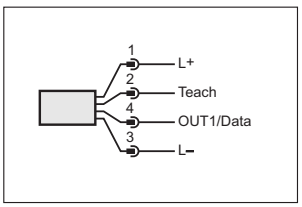
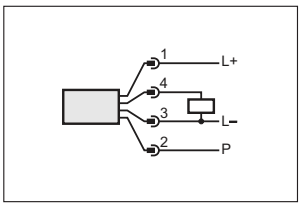


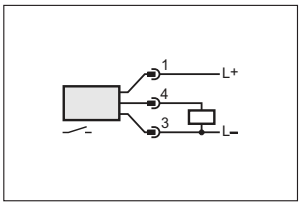
OUT1 / Data = switching signal for flow limit value and data channel for bidirectional communication, Teach = input for teach signal

9



P = programming wire (for remote adjustment)

10



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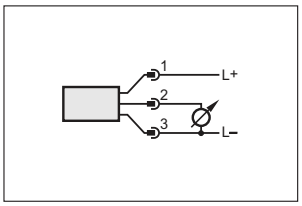

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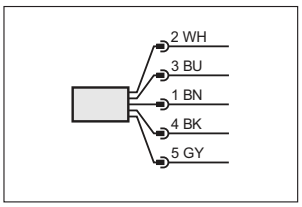

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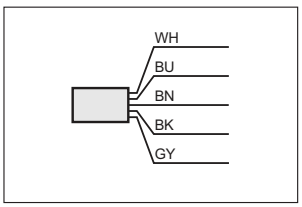

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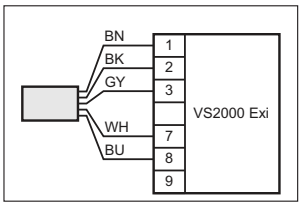

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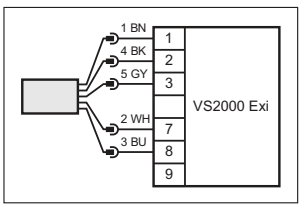

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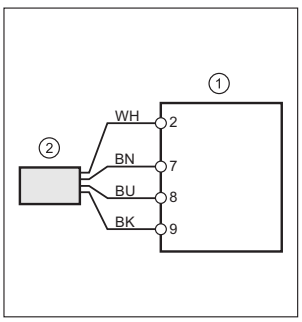

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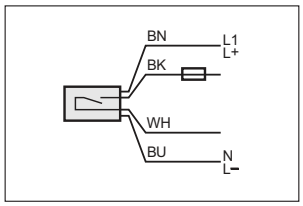

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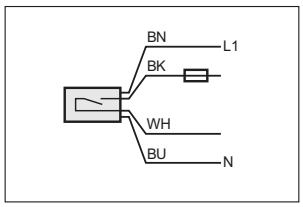

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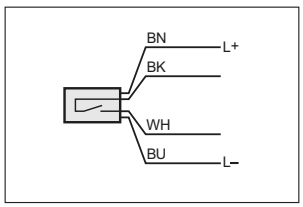

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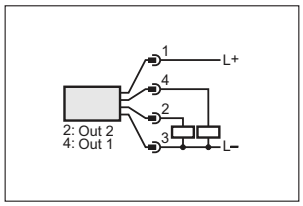

Wiring diagrams

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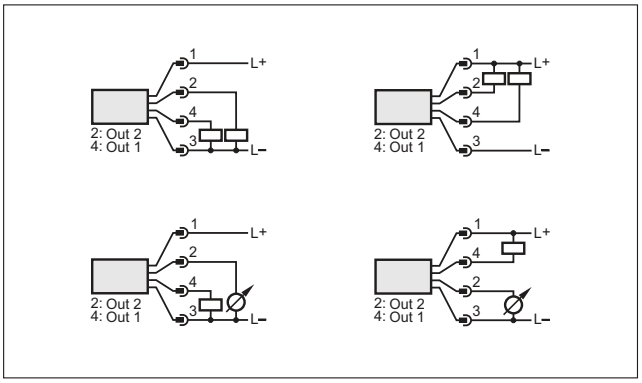

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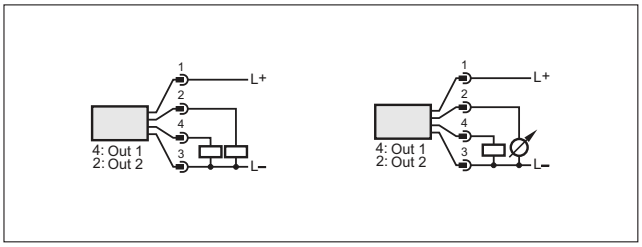

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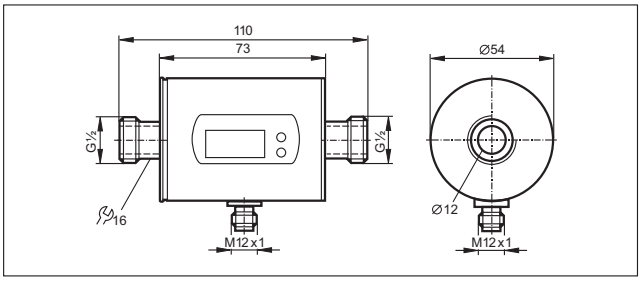

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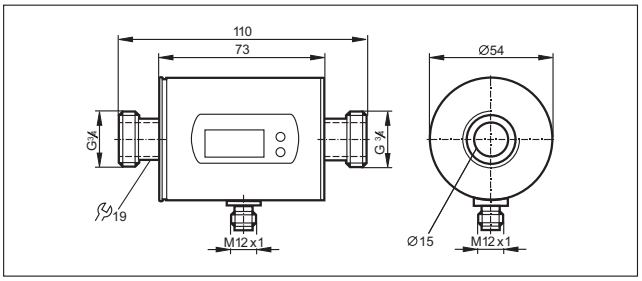

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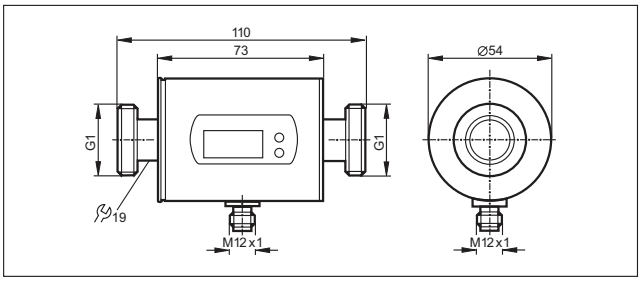

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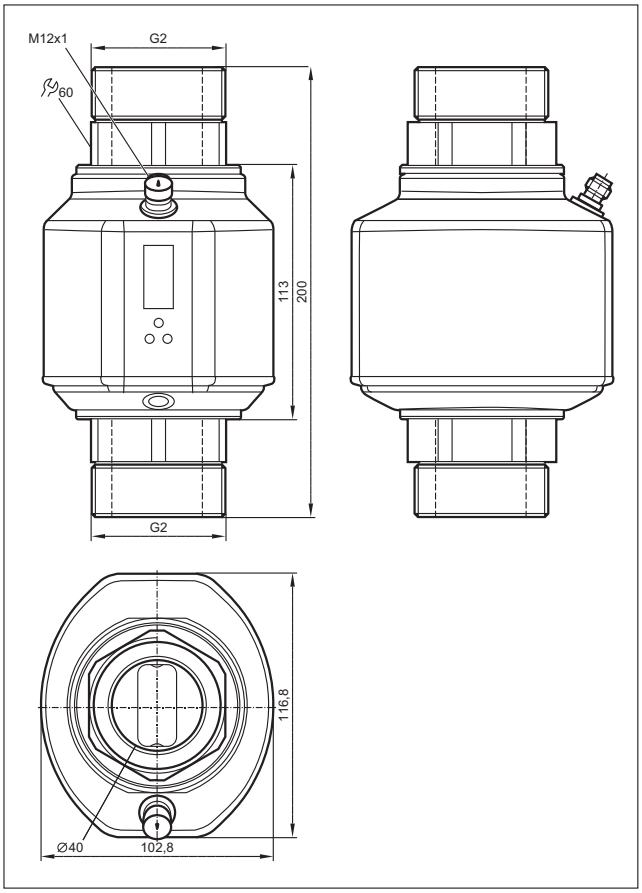

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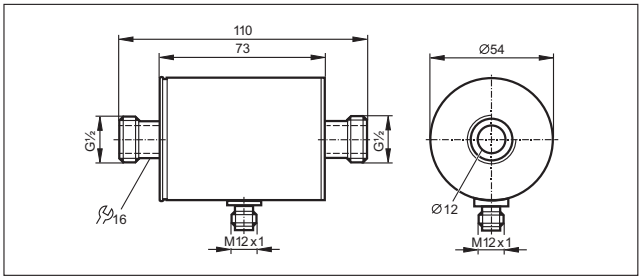

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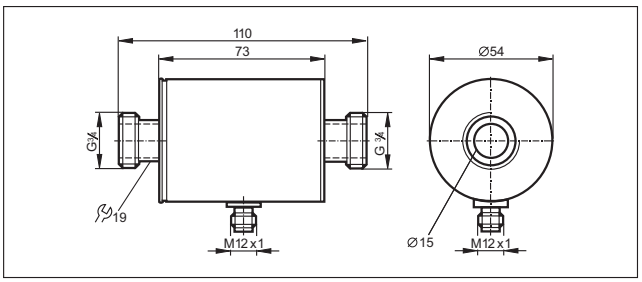

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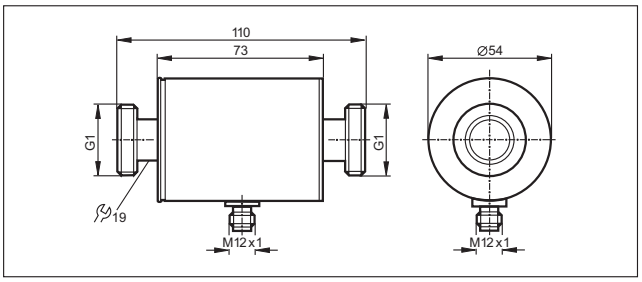

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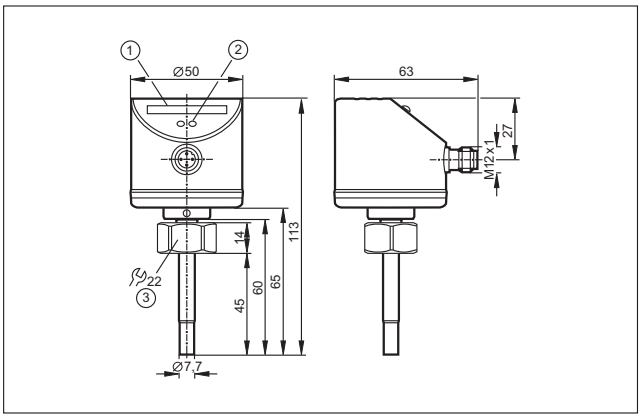

1: LED display, 2: setting pushbutton, 3: tightening torque 25 Nm

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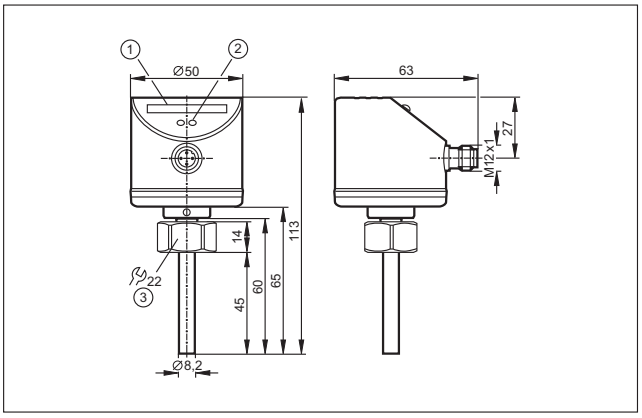

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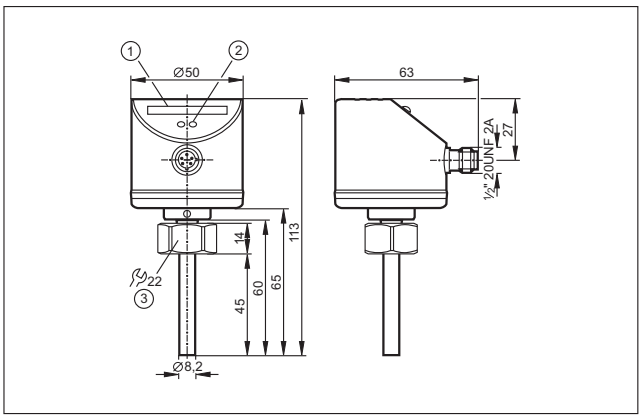

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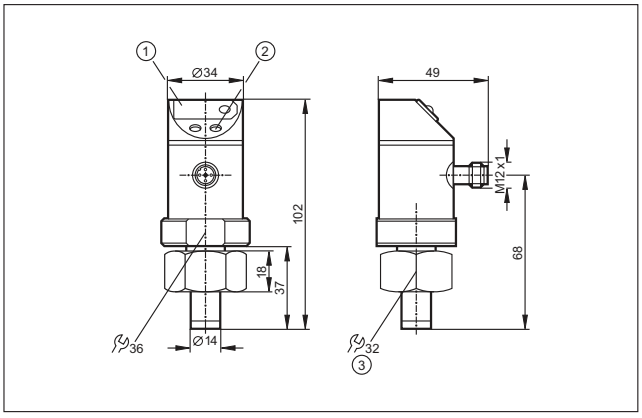

1: 7-segment LED display, 2: Programming buttons, 3: internal thread M26 x 1.5

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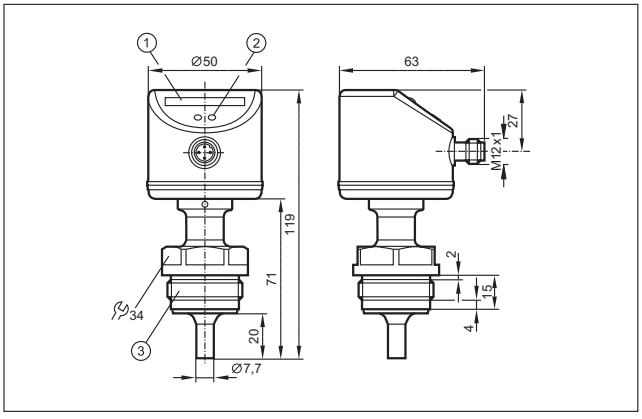

1: LED display, 2: setting pushbutton, 3: G1/Aseptoflex Vario thread

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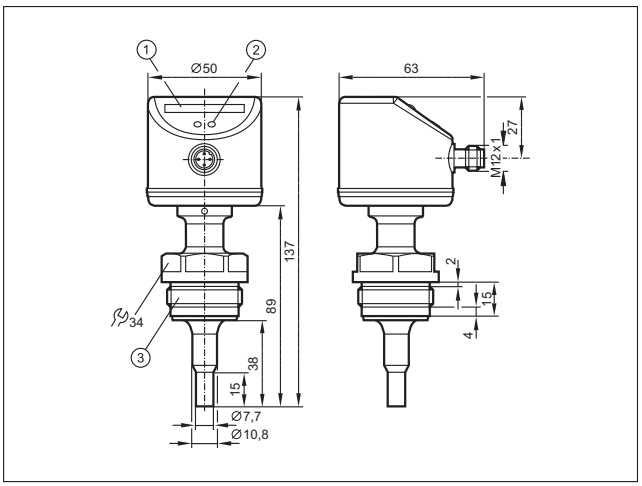

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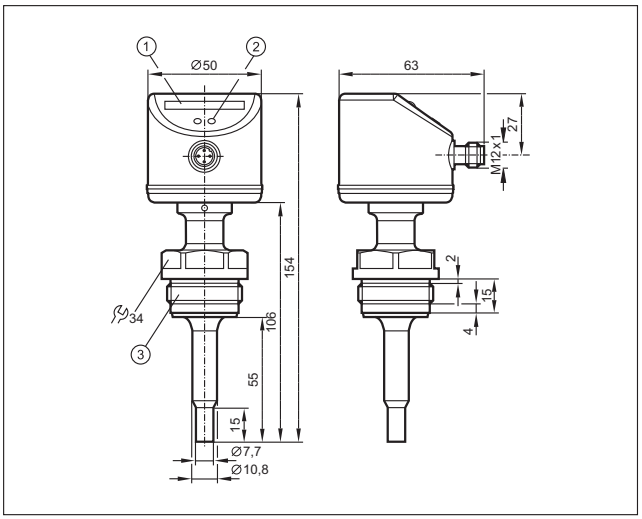

1: LED display, 2: setting pushbutton, 3: G1/Aseptoflex Vario thread

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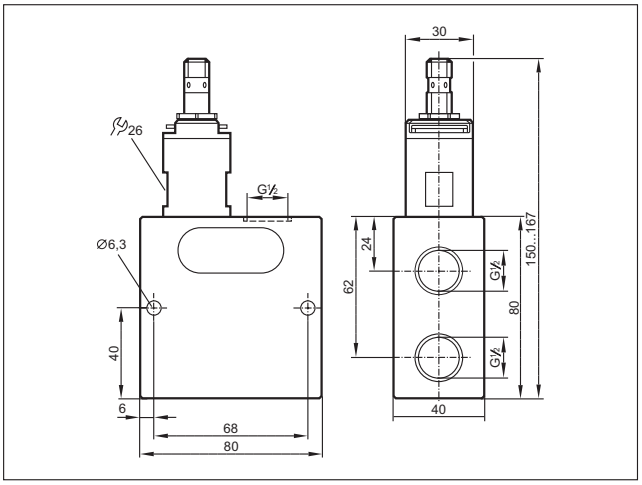

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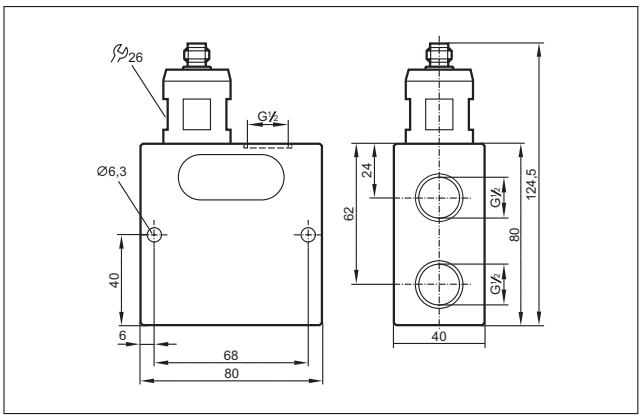

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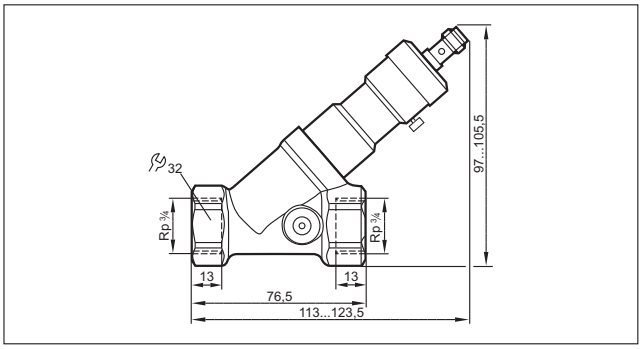

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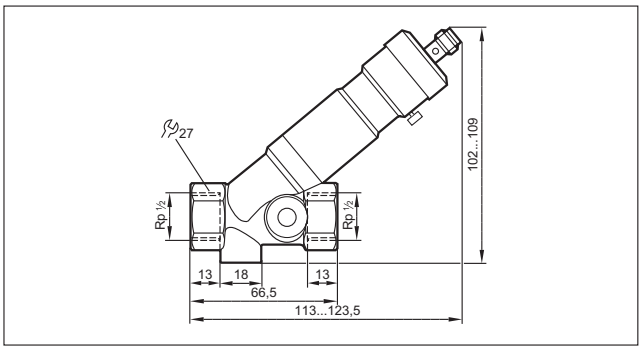

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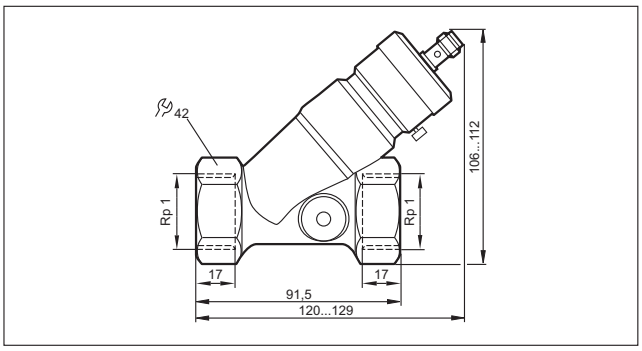

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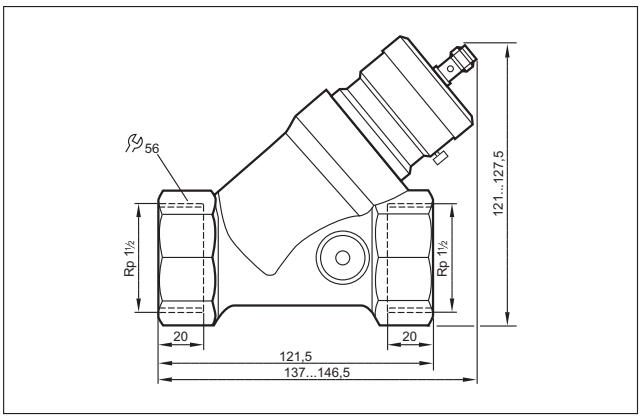

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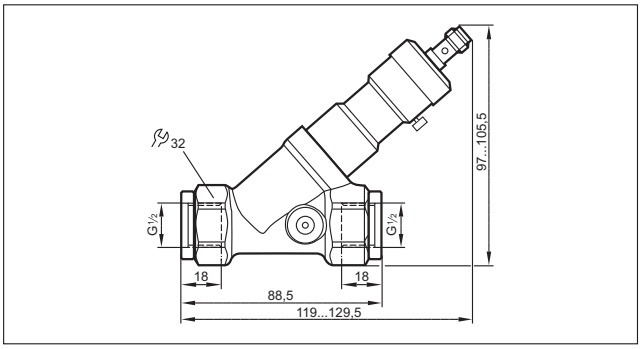

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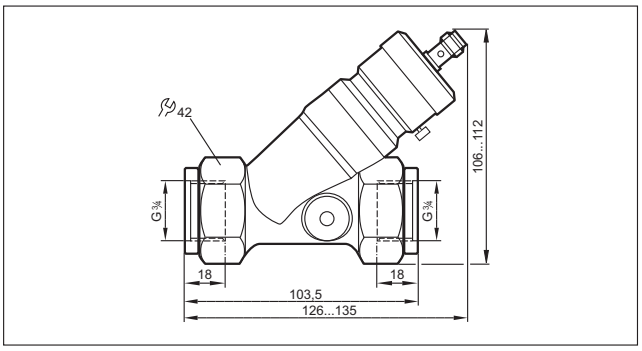

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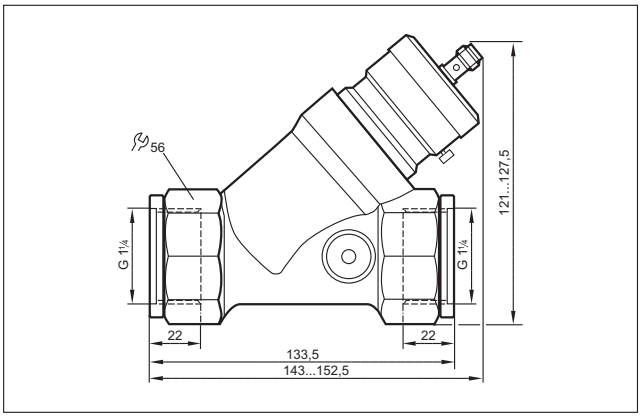

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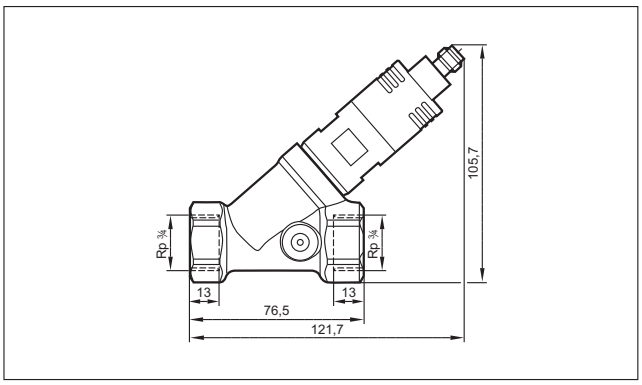

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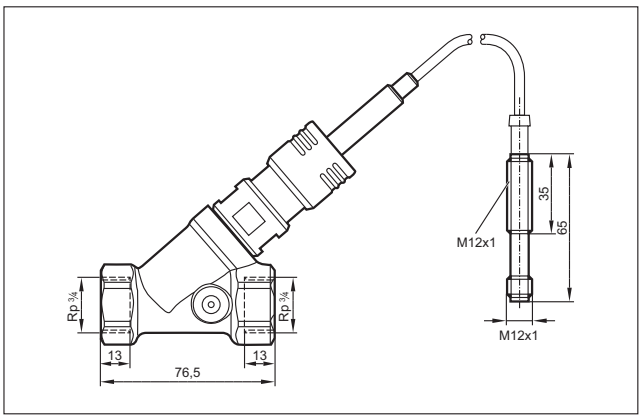

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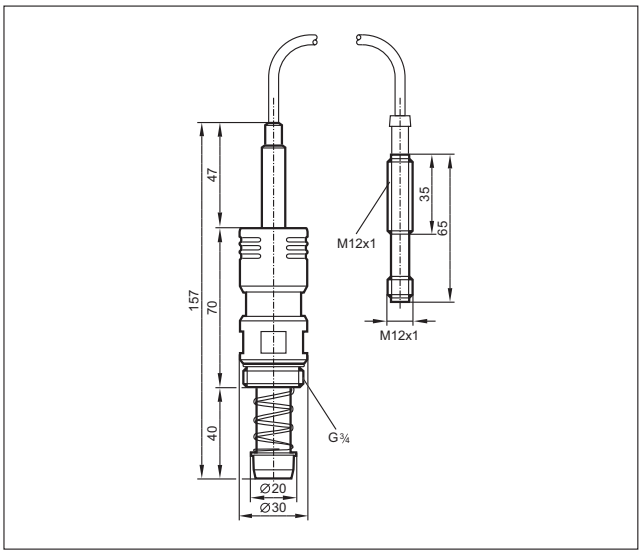

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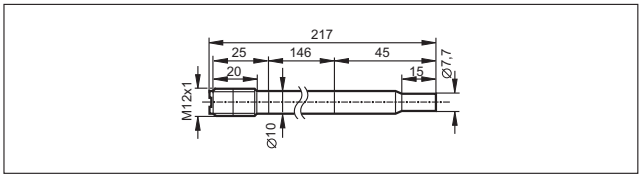

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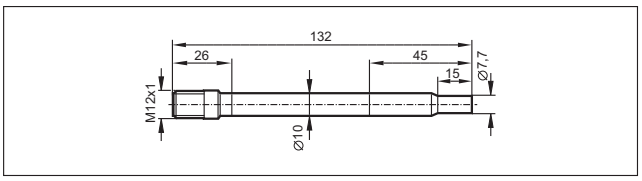

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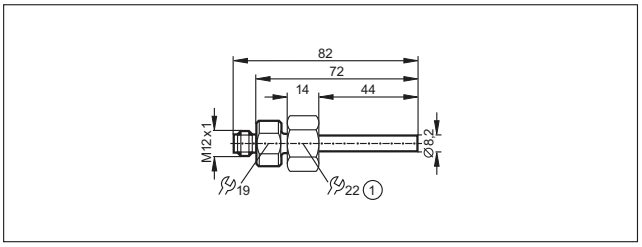

1: internal thread M18 x 1.5

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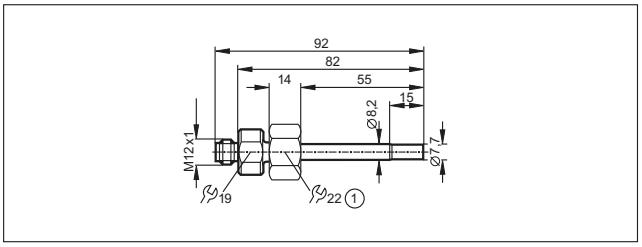

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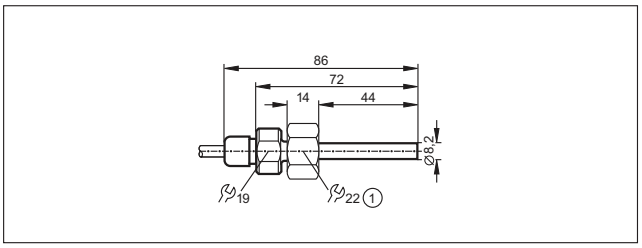

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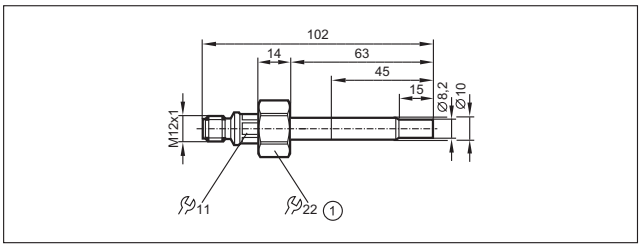

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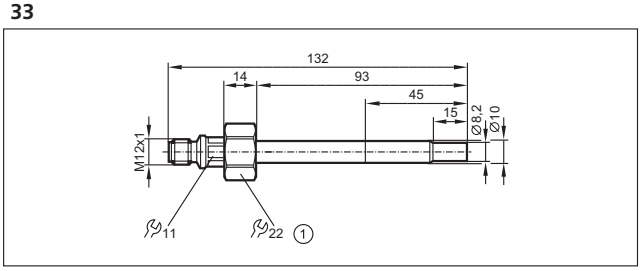

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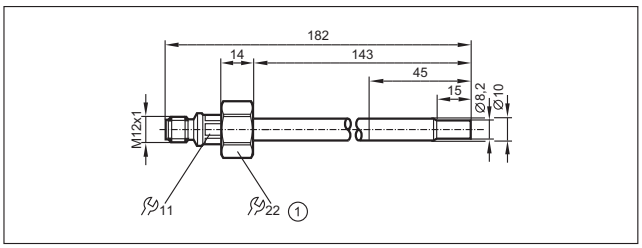

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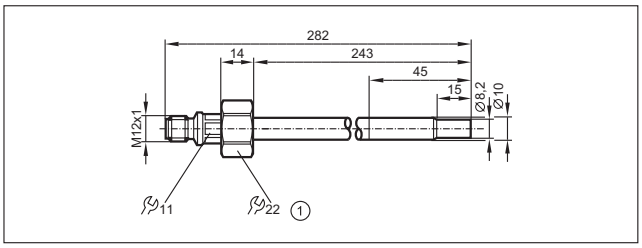

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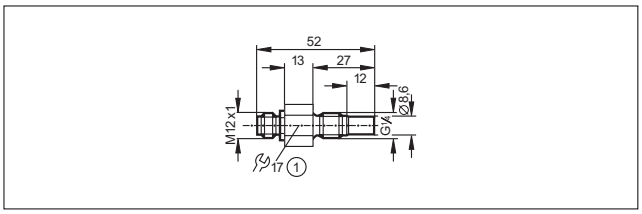

1: tightening torque max. 8 Nm

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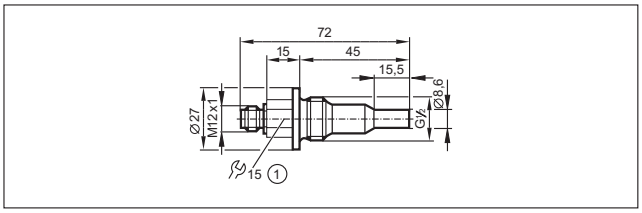

1: tightening torque max. 30 Nm

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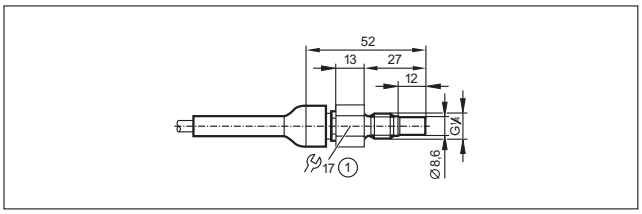

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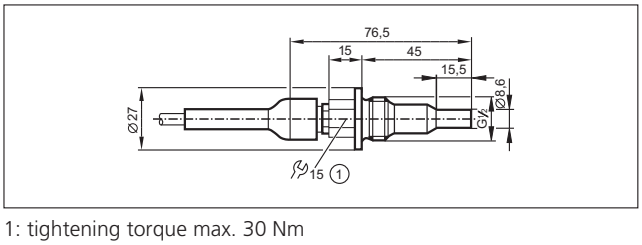

1: tightening torque max. 30 Nm

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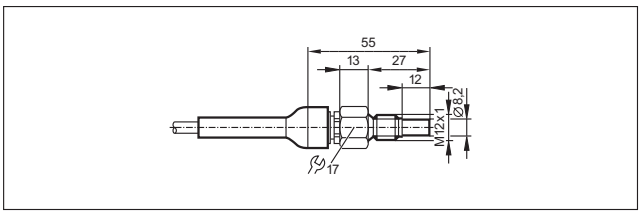

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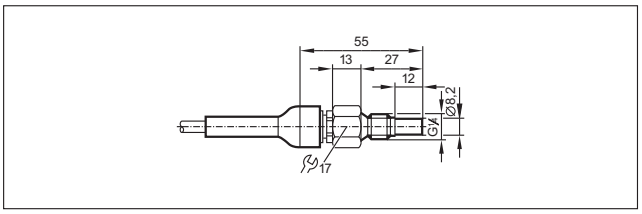

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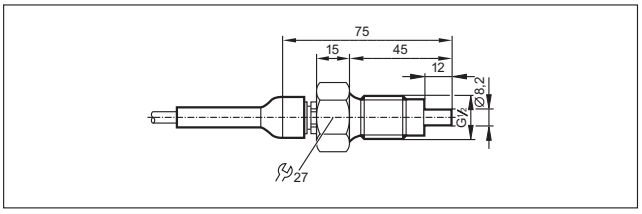

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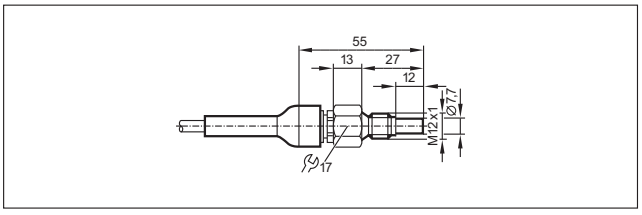

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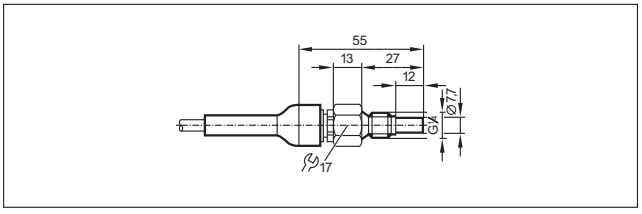

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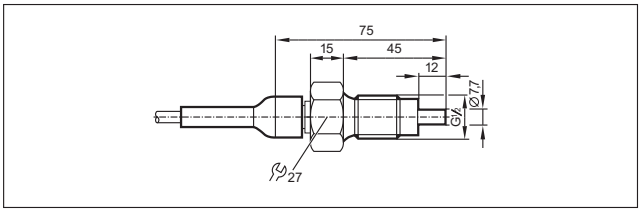

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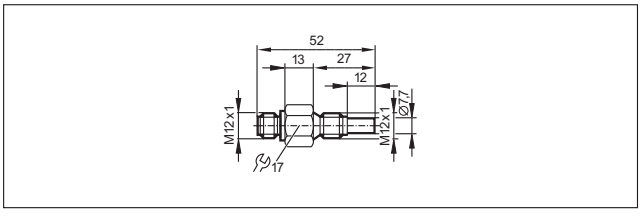

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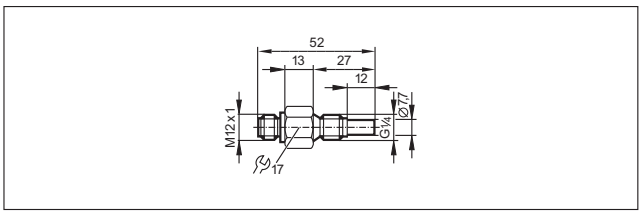

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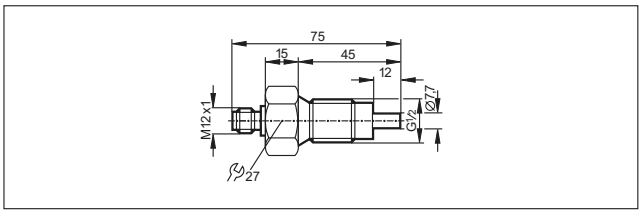

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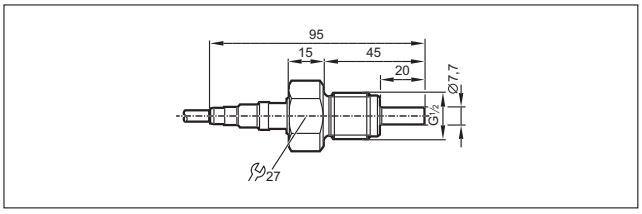

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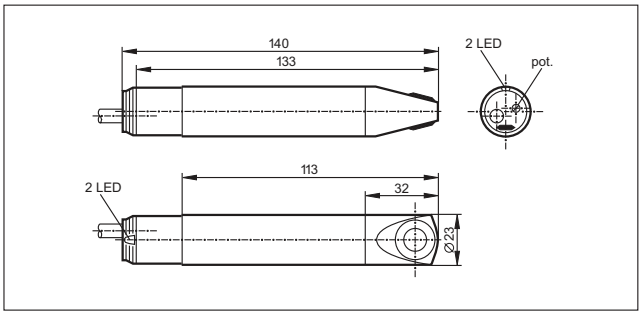
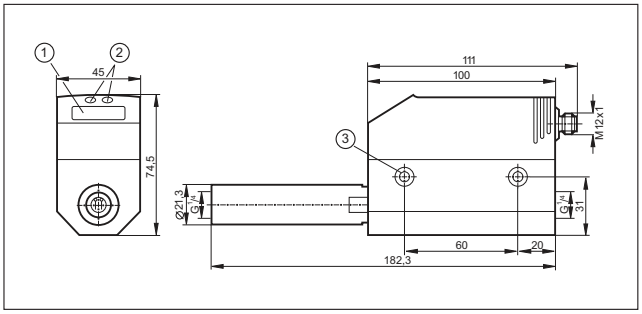


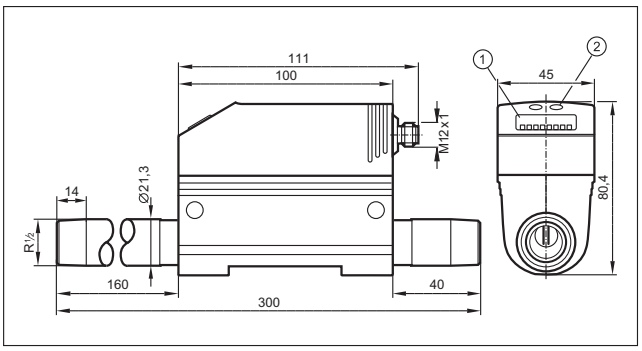
51



1: 4-digit alphanumeric display, 2: Programming buttons, 3: hole for M5 fixing screw

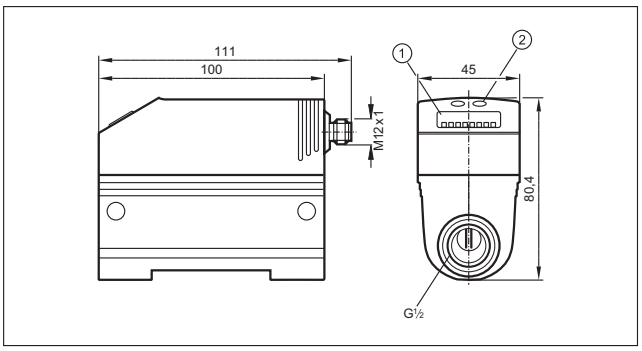
Scale drawings / drawing no. – CAD download: www.ifm.com

52



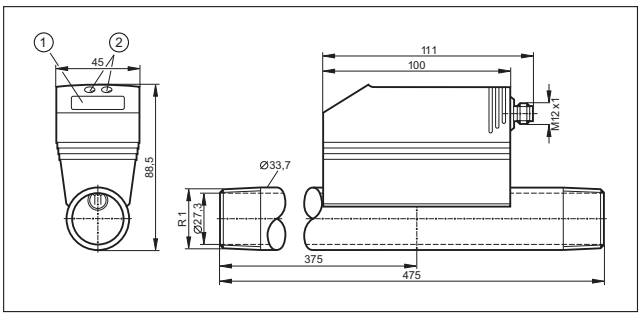
1: 4-digit alphanumeric display, 2: Programming buttons

53



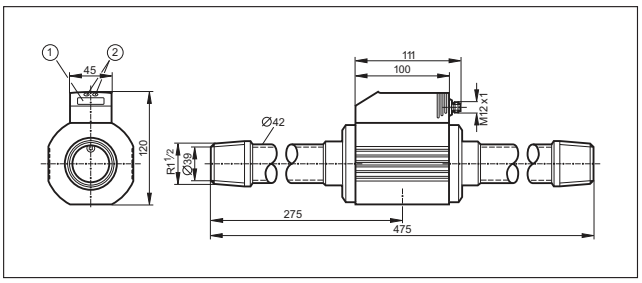
1: 4-digit alphanumeric display, 2: Programming buttons

54



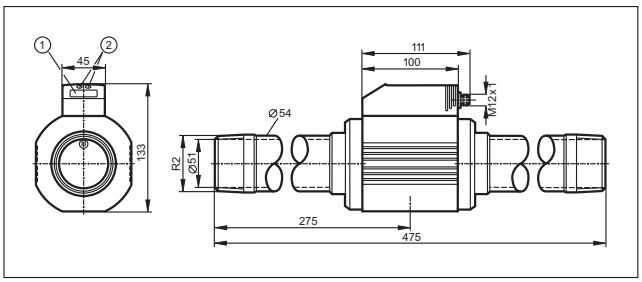
1: 4-digit alphanumeric display, 2: Programming buttons

55



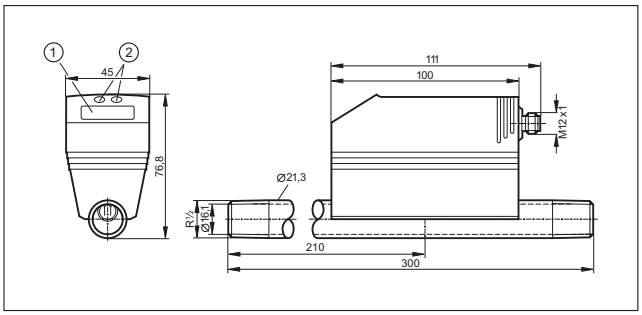
1: 4-digit alphanumeric display, 2: Programming buttons

56



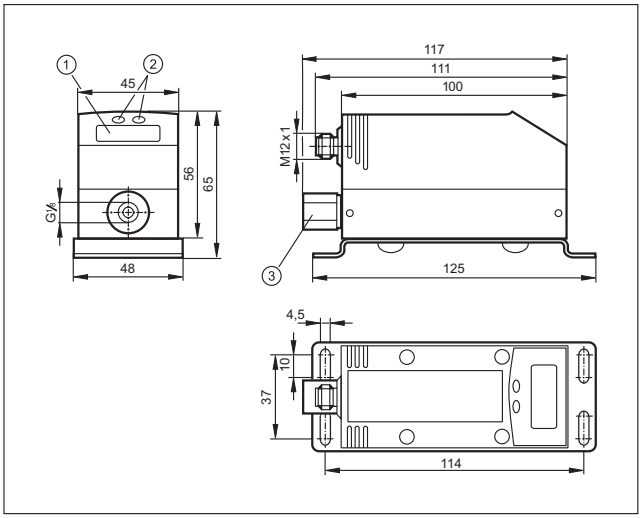
1: 4-digit alphanumeric display, 2: Programming buttons

57



1: 4-digit alphanumeric display, 2: Programming buttons

58



1: 4-digit alphanumeric display, 2: Programming buttons, 3: flow conditioner

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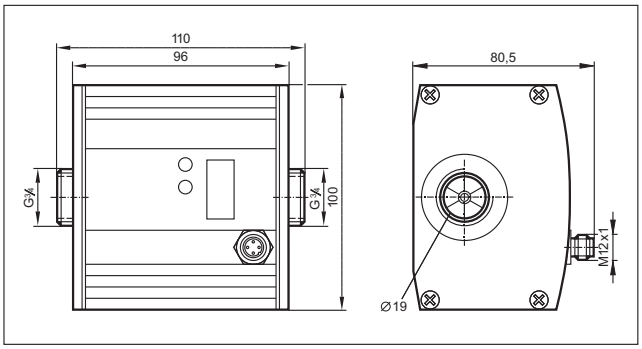

installation length with pipe adapter E40151 / E40154: 185 mm

Scale drawings / drawing no. – CAD download: www.ifm.com

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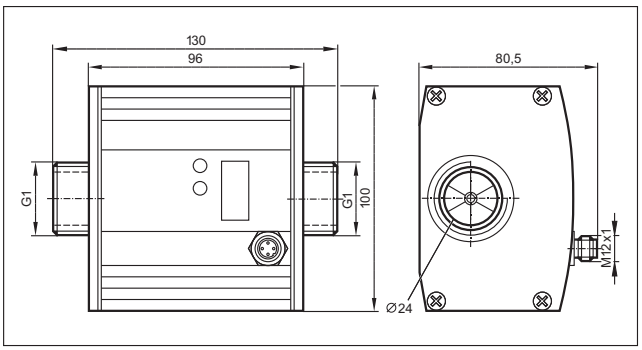
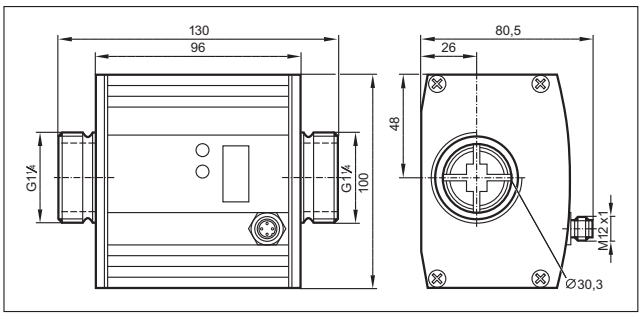


installation length with pipe adapter E40152 / E40155: 205 mm,
installation length with pipe adapter E40153 / E40156: 215 mm

61



- **Guided wave radar, capacitive and hydrostatic level sensors**
- **Designed for common industrial and process fluids**
- **No moving parts means high reliability and long service life**
- **Outputs for continuous or point level measurement**
- **Integrated LED display for local indication**

Level sensors

ifm offers a range of level sensing technologies to suit a wide variety of level monitoring applications. From monitoring simple automatic filling system and overflow prevention sensors to continuous process control ifm level sensors can give an effective solution to your application requirements.

Advantages of electronic sensors

Level monitoring systems that rely on mechanical movement are prone to erratic behaviour and failure. Simple wear and tear or the build-up of deposits can cause mechanical devices to stick or break apart. Electronic sensors from ifm have no moving parts and evaluate level using either guided wave radar, capacitance or hydrostatic pressure. This makes ifm's sensors especially robust and reliable.

Other advantages of electronic sensors are the local indication of the level and the easy setting of output function, such as the switch point.

Measurement principles

Continuous level sensors from ifm electronic use one of four different physical measuring principles: For capacitive measurement the probe and the tank form an electrical capacitor. The capacitance changes with the level and is converted into a level measurement by a microprocessor. For hydrostatic level measurement a measuring cell detects the hydrostatic pressure of the medium. Here the pressure change is a measure for the level. The efector gwr level sensor operates on the principle of guided wave radar. Electromagnetic pulses are transmitted by the sensor head and guided along the probe. When the microwave pulse hits the medium to be detected, it is reflected and the elapsed time is evaluated by the sensor.

Point levels can be set on many of the units using any of the three technologies above. The LM family adds a fourth; impedance spectroscopy is used to generate reliable switch points while ignoring foam and product residue sticking to the probe.

Point level switches make direct contact with the medium to be monitored.

For special applications: Level sensor mounted in the top of a tank.

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Electronic level sensors for oils and coolants, approval to the German Federal Water Act (WHG), section 19

Type	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable (OUT1) 1 x normally closed (OUT-OP, overflow output) · DC PNP · Wiring diagram no. 1 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	264	195	53 / 15	12...30	0...35	0...65	200	1	**LK1222**
	472	390	53 / 30	12...30	0...35	0...65	200	1	**LK1223**
	728	585	102 / 40	12...30	0...35	0...65	200	1	**LK1224**

Electronic level sensors for oils and coolants

Type	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector (according to EN 61076-2-101) · Output function 1 x analogue 4...20 mA / 0...10 V (OUT2); 1 x normally open / closed programmable (OUT-OP) · DC PNP · Wiring diagram no. 2 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	264	195	53 / 15	18...30	0...35 (LK3122 + E43100: 0...65)	0...70	200	2	**LK3122**
	472	390	53 / 30	18...30	0...35 (LK3123 + E43101: 0...60)	0...70	200	2	**LK3123**
	728	585	102 / 40	18...30	0...35 (LK3124 + E43102: 0...55)	0...70	200	2	**LK3124**
M12 connector (according to EN 61076-2-101) · Output function 2 x normally open / closed programmable · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	264	195	53 / 15	18...30	0...35 (LK1022 + E43100: 0...65)	0...70	200	2	**LK1022**
	472	390	53 / 30	18...30	0...35 (LK1023 + E43101: 0...60)	0...70	200	2	**LK1023**
	728	585	102 / 40	18...30	0...35 (LK1024 + E43102: 0...55)	0...70	200	2	**LK1024**
M12 connector (according to EN 61076-2-101) · Output function 3 x normally open / closed programmable (OUT1...OUT3); 1 x normally open / closed programmable (OUT-OP) · DC PNP · Wiring diagram no. 4 · Connector groups 16, 17									
	264	195	53 / 15	18...30	0...35 (LK8122 + E43100: 0...65)	0...70	200	3	**LK8122**
	472	390	53 / 30	18...30	0...35 (LK8123 + E43101: 0...60)	0...70	200	3	**LK8123**

Type	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector (according to EN 61076-2-101) · Output function 3 x normally open / closed programmable (OUT1...OUT3); 1 x normally open / closed programmable (OUT-OP) · DC PNP · Wiring diagram no. 4 · Connector groups 16, 17									
	728	585	102 / 40	18...30	0...35 (LK8124 + E43102: 0...55)	0...70	200	3	**LK8124**

Point level sensors for oils and coolants, approval to the German Federal Water Act (WHG), section 19

Type	Probe length [mm]	Output	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⌐t · DC PNP · Wiring diagram no. 5 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	132	Normally closed	10...36	0...35	0...65	200	4	**LI2141**
	273	Normally closed	10...36	0...35	0...65	200	4	**LI2142**
	481	Normally closed	10...36	0...35	0...65	200	4	**LI2143**

Point level sensors for oils and lubricants

Type	Probe length [mm]	Output	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⌐t / ⌐t · DC PNP · Wiring diagram no. 5 · Connector groups 8, 9, 10, 11, 18, 20, 123, 125, 126, 127, 150, 151								
	132	normally open / closed programmable	10...36	0...35 (LI5141 + E43103: 0...65)	0...65	200	4	**LI5141**
	273	normally open / closed programmable	10...36	0...35 (LI5142 + E43100: 0...65)	0...65	200	4	**LI5142**
	481	normally open / closed programmable	10...36	0...35 (LI5143 + E43101: 0...60)	0...65	200	4	**LI5143**
	737	normally open / closed programmable	10...36	0...35 (LI5144 + E43102: 0...55)	0...65	200	4	**LI5144**

You can find wiring diagrams and scale drawings from page 515

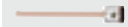
Point level sensors for hygienic areas

Type	Process connection	Process pressure max. [bar]	Application	Protection	Drawing no.	Order no.
M12 connector · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 6 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151						
	G ½ A	-1...16	water, water-based media	IP 68 / IP 69K	5	**LMT100**
	G ½ A	-1...16	oils, grease	IP 68 / IP 69K	5	**LMT110**
M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN · Wiring diagram no. 15 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151						
	G ½ A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	6	**LMT121**

Variable level sensors, guided wave radar

Type	Process connection	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector (according to EN 61076-2-101) · Output function normally open / closed programmable; 4...20 mA or 0...10 V · DC PNP · Wiring diagram no. 7 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	G ¾ A	–	L-40 (L-60)	30 / 10 (30)	18...30	0...80	200	7	**LR3000**
	¾" NPT	–	L - 50	40/10	18...30	0...80	200	8	**LR3300**
M12 connector (according to EN 61076-2-101) · Output function 2 x normally open / closed programmable · DC PNP · Wiring diagram no. 7 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	G ¾ A	–	L-40 (L-60)	30 / 10 (30)	18...30	0...80	200	7	**LR7000**
M12 connector (according to EN 61076-2-101) · Output function 2 x normally open / closed programmable · DC PNP · Wiring diagram no. 3 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	¾" NPT	–	L - 50	40/10	18...30	0...80	200	8	**LR7300**
M12 connector (according to EN 61076-2-101) · Output function 4 x normally open / closed programmable · DC PNP · Wiring diagram no. 8 · Connector groups 16, 17									
	G ¾ A	–	L-40 (L-60)	30 / 10 (30)	18...30	0...80	200	9	**LR8000**
M12 connector (according to EN 61076-2-101) · Output function 4 x normally open / closed programmable · DC PNP · Wiring diagram no. 9 · Connector groups 16, 17									
	¾" NPT	–	L - 50	–	18...30	0...80	200	10	**LR8300**

Compact sensors for level and temperature monitoring

Type	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector (according to EN 61076-2-101) · Output function 2 x normally open / closed programmable (level) 2 x normally open / closed programmable (temperature) · DC PNP · Wiring diagram no. 10 · Connector groups 16, 17									
	264	195	53 / 15	18...30	–	0...70	200	11	**LT8022**
	472	390	53 / 30	18...30	–	0...70	200	11	**LT8023**
	728	585	102 / 40	18...30	–	0...70	200	11	**LT8024**

Compact sensors for level and leakage monitoring

Type	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U_b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	I_{load} [mA]	Drawing no.	Order no.
M12 connector (according to EN 61076-2-101) · Output function 4 x normally open / closed programmable · DC PNP · Wiring diagram no. 11 · Connector groups 16, 17									
	264	195	53 / 15	18...30	0...35 (LL8022 + E43100: 0...65)	0...70	200	11	**LL8022**
	472	390	53 / 30	18...30	0...35 (LL8023 + E43101: 0...60)	0...70	200	11	**LL8023**
	728	585	102 / 40	18...30	0...35 (LL8024 + E43102: 0...55)	0...70	200	11	**LL8024**

Sensors for hydrostatic level monitoring

Type	Measuring range [bar]	Cable length / material	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
Output function 4...20 mA analogue · Wiring diagram no. 12							
	0...0.25	5 m PUR cable	2	2.4	10...30	12	**PS3208**
	0...0.6	10 m PUR cable	4	4.8	10...30	12	**PS3407**
	0...0.6	15 m PUR cable	4	4.8	10...30	12	**PS3427**

You can find wiring diagrams and scale drawings from page 515

Type	Measuring range [bar]	Cable length / material	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
Output function 4...20 mA analogue · Wiring diagram no. 12							
	0...1	15 m PUR cable	5	6	10...30	12	**PS3417**
	0...0.6	30 m PUR cable	4	4.8	10...30	12	**PS3607**
	0...1	30 m PUR cable	5	6	10...30	12	**PS3617**
Output function 4...20 mA · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...0.25	M12 connector	10	30	9.6...32	13	**PA3028**

Sensors for hydrostatic level monitoring ATEX category 1G/1D

Type	Measuring range [bar]	Cable length / material	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
Output function 4...20 mA analogue · Wiring diagram no. 14							
	0...0.25	5 m FEP cable	2	2.4	10...30	14	**PS308A**
	0...0.6	10 m FEP cable	4	4.8	10...30	14	**PS307A**
	0...1	15 m FEP cable	5	6	10...30	14	**PS317A**

Sensors for hydrostatic level monitoring in hygienic and wet areas

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 16 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	20...32	15	**PI2789**
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	20...32	15	**PI2798**
	Aseptoflex Vario	Display unit	-1...1	10	30	20...32	15	**PI2799**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 16 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-0.05...1	10	30	20...32	15	**PI2797**
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	20...32	15	**PI2796**
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	20...32	16	**PI2889***
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	20...32	16	**PI2896***
	G1 A sealing cone	Display unit	-0.05...1	10	30	20...32	16	**PI2897***
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	20...32	16	**PI2898***
	G1 A sealing cone	Display unit	-1...1	10	30	20...32	16	**PI2899***
	Clamp DN 38 / 1½"	Display unit	-0.124...2.5	20	50	20...32	17	**PI2206**
	Clamp DN 38 / 1½"	Display unit	-0.05...1	10	30	20...32	17	**PI2207**
	Clamp DN 38 / 1½"	Display unit	-1...1	10	30	20...32	17	**PI2209**
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 17 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	18...32	18	**PG2789**
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	18...32	18	**PG2798**
	Aseptoflex Vario	Display unit	-0.05...1	10	30	18...32	18	**PG2797**
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	18...32	18	**PG2796**
	Aseptoflex Vario	Display unit	-1...1	10	30	18...32	18	**PG2799**

You can find wiring diagrams and scale drawings from page 515

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · Wiring diagram no. 17 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	18...32	19	**PG2896***
	G1 A sealing cone	Display unit	-0.05...1	10	30	18...32	19	**PG2897***
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	18...32	19	**PG2898***
	G1 A sealing cone	Display unit	-1...1	10	30	18...32	19	**PG2899***
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	18...32	19	**PG2889***

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

Oil humidity sensor

Type	Process connection	Pressure rating [bar]	Protection	Medium temperature oil [°C]	Ambient temperature [°C]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · Wiring diagram no. 18 · Connector groups 15, 16, 17							
	G ¾	10	IP 67	-20...100	-20...85	20	**LDH100**

Accessories for level sensors LK, LT, LL, LI

Type	Description	Order no.
	Flange plate · 54-52X52 D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: Tesnit	**E43007**
	Flange plate · 65-80 D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM	**E43006**
	Flange plate · 73-90 D16 · for capacitive level sensors LK, LI, LT, LL · according to DIN 24557 · Housing materials: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: NBR	**E43001**
	Mounting adapter · G ¾ D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: Tesnit	**E43003**

Type	Description	Order no.
	Mounting adapter · G ¾ D16 · for capacitive level sensors LI · Housing materials: Brass nickel-plated / TPE / sealing: FKM	**E43019**
	Mounting adapter · G ¾ D22 · for climatic tube LK / LI · Housing materials: stainless steel / NBR / Tesnit / Brass	**E43008**
	Mounting adapter · ¾" NPT D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	**E43012**
	Mounting adapter · ¾" NPT D22 · for climatic tube LK / LI · Housing materials: stainless steel / NBR / Brass	**E43014**
	Mounting adapter · G 1 D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: Tesnit	**E43004**
	Mounting adapter · G 1 D22 · for climatic tube LK / LI · Housing materials: stainless steel / NBR / Tesnit / Brass	**E43009**
	Mounting adapter · 1" NPT D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	**E43013**
	Climatic tube · Length: 132 mm · for capacitive level sensors LK, LI · Housing materials: PPH / NBR	**E43103**
	Climatic tube · Length: 264 mm · for capacitive level sensors LK, LI · Housing materials: PPH / NBR	**E43100**
	Climatic tube · Length: 472 mm · for capacitive level sensors LK, LI · Housing materials: PPH / NBR	**E43101**
	Climatic tube · Length: 728 mm · for capacitive level sensors LK, LI · Housing materials: PPH / NBR	**E43102**
	Mounting clamp · Ø 16 mm · for capacitive level sensors LK, LI, LT, LL · Housing materials: PP	**E43000**
	Mounting set · Ø 16 mm · for capacitive level sensors LK, LI, LT, LL · Housing materials: PP / Metal parts: steel galvanised	**E43016**
	Welding adapter · Ø 50 D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	**E43002**
	Protective cover · for LK / LL / LR / LT sensors · Housing materials: PP	**E43910**

You can find wiring diagrams and scale drawings from page 515

Parameter-setting system

Type	Description	Order no.
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software "ifm Container" or software "LINERECORDER SENSOR"	E30396
	ifm Container · FDT frame software · for parameter setting and analysis of units with DTM specification · e.g. ifm sensors with EPS programming interface, · sensors with IO-Link	E30110
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	ZGS210
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	E30398
	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LINERECORDER SENSOR"	E30390
Factory calibration certificate for pressure sensors (and flow sensors, see below) · Number of measuring points: 6-point factory calibration · Measurement points: in 20 % steps of the measuring range (according to ISO 9001) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		ZC0004
DAkkS calibration certificate for pressure sensors · Number of measuring points: 11-point DAkkS calibration · Measurement points: in 10 % steps of the measuring range (according to directive DAkkS-DKD-R 6-1) · Minimum measurement uncertainty [bar]: 20 µbar...140 mbar (depending on the reference pressure)		ZC0005

Accessories for level sensors LM

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33401
	Clamp adapter · Clamp · 2" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33402
	Welding adapter · G ½ - Ø 35 mm · Housing materials: stainless steel 316L / 1.4404	E30055
	Welding adapter · G ½ - Ø 45 mm · Housing materials: stainless steel 316L / 1.4404	E30056
	Welding adapter · G ½ - Ø 30 mm · for tanks · Housing materials: stainless steel 316L / 1.4435	E43300

Type	Description	Order no.
	Welding adapter · G ½ - Ø 29 mm · for pipes · Housing materials: stainless steel 316L / 1.4435	**E43301**
	Adapter · G ¾ · Housing materials: stainless steel 316L / 1.4435	**E43302**
	Adapter · G 1 · Housing materials: stainless steel 316L / 1.4435	**E43303**
	Adapter · ¾" NPT · Housing materials: stainless steel 316L / 1.4404	**E43313**
	pipe fitting · G ½ · pipe fitting · DN25 (1") · DIN 11851 · Housing materials: stainless steel 316L / 1.4435	**E43304**
	pipe fitting · G ½ · pipe fitting · DN40 (1.5") · DIN 11851 · Housing materials: stainless steel 316L / 1.4435	**E43305**
	Clamp adapter · G ½ · Varivent type F · DN25 (1"), D = 50 · Housing materials: stainless steel 316L / 1.4435	**E43306**
	Clamp adapter · G ½ · Varivent type N · DN40 (1.5"), D = 68 · Housing materials: stainless steel 316L / 1.4435	**E43307**
	Welding mandrel · G ½ · carries away heat during welding · Housing materials: brass	**E43314**

Accessories 3A

Type	Description	Order no.
	pipe fitting · SMS pipe fitting · DN25 · SMS · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	**E33430**
	sealing plug · G ½ · Housing materials: stainless steel 316L / 1.4435	**E43308**
	Welding adapter · G ½ - Ø 30 mm · for tanks · with leakage port · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43309**
	Welding adapter · G ½ - Ø 29 mm · for pipes · with leakage port · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43310**

You can find wiring diagrams and scale drawings from page 515

Type	Description	Order no.
	Welding adapter · G ½ · with leakage port · Housing materials: stainless steel 316L / 1.4404	E43315
	Clamp adapter · G ½ · with leakage port · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43311
	Clamp adapter · G ½ · with leakage port · Clamp · 2" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43312

Accessories for oil humidity sensor LDH

Type	Description	Order no.
	Adapter block · D33 / G ¾ · for oil humidity sensor LDH100 · Housing materials: aluminium	E43400

Accessories for level sensors LR

Type	Description	Order no.
	Flange plate · 65-80 / G ¾ · for level sensors LR · Housing materials: flange: stainless steel	E43202
	Flange plate · 73-90 / G ¾ · for level sensors LR · according to DIN 24557 · Housing materials: flange: stainless steel / sealing: NBR	E43201
	Flange plate · 73-90 / ¾" NPT · for level sensors LR · according to DIN 24557 · Housing materials: flange: stainless steel / sealing: NBR	E43206
	Probe · Probe length: 150 mm · for level sensors LR · Housing materials: stainless steel	E43225
	Probe · Probe length: 240 mm · for level sensors LR · Housing materials: stainless steel	E43203
	Probe · Probe length: 300 mm · for level sensors LR · Housing materials: stainless steel	E43226
	Probe · Probe length: 450 mm · for level sensors LR · Housing materials: stainless steel	E43204

Type	Description	Order no.
	Probe · Probe length: 500 mm · for level sensors LR · Housing materials: stainless steel	**E43227**
	Probe · Probe length: 700 mm · for level sensors LR · Housing materials: stainless steel	**E43205**
	Probe · Probe length: 1000 mm · for level sensors LR · Housing materials: stainless steel	**E43207**
	Probe · Probe length: 1200 mm · for level sensors LR · Housing materials: stainless steel	**E43208**
	Probe · Probe length: 1400 mm · for level sensors LR · Housing materials: stainless steel	**E43209**
	Probe · Probe length: 1600 mm · for level sensors LR · Housing materials: stainless steel	**E43210**
	Coaxial pipe · Length: 150 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit	**E43230**
	Coaxial pipe · Length: 240 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43211**
	Coaxial pipe · Length: 300 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43228**
	Coaxial pipe · Length: 450 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43212**
	Coaxial pipe · Length: 500 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43229**
	Coaxial pipe · Length: 700 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43213**
	Coaxial pipe · Length: 1000 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43214**
	Coaxial pipe · Length: 1200 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43215**
	Coaxial pipe · Length: 1400 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	**E43216**

You can find wiring diagrams and scale drawings from page 515

Type	Description	Order no.
	Coaxial pipe · Length: 1600 mm · G ¾ · for level sensors LR · Housing materials: stainless steel / sealing: Tesnit / centring piece: PP / fixing bracket: stainless steel	E43217
	Coaxial pipe · Length: 450 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43218
	Coaxial pipe · Length: 700 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43219
	Coaxial pipe · Length: 1000 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43220
	Coaxial pipe · Length: 1200 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43223
	Coaxial pipe · Length: 1400 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43224
	Coaxial pipe · Length: 1600 mm · ¾" NPT · for level sensors LR · Housing materials: stainless steel / centring piece: PP / fixing bracket: stainless steel	E43221

Accessories for level sensors PA, PG, PI, PN, PS, PY

Type	Description	Order no.
	Adapter · G ¼ - G ½ · Housing materials: stainless steel / sealing: FPM	E30000
	Adapter · G ¼ - G ¼ · Housing materials: stainless steel / FPM	E30007
	Cable clamp fastener · for submersible pressure transmitter PS3 · Housing materials: steel / plastics	E30399
	Filter element · for submersible pressure transmitter PS3 · for fixing on the capillary tube	E30400
	Splitter box · with ventilation and terminal block · for submersible pressure transmitter PS3 · Housing materials: plastics	E30401
	Additional weight · for submersible pressure transmitter PS3 · Housing materials: stainless steel 316Ti / 1.4571	E30402

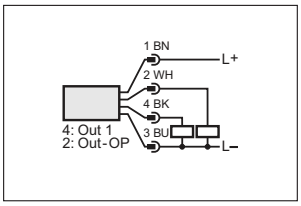
Type	Description	Order no.
	Welding adapter · Ø 50 mm · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30122
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33212
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33213
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33712
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33713
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E33201
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	E33701

Wiring diagrams

Core colours

BN	brown
GY	grey
WH	white
BU	blue
GN	green

1



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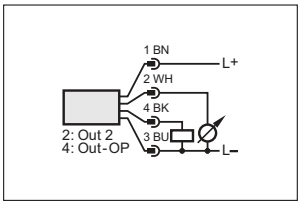

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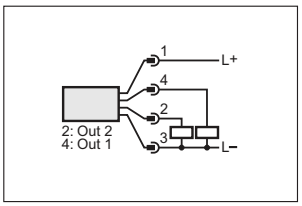

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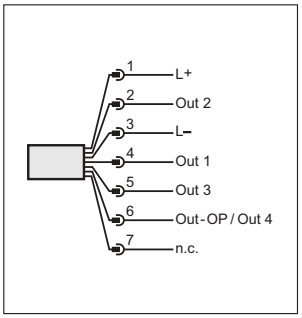

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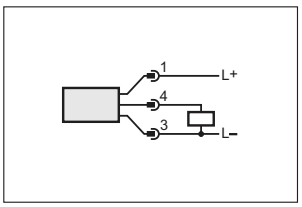

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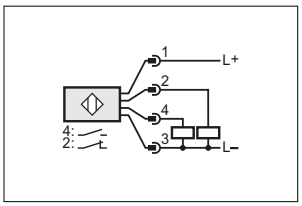

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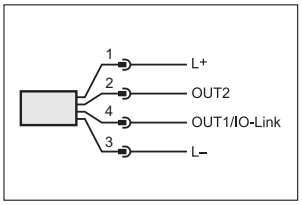

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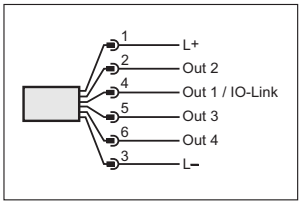

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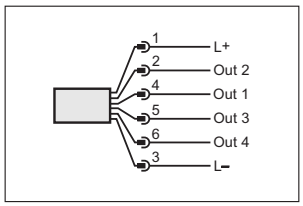

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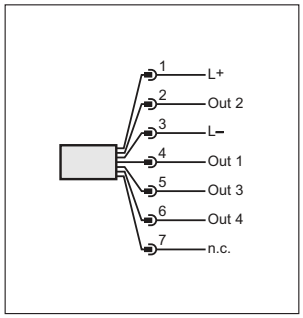
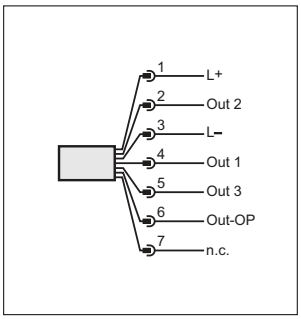


Wiring diagrams

11



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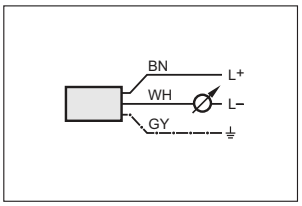

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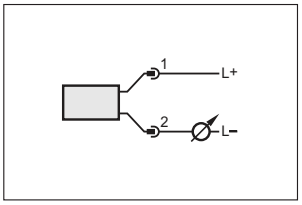

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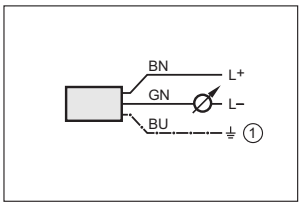
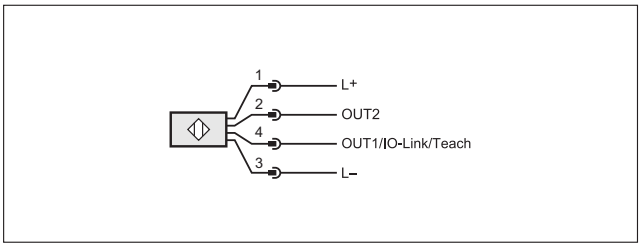


1: screen (connected to the housing)

15



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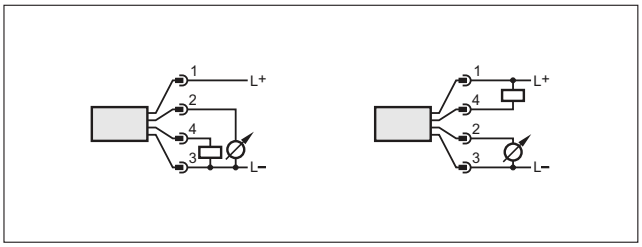

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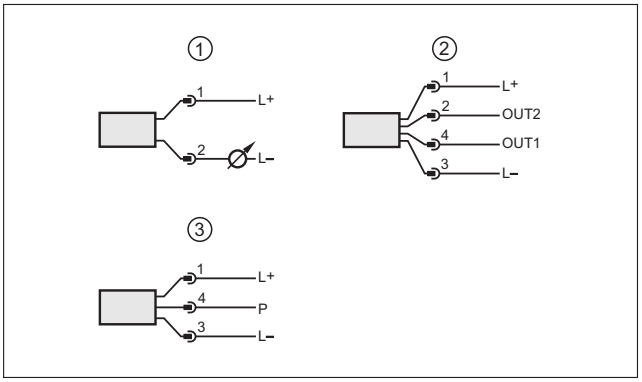
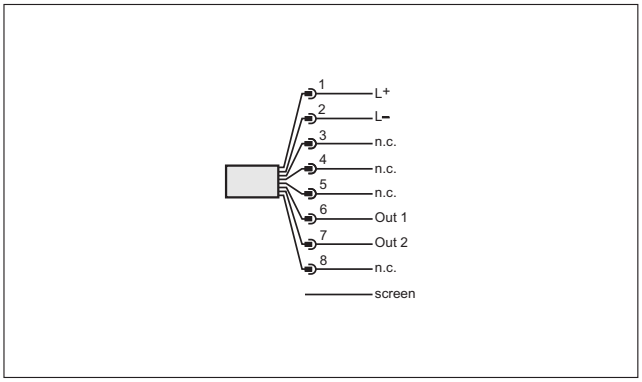


1: connection for 2-wire operation, 2: connection for 3-wire operation, 3: connection for IO-Link parameter setting (P = communication via IO-Link)

18



Scale drawings / drawing no. – CAD download: www.ifm.com

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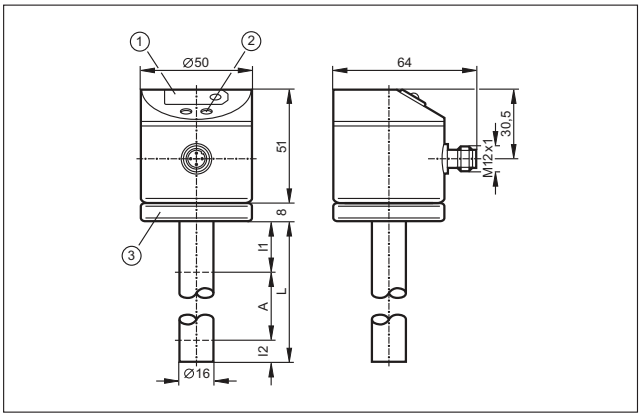
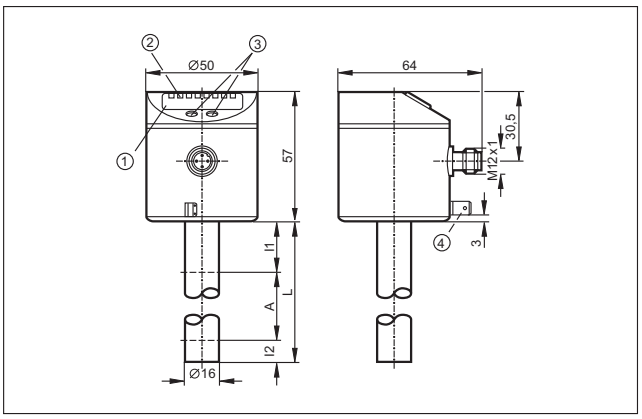


1: 7-segment LED display, 2: Programming buttons, 3: Housing connection with cable lug for cable 1.5 - 2.5 mm²

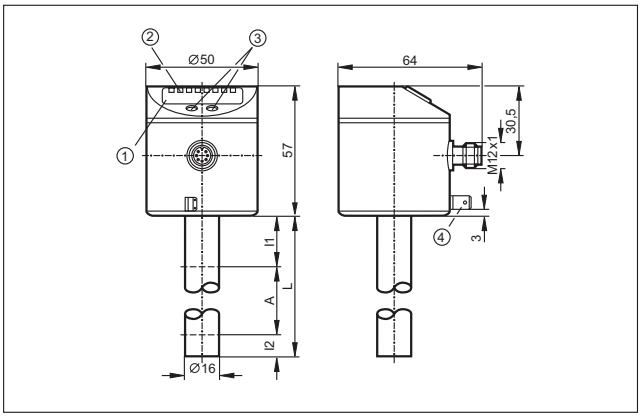
Scale drawings / drawing no. – CAD download: www.ifm.com

2



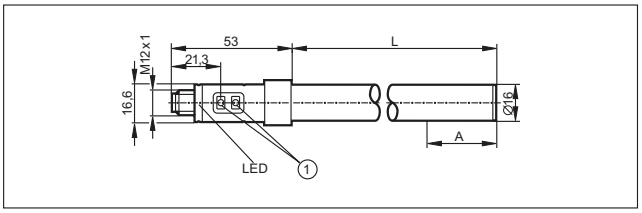
1: 4-digit alphanumeric display, 2: LEDs, 3: Programming buttons,
4: Housing connection (flat-pin connector 6.3 mm following DIN 46244)

3



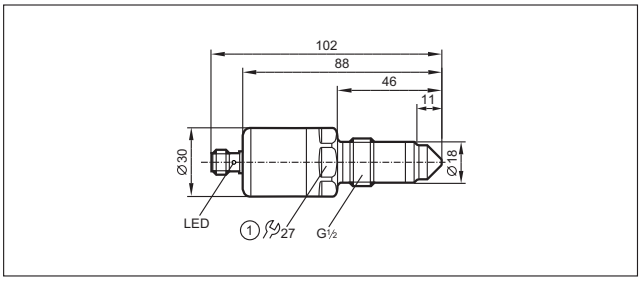
1: 4-digit alphanumeric display, 2: LEDs, 3: Programming buttons,
4: Housing connection (flat-pin connector 6.3 mm following DIN 46244)

4



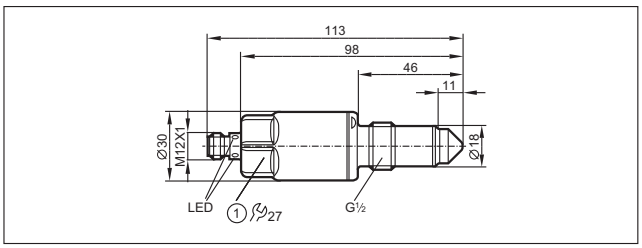
1: Programming buttons

5



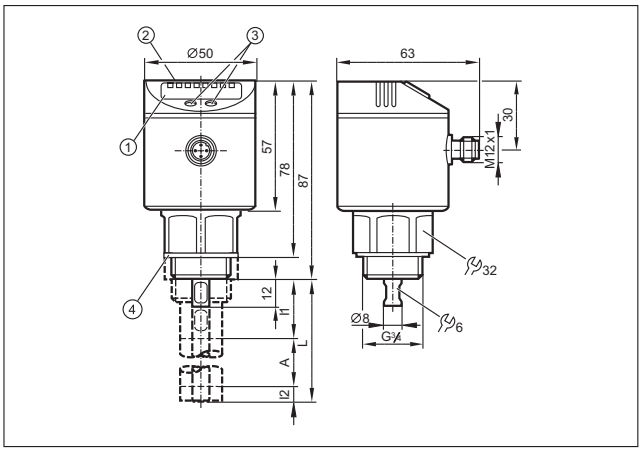
1: tightening torque 20...25 Nm

6



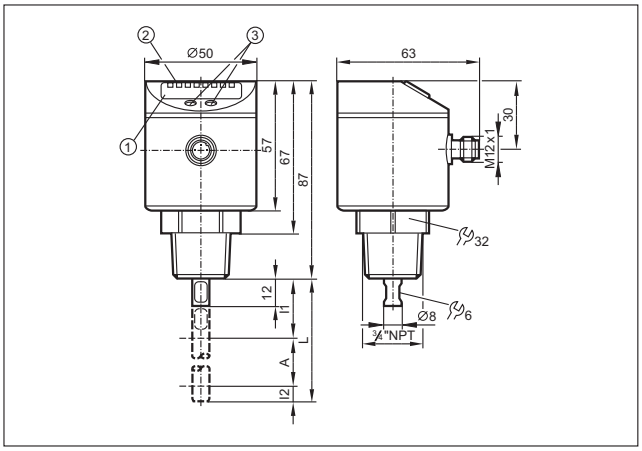
1: tightening torque 20...25 Nm

7



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming buttons, 4: sealing, A: Active range, l1 / l2: Inactive ranges

8



1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming buttons, A: Active range, l1 / l2: Inactive ranges

Scale drawings / drawing no. – CAD download: www.ifm.com

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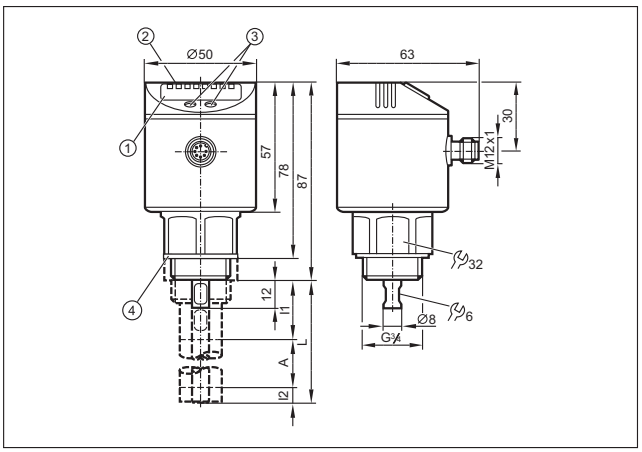

1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming buttons, 4: sealing, A: Active range, I1 / I2: Inactive ranges

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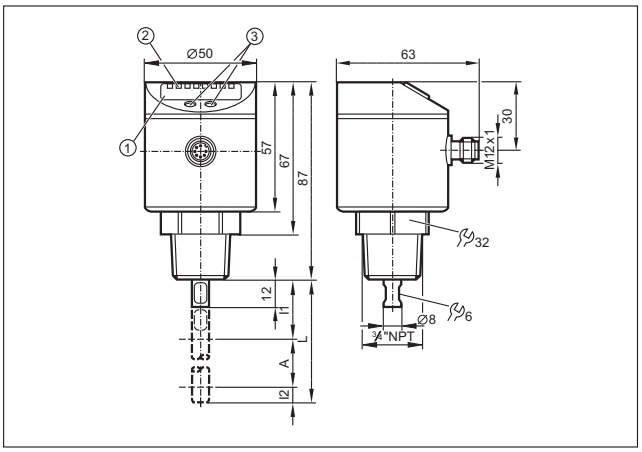

1: 4-digit alphanumeric display, 2: LEDs (display unit / switching status), 3: Programming buttons, A: Active range, I1 / I2: Inactive ranges

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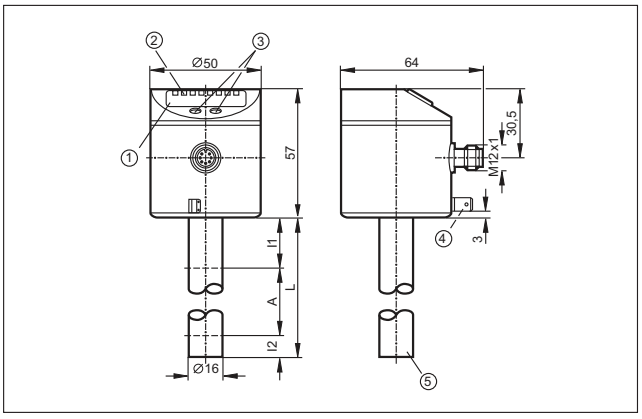
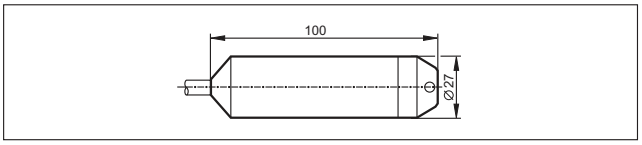


1: 4-digit alphanumeric display, 2: LEDs, 3: Programming buttons, 4: Housing connection (flat-pin connector 6.3 mm following DIN 46244), 5: Position of the temperature measuring element

12



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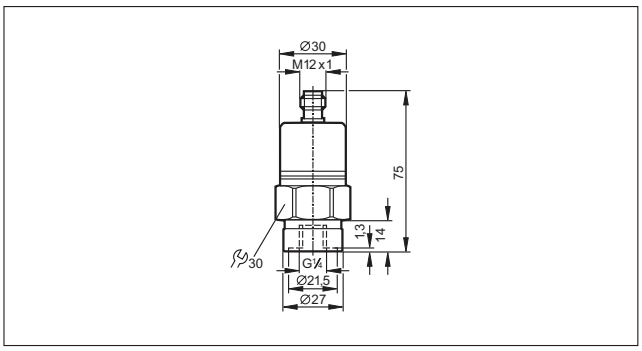

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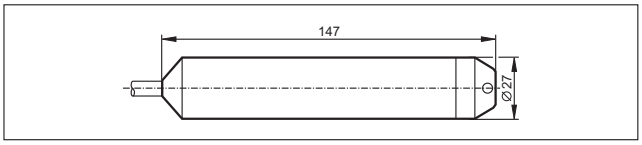

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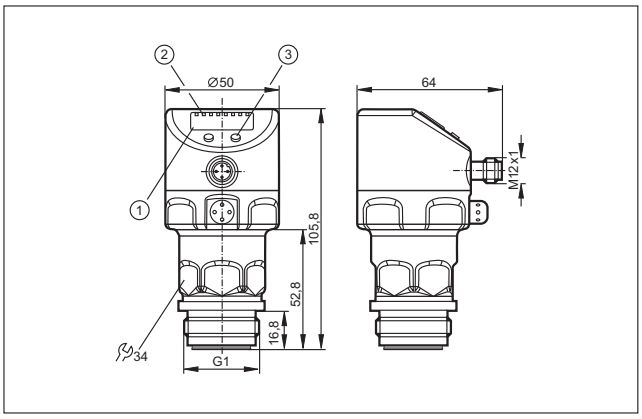
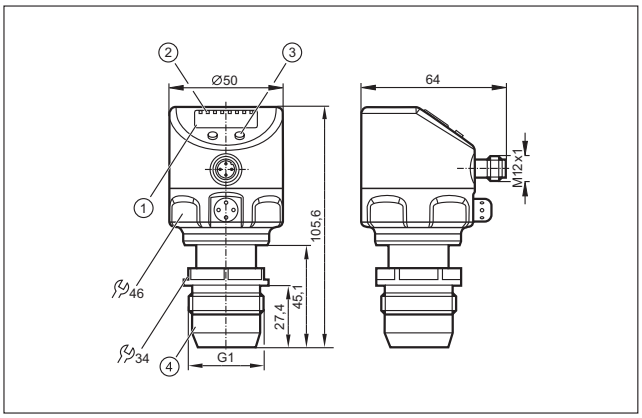


1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button

16



1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

Scale drawings / drawing no. – CAD download: www.ifm.com

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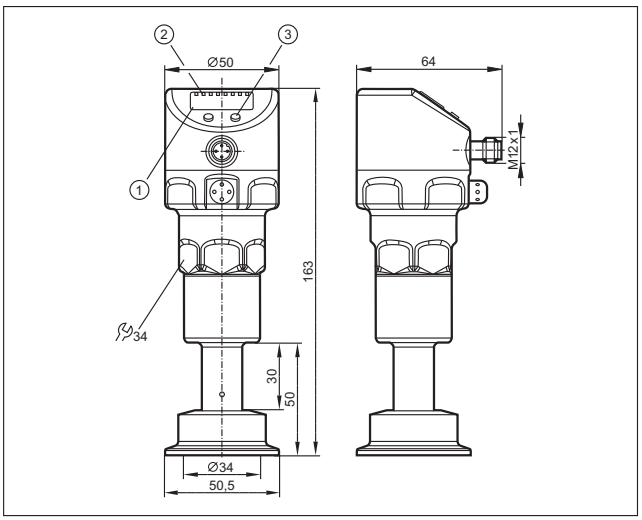

1:: 4-digit alphanumeric display, 2: : LEDs, 3: : Programming button

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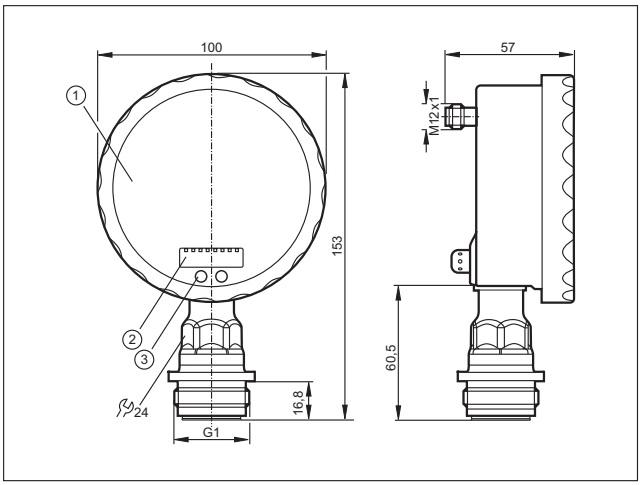

1: Analogue display, 2: 4-digit alphanumeric display, 3: Programming button

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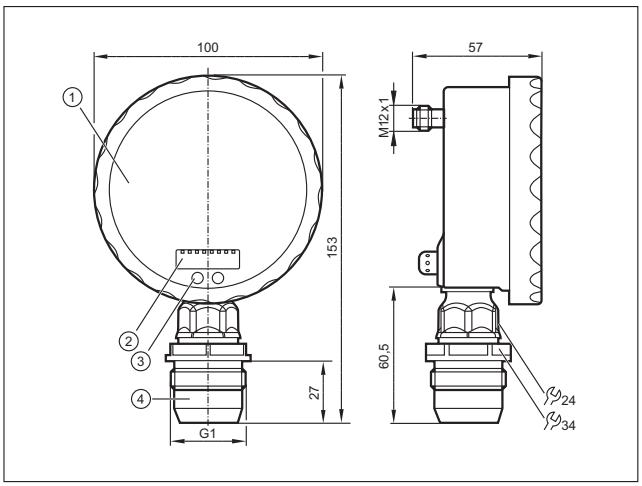

1: Analogue display, 2: 4-digit alphanumeric display, 3: Touch button (programming button), 4: G1 A sealing cone, Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

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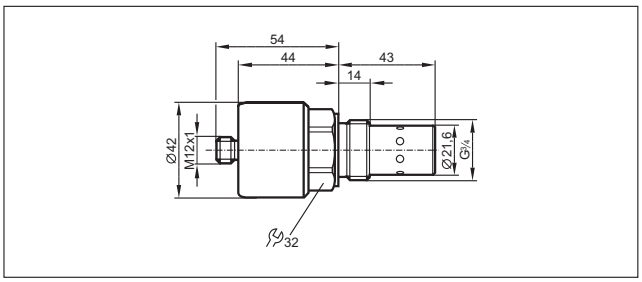

- **Temperature monitors using Pt100 and Pt1000 sensors**
- **Probes in a variety of shapes, sizes and lengths**
- **Simple transmitters up to multifunction heads with display**
- **Modular concept allows optimised product combinations**
- **Units with self-checking function and 5 year warranty**

Temperature sensors

ifm electronic offers a very wide range of temperature monitoring products to suit the needs of many industries. One end of the range offers simple probes based on Pt100 or Pt1000 resistive elements. At the top end we have a diverse redundant transmitter design which is warranted to stay within tolerance for 5 years or raise an alarm if it drifts – ideal for those critical or difficult to reach installations.

What makes an ifm probe different?

The key to a good temperature probe is the balance between being responsive to changing temperatures and being robust enough to cope with an ever changing environment. ifm uses flexible, temperature-resistant and extremely stable polyamide film as a carrier of the SMD Pt100 components in place of circuit boards. This allows us to position the sensing element right up to the probe wall, making for a very fast response.

From sensor to system

ifm provides a selection of options for customers requiring temperature monitoring. The simplest systems are the all-in-one temperature transmitters which can be supplied for both industrial and hygienic applications. Others prefer the flexibility of sourcing the probe and monitor separately and then combining them on site in one of several ways. This gives the widest range of probe shapes and sizes for specific applications. The evaluation can be achieved locally with a simple head transmitter, type TP, or by using a more feature-laden monitor like the TR which has its own display. The top end solution is the TAD transmitter. It uses two independent temperature monitoring technologies which are then internally cross-checked by the microprocessor. If ever they stop agreeing with each other's measurement then the transmitter will raise an alarm to alert the customer that he can no longer be 100 % certain of that measure and some action should be taken. ifm offers a 5 year warranty on that peace of mind.

Indirect temperature measurement

In most cases the infrared temperature measurement is used where temperatures can only be measured indirectly, that means without contact. The reason for this can for example be a high temperature of the object. The sensors detect the infrared radiation emitted by the objects and convert them into an output signal.

Local display of the current temperature.

Essential: Temperature monitoring in air conditioning.

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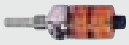
Compact temperature sensors

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · Output function normally open / closed complementary · DC PNP · Wiring diagram no. 1 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151							
	-25...140	G ¼ A	39	9.6...32	1 / 3	1	**TK6130**
	-25...140	¼" NPT	39	9.6...32	1 / 3	2	**TK6330**
M12 connector · Output function ⎽⎺⎽ / ⎽⎺⎽ · DC PNP · Wiring diagram no. 2 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151							
	-25...140	G ¼ A	39	9.6...32	1 / 3	1	**TK7130**
M12 connector · Output function 1 x normally open / 1 x normally closed · DC PNP · Wiring diagram no. 2 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151							
	-25...140	G ½ A	267	9.6...32	1 / 3	3	**TK7480**

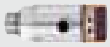
Compact temperature sensors with display, IO-Link

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V, scalable) · DC PNP/NPN · Wiring diagram no. 5 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150							
	-40...150	M18 x 1.5	45	18...32	1 / 3	4	**TN2531**
M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN · Wiring diagram no. 6 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151							
	-40...150	M18 x 1.5	45	18...32	1 / 3	4	**TN7531**

Control monitors for temperature sensors

Type	Measuring range [°C]	Process connection	Display LED	U_b [V]	Current consumption [mA]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 4 x normally open / closed programmable · DC PNP · Wiring diagram no. 7 · Connector groups 16, 17								
	-40...150	G ½ A	Display unit	18...28	90	< 500	5	**TR8430**

Control monitors for temperature sensors, IO-Link

Type	Measuring range [°C]	Process connection	Display LED	U_b [V]	Current consumption [mA]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V, scalable) · DC PNP/NPN · Wiring diagram no. 8 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	-40...300	G ½ A	Display unit	18...32	50	250	6	**TR2432**
M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN · Wiring diagram no. 9 · Connector groups 123, 125, 150								
	-40...300	G ½ A	Display unit	18...32	50	250	6	**TR7432**

Modular temperature transmitters

Type	Measuring range [°C]	Process connection	U_b [V]	Ambient temperature [°C]	Measuring element	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · DC · Wiring diagram no. 10 · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	7	**TP3232**
	0...100	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	7	**TP3237**
	-50...150	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	7	**TP3231**
M12 connector · Output function 0...10 V analogue · DC · Wiring diagram no. 11 · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...100	M12	18...32	-25...70	for Pt100 and Pt1000 measuring elements	7	**TP9237**

Pt1000 probe sensors for standard applications

Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Wiring diagram no. 3							
	-40...150	10	160	1 x Pt 1000	1 / 3	8	**TT1050**
	-40...150	10	260	1 x Pt 1000	1 / 3	8	**TT2050**

You can find wiring diagrams and scale drawings from page 539

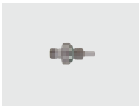
Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Wiring diagram no. 3							
	-40...150	10	360	1 x Pt 1000	1 / 3	8	**TT3050**
	-40...150	10	560	1 x Pt 1000	1 / 3	8	**TT5050**

Pt100 probe sensors for standard applications

Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...150	6	100	1 x Pt 100	1 / 3	9	**TT0281**
	-40...150	6	150	1 x Pt 100	1 / 3	9	**TT1281**
	-40...150	6	250	1 x Pt 100	1 / 3	9	**TT2281**
	-40...150	6	350	1 x Pt 100	1 / 3	9	**TT3281**
	-40...150	6	50	1 x Pt 100	1 / 3	9	**TT9281**
	-40...150	10	160	1 x Pt 100	1 / 3	8	**TT1081**
	-40...150	10	260	1 x Pt 100	1 / 3	8	**TT2081**
	-40...150	10	360	1 x Pt 100	1 / 3	8	**TT3081**
	-40...150	10	560	1 x Pt 100	1 / 3	8	**TT5081**
	-40...125	8.2	60	1 x Pt 100	1 / 3	10	**TM9950**

Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · titanium · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...125	8.2	60	1 x Pt 100	1 / 3	10	**TM9900**

Pt100 probe sensors for standard applications

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...150	G ¼	25	1 x Pt 100	1 / 3	11	**TM4101**
	-40...150	G ½	50	1 x Pt 100	1 / 3	12	**TM4411**
	-40...150	G ½	100	1 x Pt 100	1 / 3	12	**TM4431**
	-40...150	G ½	150	1 x Pt 100	1 / 3	12	**TM4441**
	-40...150	G ½	250	1 x Pt 100	1 / 3	12	**TM4461**

Cable sensors for standard applications

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable 4 m · high-grade stainless steel							
	-30...180	M5	silicone cable	1 x Pt 100	3 / 8	13	**TS4759**
Cable with connector 2 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...90	Ø 6 mm / L = 45 mm	PUR cable	1 x Pt 100	3 / 10	14	**TS2289**
	-50...250	Ø 6 mm	PTFE cable	1 x Pt 100	11 / 37	15	**TS2256**

You can find wiring diagrams and scale drawings from page 539

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable with connector 2 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-50...250	Ø 10 mm	PTFE cable	1 x Pt 100	12 / 39	16	**TS2056**
	-30...90	M5 / L = 25.7	PUR cable	1 x Pt 100	3 / 8	17	**TS2789**
	-30...180	M5 / L = 25.7	silicone cable	1 x Pt 100	3 / 8	18	**TS2759**
	-30...180	M6	silicone cable	1 x Pt 100	3 / 8	19	**TS2659**
Cable with connector 2.5 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...90	Ø 6 mm / L = 45 mm	PUR cable	1 x Pt 100	3 / 10	14	**TS9289**
Cable with connector 5 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...90	Ø 10 mm	PUR cable	1 x Pt 100	6 / 25	20	**TS5089**
	-40...90	Ø 6 mm / L = 45 mm	PUR cable	1 x Pt 100	3 / 10	14	**TS5289**
Cable with connector 10 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-30...180	M5 / L = 25.7	silicone cable	1 x Pt 100	3 / 8	18	**TS0759**

Cable sensors with bolt-on sensor for standard applications

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable with connector 2 m · stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-25...90	12	PUR cable	1 x Pt 100	9 / 15	21	**TS2229**
Cable 2 m · stainless steel							
	-25...90	12	PUR cable	1 x Pt 100	12 / 39	22	**TS2239**

Cable sensors for ATEX applications 3D/3G

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable 3 m · high-grade stainless steel							
	-20...80	Ø 5/6 mm / L = 40	silicone cable	1 x Pt 100	4 / 10	23	**TS325A**

Cable sensors with bolt-on sensors for ATEX 3D / 3G applications

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable 5 m · high-grade stainless steel							
	-20...80	10	silicone cable	1 x Pt 100	13 / 39	24	**TS522A**
	-20...80	18	silicone cable	1 x Pt 1000	18 / 42	25	**TS502A**

Temperature transmitters for standard applications

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · DC · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-50...150	G ¼ A	60	10...30	1 / 3	26	**TA3131**
	0...140	G ¼ A	60	10...30	1 / 3	26	**TA3130**
	-50...150	G ¼ A	200	10...30	1 / 3	27	**TA3171**

You can find wiring diagrams and scale drawings from page 539

Probe sensors for hygienic and wet areas

Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...150	6	50	1 x Pt 100	1 / 3	9	**TT9291**
	-40...150	6	100	1 x Pt 100	1 / 3	9	**TT0291**
	-40...150	6	150	1 x Pt 100	1 / 3	9	**TT1291**
	-40...150	6	250	1 x Pt 100	1 / 3	9	**TT2291**
	-40...150	6	350	1 x Pt 100	1 / 3	9	**TT3291**

Sensors with process connection for hygienic and wet areas

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...150	Clamp 1-1.5" ISO 2852	30	1 x Pt 100	1 / 3	28	**TM4801**
	-40...150	Clamp 1-1.5" ISO 2852	50	1 x Pt 100	1 / 3	28	**TM4811**
	-40...150	Clamp 1-1.5" ISO 2852	100	1 x Pt 100	1 / 3	28	**TM4831**
	-40...150	Clamp 1-1.5" ISO 2852	150	1 x Pt 100	1 / 3	28	**TM4841**
	-40...150	Clamp 2"	30	1 x Pt 100	1 / 3	29	**TM4901**
	-40...150	Clamp 2"	50	1 x Pt 100	1 / 3	29	**TM4911**
	-40...150	Clamp 2"	100	1 x Pt 100	1 / 3	29	**TM4931**

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-40...150	Clamp 2"	150	1 x Pt 100	1 / 3	29	**TM4941**
	-40...150	G½ with sealing cone	20	1 x Pt 100	1 / 3	30	**TM4591**
	-40...150	G½ with sealing cone	30	1 x Pt 100	1 / 3	30	**TM4501**
	-40...150	G½ with sealing cone	50	1 x Pt 100	1 / 3	30	**TM4511**
	-40...150	G½ with sealing cone	100	1 x Pt 100	1 / 3	30	**TM4531**
	-40...150	G½ with sealing cone	150	1 x Pt 100	1 / 3	30	**TM4541**

Cable sensors for hygienic and wet areas

Type	Measuring range [°C]	Diameter [mm]	Cable material	Sensor element	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
Cable with connector 2 m · high-grade stainless steel · Connector groups 8, 10, 18, 20, 123, 125, 150							
	-50...250	Ø 10 mm	PTFE cable	1 x Pt 100	12 / 39	16	**TS2056**

Temperature transmitters for hygienic and wet areas

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · DC · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...100	G ½ A	87.5	10...30	1 / 3	31	**TA3437**
	0...140	G ½ A	87.5	10...30	1 / 3	31	**TA3430**
	-10...150	G ½ A	87.5	10...30	1 / 3	32	**TA3431**

You can find wiring diagrams and scale drawings from page 539

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · high-grade stainless steel · DC · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...100	Ø 6 mm	123	10...30	1 / 3	33	**TA3237**
	-10...150	Ø 6 mm	123	10...30	1.2 / 3.5	33	**TA3231**

Self-monitoring temperature transmitters for hygienic and wet areas, IO-Link

Type	Measuring range	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · Output function normally open / normally closed / heartbeat programmable, 4...20 mA analogue · DC PNP/NPN · Wiring diagram no. 12 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150							
	0...150°C / 32...302°F	Aseptoflex Vario	50	18...32	3 / 6	34	**TAD081**
	0...150°C / 32...302°F	Aseptoflex Vario	87.5	18...32	3 / 6	35	**TAD181**
	0...150°C / 32...302°F	Aseptoflex Vario	33	18...32	3 / 6	36	**TAD981**
	0...150°C / 32...302°F	G ½ A	50	18...32	3 / 6	37	**TAD091**
	0...150°C / 32...302°F	G ½ A	87.5	18...32	3 / 6	38	**TAD191**
	0...150°C / 32...302°F	G ½ A	33	18...32	3 / 6	39	**TAD991**

Temperature transmitter with display for hygienic and wet areas, IO-Link

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · DC · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...100	G½ with sealing cone	30	18...32	1 / 3	40	**TD2507**
	0...100	G½ with sealing cone	50	18...32	1 / 3	40	**TD2517**

Type	Measuring range [°C]	Process connection	Installation length [mm]	U_b [V]	Dynamic response T05 / T09 [s]	Drawing no.	Order no.
M12 connector · DC · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150							
	0...100	G½ with sealing cone	100	18...32	1 / 3	40	**TD2537**
	0...100	G½ with sealing cone	150	18...32	1 / 3	40	**TD2547**
	0...100	1.5" clamp (ISO 2852)	30	18...32	1 / 3	41	**TD2807**
	0...100	1.5" clamp (ISO 2852)	50	18...32	1 / 3	41	**TD2817**
	0...100	1.5" clamp (ISO 2852)	100	18...32	1 / 3	41	**TD2837**
	0...100	1.5" clamp (ISO 2852)	150	18...32	1 / 3	41	**TD2847**
	0...100	2" triclamp (ISO 2852)	30	18...32	1 / 3	42	**TD2907**
	0...100	2" triclamp (ISO 2852)	50	18...32	1 / 3	42	**TD2917**
	0...100	2" triclamp (ISO 2852)	100	18...32	1 / 3	42	**TD2937**
	0...100	2" triclamp (ISO 2852)	150	18...32	1 / 3	42	**TD2947**
	0...100	Ø 6 mm	50	18...32	1 / 3	43	**TD2217**
	0...100	Ø 6 mm	100	18...32	1 / 3	43	**TD2237**
	0...100	Ø 6 mm	150	18...32	1 / 3	43	**TD2247**
	0...100	Ø 6 mm	250	18...32	1 / 3	43	**TD2267**

You can find wiring diagrams and scale drawings from page 539

Infrared temperature sensors

Type	Temperature range [°C]	Wave length range [µm]	Material lens	Response time [ms]	Drawing no.	Order no.
M12 connector · Output function ⎍ / ⎍ · DC PNP · Wiring diagram no. 4						
	50...500	8...14	Infrared transparent crystal lens with anti-reflex coating	< 100	44	**TW7000**
	250...1250	1.0...1.7	tempered optical glass	≤ 2	45	**TW7001**
	350...1350	1.0...1.7	tempered optical glass	≤ 2	46	**TW7011**

Accessories for temperature sensors TN / TR

Type	Description	Order no.
	Mounting clamp · Ø 34 mm · Housing materials: PBT	**E10017**
	Mounting clamp · Ø 34 mm · Housing materials: PA	**E10193**
	Mounting device 2 way · for fluid sensors · Housing materials: POM	**E30078**
	Mounting device 3 way · for fluid sensors · Housing materials: POM	**E30079**
	Protective cover · for fluid sensors with M12 connector · Housing materials: polyurethane	**E30006**

Accessories for infrared temperature sensors

Type	Description	Order no.
	Measuring head · for infrared temperature sensors TWxx11, M30 design · for type TW · Housing materials: AlMg3 black anodised / stainless steel / lock nuts: stainless steel / O-ring: FPM	**E35060**
	Fibre optics with stainless steel sheathing · straight · Connection to infrared temperature sensors TWxxxx · ¼"-36UNS-2A · Housing materials: stainless steel, Fibre optic: Quartz/Quartz fibre (VIS/IR)	**E35061**

Type	Description	Order no.
	Fibre optics with stainless steel sheathing · straight · Connection to infrared temperature sensors TWxxxx · ¼"-36UNS-2A · Housing materials: stainless steel, Fibre optic: Quartz/Quartz fibre (VIS/IR)	**E35062**
	Air purge · for infrared temperature sensors TWxxxx, M30 design · for type TW · Housing materials: stainless steel / Brass / sealing ring: aluminium	**E35063**
	Cooling jacket · for infrared temperature sensors TWxxxx, M30 design · for type TW · Housing materials: Brass / copper / steel galvanised	**E35064**
	Mounting bracket · Ø 30 mm · for types M30 · Housing materials: Steel galvanised	**E35065**
	Protective tube · for infrared temperature sensors TWxxxx, M30 design · for type TW · Housing materials: stainless steel	**E35066**
	Insulating tube · for infrared temperature sensors TWxxxx, M30 design · for type TW · Housing materials: POM	**E35067**

Accessories and software

Type	Description	Order no.
	IO-Link interface · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · for operation with FDT framework software "ifm Container" or software "LINERECORDER SENSOR"	**E30396**
	ifm Container · FDT frame software · for parameter setting and analysis of units with DTM specification · e.g. ifm sensors with EPS programming interface, · sensors with IO-Link	**E30110**
	LINERECORDER SENSOR · Software for parameter setting and set-up of IO-Link sensors · Recording and distribution of parameter sets (duplication) · Capture and evaluation of sensor values over a longer period of time · Resetting of sensor parameters to factory setting · Application via USB connection cable E30396 (driver is included in the software package)	**ZGS210**
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	**E30398**
	Teach button · for sensors PP0xE, PP052x, PP755x · for memory plug (E30398) · 0.9 m · Housing materials: stainless steel / PA / PMMA	**E30405**
	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LINERECORDER SENSOR"	**E30390**

You can find wiring diagrams and scale drawings from page 539

Description	Order no.
DAkkS calibration certificate for temperature sensors · Number of measuring points: 3-point DAkkS calibration · Measurement points [°C]: 65, 85, 123 (to directive DAkkS-DKD-R 5-1) · Minimum measurement uncertainty [K]: 0.1	ZC0013
DAkkS calibration certificate for temperature sensors · Number of measuring points: 5-point DAkkS calibration · Measurement points [°C]: 20, 65, 85, 100, 123 (to directive DAkkS-DKD-R 5-1) · Minimum measurement uncertainty [K]: 0.1	ZC0014
DAkkS calibration certificate for temperature sensors · Number of measuring points: n-point DAkkS calibration · Measurement points [°C]: number and positions as requested by the customer, maximum 4 points in the range from -20...150 °C (to directive DAkkS-DKD-R 5-1) · Minimum measurement uncertainty [K]: 0.1	ZC0015
Factory calibration certificate for temperature sensors · Number of measuring points: 3-point factory calibration · Measurement points [°C]: 65, 85, 123 (to ISO 9001) · Minimum measurement uncertainty [K]: 0.1	ZC0016
Factory calibration certificate for temperature sensors · Number of measuring points: 5-point factory calibration · Measurement points [°C]: 20, 65, 85, 100, 123 (to ISO 9001) · Minimum measurement uncertainty [K]: 0.1	ZC0017
Factory calibration certificate for temperature sensors · Number of measuring points: n-point factory calibration · Measurement points [°C]: number and positions as requested by the customer, maximum 4 points in the range from -20...150 °C (to ISO 9001) · Minimum measurement uncertainty [K]: 0.1	ZC0018

Thermowells for temperature sensors

Type	Description	Order no.
	Welding thermowell · Ø 10 mm · Probe length: 173 mm · Housing materials: stainless steel 316Ti / 1.4571	E35220
	Welding thermowell · Ø 35 mm · Probe length: 126.5 mm · for type TA343x, TAA431, TAD191 · Housing materials: stainless steel 316L / 1.4404	E30403
	Thermowell for temperature sensors · G ½ · Probe length: 53 mm · for type TA34xx, TAA431, TAD191 · Housing materials: stainless steel 316L / 1.4404	E30393
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 82 mm · Housing materials: stainless steel 316L / 1.4404	E35010
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 182 mm · Housing materials: stainless steel 316L / 1.4404	E35020
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 282 mm · Housing materials: stainless steel 316L / 1.4404	E35030
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 482 mm · Housing materials: stainless steel 316L / 1.4404	E35050
	Thermowell for temperature sensors · Ø 10 mm - ½" NPT · Probe length: 72 mm · Housing materials: stainless steel 316Ti / 1.4571	E35110

Type	Description	Order no.
	Thermowell for temperature sensors · Ø 6 mm - G ½ · Probe length: 82 mm · Housing materials: stainless steel 316Ti / 1.4571	**E37010**
	Thermowell for temperature sensors · Ø 6 mm - G ½ · Probe length: 182 mm · Housing materials: stainless steel 316Ti / 1.4571	**E37020**
	Thermowell for temperature sensors · Ø 6 mm - G ½ · Probe length: 282 mm · Housing materials: stainless steel 316Ti / 1.4571	**E37030**

Adapters

Type	Description	Order no.
	Thread cover · Ø 24 mm - G ½ · to cover the G½ thread for installation in hygienic areas · for type TR · Housing materials: stainless steel	**E30091**
	Mounting set · for direct connection of temperature sensors TT to control monitors TR · Housing materials: stainless steel	**E30017**
	Clamp fitting · Ø 6/8/10 mm - G ½ · for temperature sensors · Housing materials: stainless steel / FPM	**E30018**
	Clamp fitting · Ø 6/8/10 mm - ½" NPT · for temperature sensors · Housing materials: stainless steel / FPM	**E30025**
	Mounting adapter · M18 x 1.5 - Ø 23 mm · PVC adapter to be glued into the pipe · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: PVC	**E40148**
	Adapter · M18 x 1.5 - G ½ · Housing materials: stainless steel 316L / 1.4404 / O-ring: FPM (fitted)	**E30073**
	Welding adapter · M18 x 1.5 - Ø 24 mm · Insertion depth of the probe of SID, SFD, TN: · 15 mm · Housing materials: stainless steel 316L / 1.4404	**E40124**
	Welding adapter · Ø 24.7 mm · ball · for temperature sensors Ø 6 mm · Clamp fitting · Housing materials: stainless steel 316L / 1.4404	**E30108**
	Welding adapter · Ø 25 mm · ball · for temperature sensors Ø 6 mm · Clamp fitting · Housing materials: stainless steel 316L / 1.4404 / rubber ring: PEEK	**E30407**
	Progressive ring fitting for temperature sensors · Ø 10 mm - G ½ · Housing materials: stainless steel 316Ti / 1.4571	**E30016**

You can find wiring diagrams and scale drawings from page 539

Type	Description	Order no.
	Progressive ring fitting for temperature sensors · Ø 10 mm - ½" NPT · Housing materials: stainless steel 316Ti / 1.4571	**E30024**
	Progressive ring fitting for temperature sensors · Ø 6 mm - G ½ · Housing materials: stainless steel 316Ti / 1.4571	**E30047**
	Progressive ring fitting for temperature sensors · Ø 6 mm - ¼" NPT · Housing materials: stainless steel 316Ti / 1.4571	**E30049**
	Progressive ring fitting for temperature sensors · Ø 6 mm - G ¼ · Housing materials: stainless steel 316Ti / 1.4571	**E33431**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: titanium	**E40114**
	Adapter · M18 x 1.5 - M12 x 1 · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: titanium	**E40128**
	Adapter · M18 x 1.5 - L18 · for mounting in T-pieces · Insertion depth of the probe of SID, SFD, TN: · 28.5 mm · Housing materials: nut: stainless steel 316Ti / 1.4571 / adapter: stainless steel 316L / 1.4404 / O-ring: FKM 16 x 1.5 gr 70° Shore A	**E40104**
	Adapter · M18 x 1.5 - M12 x 1 · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: stainless steel 316L / 1.4404	**E40101**
	Adapter · M18 x 1.5 - M12 x 1 · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: brass	**E40100**
	Adapter · M18 x 1.5 - G ¼ · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: stainless steel 316L / 1.4404	**E40099**
	Adapter · M18 x 1.5 - G ¼ · Insertion depth of the probe of SID, SFD, TN: · 13.5 mm · Housing materials: brass	**E40098**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: stainless steel 316L / 1.4404	**E40096**
	Adapter · M18 x 1.5 - G ½ · Insertion depth of the probe of SID, SFD, TN: · 21 mm · Housing materials: brass	**E40097**
	Adapter · M18 x 1.5 - ½" NPT · Insertion depth of the probe of SID, SFD, TN: · 23 mm · Housing materials: stainless steel 316L / 1.4404	**E40107**

Type	Description	Order no.
	Adapter · M18 x 1.5 - G ½ · Housing materials: stainless steel 316L / 1.4404 / O-ring: FPM (fitted)	**E30073**
	Protective cover · with lead seal option · for pressure sensors type PK · for temperature sensors type TK · for vibration sensors type VK · Housing materials: PP transparent	**E30094**

Hygienic adapters

Type	Description	Order no.
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33201**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33202**
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33701**
	Clamp adapter · Clamp · 2" · ISO 2852 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33702**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33212**
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33213**
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33712**
	pipe fitting · pipe fitting · pipe fitting · DN50 (2") · DIN 11851 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33713**
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E33222**
	Clamp adapter · Varivent Adapter · Varivent type N · DN40 (1.5"), D = 68 · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33722**
	pipe fitting · SMS pipe fitting · pipe fitting · DN40 (1.5") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33731**

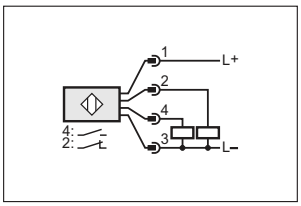
You can find wiring diagrams and scale drawings from page 539

Type	Description	Order no.
	pipe fitting · SMS pipe fitting · pipe fitting · DN50 (2") · SMS · for units with Aseptoflex Vario adapter · Metal to metal seal · Housing materials: stainless steel 316L / 1.4435	**E33732**
	Welding adapter · Ø 50 mm · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	**E30122**
	sealing plug · sealing plug · Housing materials: adapter: stainless steel 316L / 1.4435 / sealing ring: FKM	**E30128**
	Clamp adapter · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	**E33401**
	Clamp adapter · Clamp · 2" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	**E33402**
	pipe fitting · SMS pipe fitting · DN25 · SMS · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	**E33430**
	Welding adapter · G ½ - Ø 30 mm · for tanks · Housing materials: stainless steel 316L / 1.4435	**E43300**
	Welding adapter · G ½ - Ø 29 mm · for pipes · Housing materials: stainless steel 316L / 1.4435	**E43301**
	pipe fitting · G ½ · pipe fitting · DN25 (1") · DIN 11851 · Housing materials: stainless steel 316L / 1.4435	**E43304**
	pipe fitting · G ½ · pipe fitting · DN40 (1.5") · DIN 11851 · Housing materials: stainless steel 316L / 1.4435	**E43305**
	Clamp adapter · G ½ · Varivent type F · DN25 (1"), D = 50 · Housing materials: stainless steel 316L / 1.4435	**E43306**
	Clamp adapter · G ½ · Varivent type N · DN40 (1.5"), D = 68 · Housing materials: stainless steel 316L / 1.4435	**E43307**
	sealing plug · G ½ · Housing materials: stainless steel 316L / 1.4435	**E43308**
	Welding adapter · G ½ - Ø 35 mm · Housing materials: stainless steel 316L / 1.4404	**E30055**

Type	Description	Order no.
	Welding adapter · G ½ - Ø 45 mm · Housing materials: stainless steel 316L / 1.4404	**E30056**
	Welding adapter · G ½ - Ø 30 mm · for tanks · with leakage port · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43309**
	Welding adapter · G ½ - Ø 29 mm · for pipes · with leakage port · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43310**
	Clamp adapter · G ½ · with leakage port · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43311**
	Clamp adapter · G ½ · with leakage port · Clamp · 2" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	**E43312**
	Welding mandrel · G ½ · carries away heat during welding · Housing materials: brass	**E43314**
	Welding adapter · G ½ · with leakage port · Housing materials: stainless steel 316L / 1.4404	**E43315**

Wiring diagrams

1



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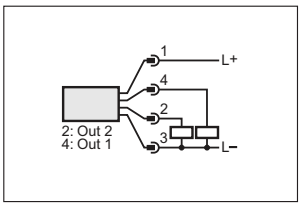

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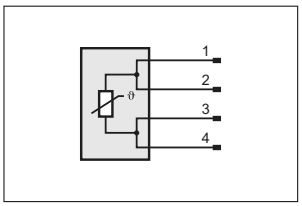

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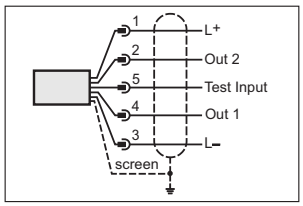

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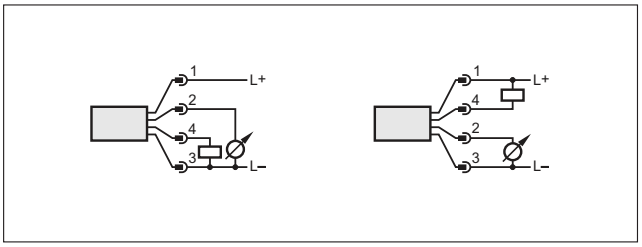

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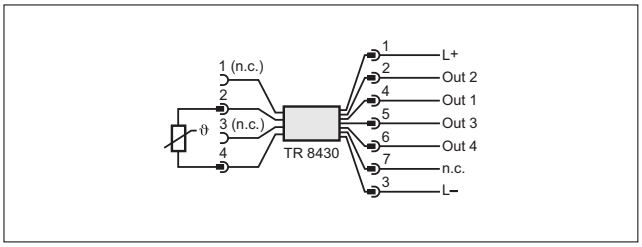

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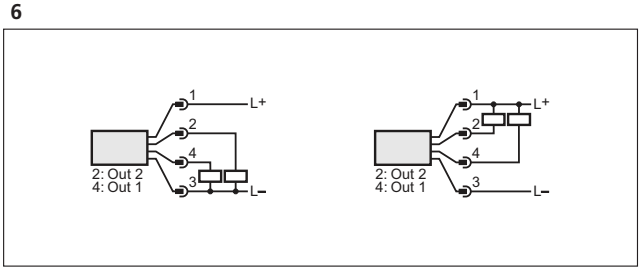
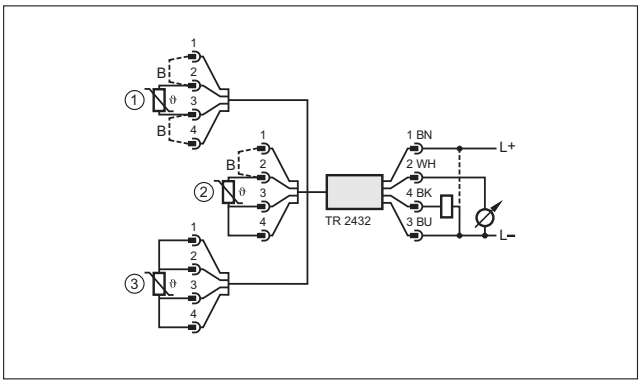


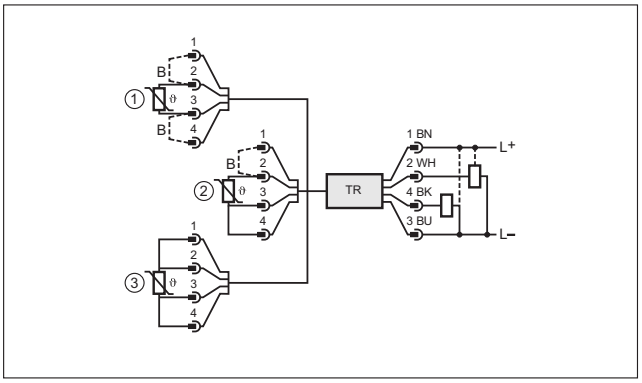
Wiring diagrams

8



1: Two-wire sensor, 2: Three-wire sensor, 3: Four-wire sensor, B: link

9



1: Two-wire sensor, 2: Three-wire sensor, 3: Four-wire sensor, B: link

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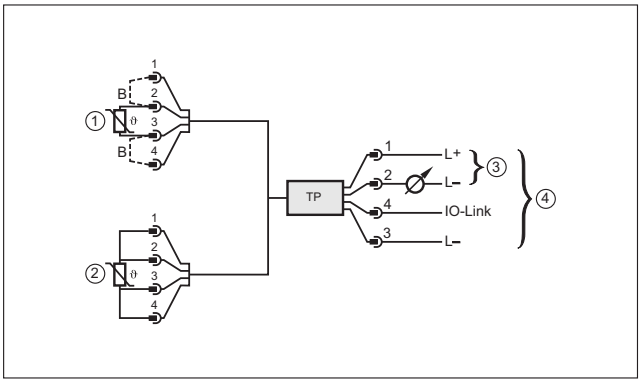
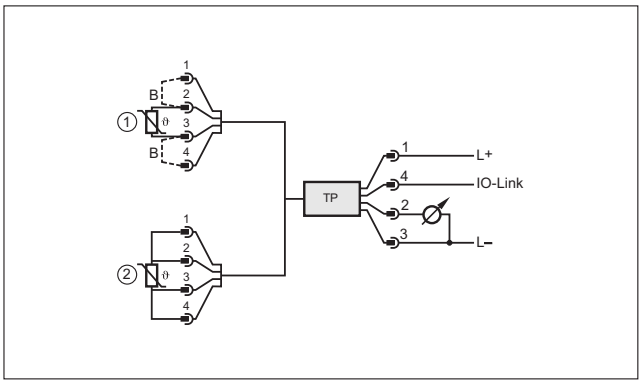


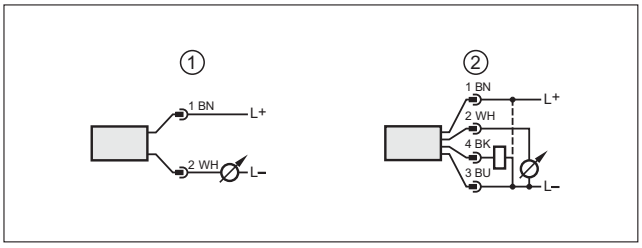
1: Two-wire sensor, 2: Four-wire sensor, 3: Operation as 2-wire temperature transmitter, 4: Operation as 3-wire unit, IO-Link communication possible, B: link

11



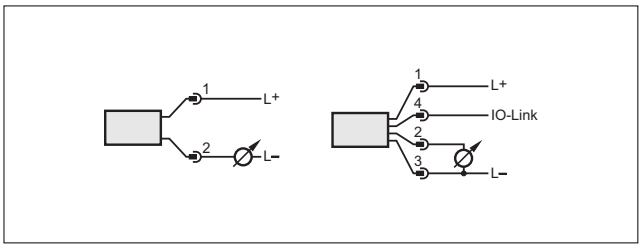
2: Two-wire sensor, 2: Four-wire sensor, B: link

12



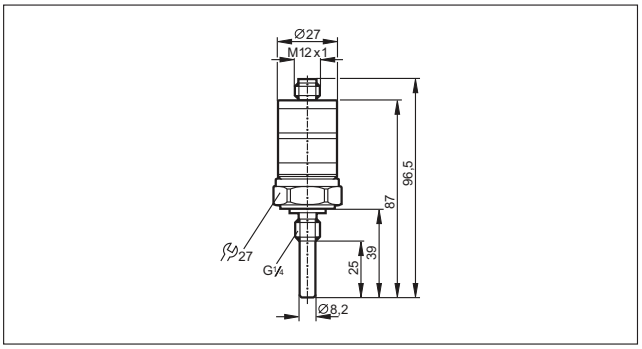
1: 2-wire operation, 2: 3-wire operation

13



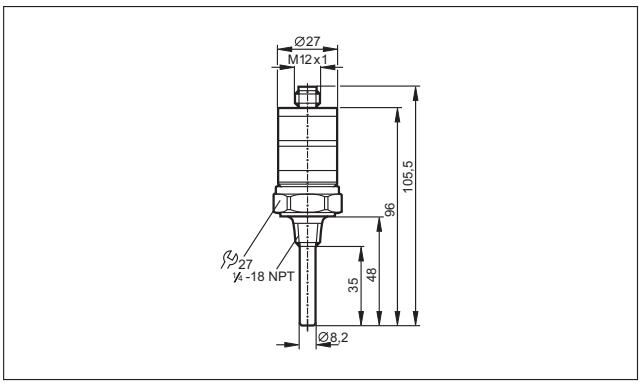
Scale drawings / drawing no. – CAD download: www.ifm.com

1



Scale drawings / drawing no. – CAD download: www.ifm.com

2



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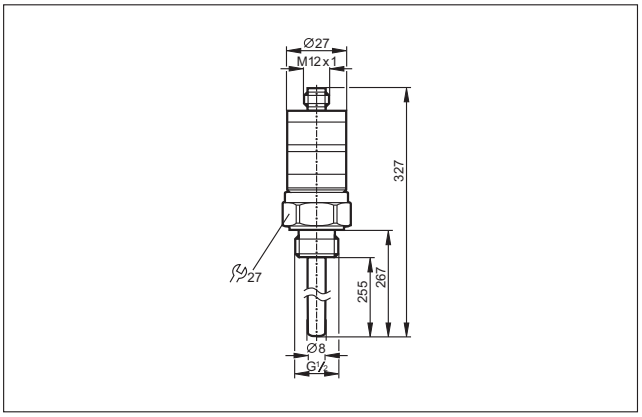

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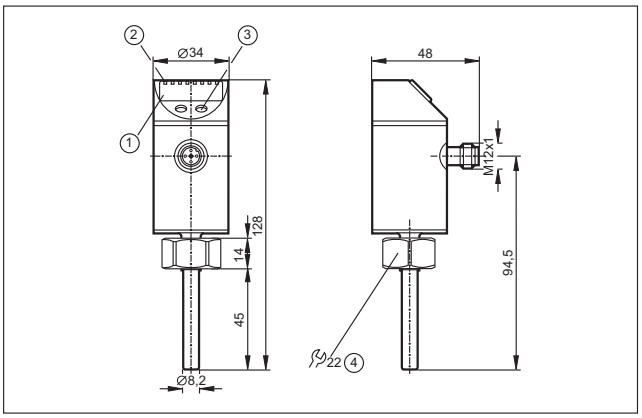

1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: internal thread M18 x 1.5

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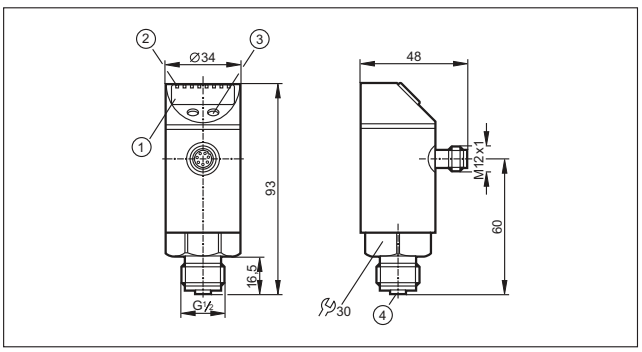

1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: connection for temperature sensor

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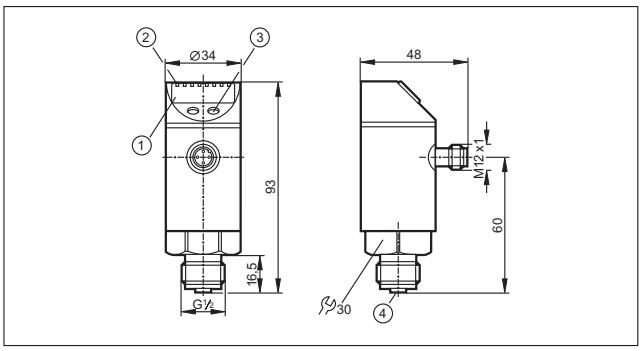

1: 4-digit alphanumeric display, 2: LEDs, 3: Programming button, 4: connection for temperature sensor

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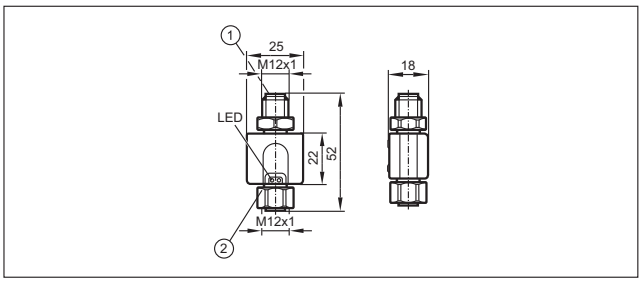

1: connection for voltage supply and output signals, 2: connection for temperature sensor

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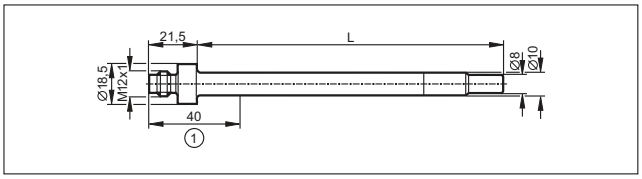

1: plug area

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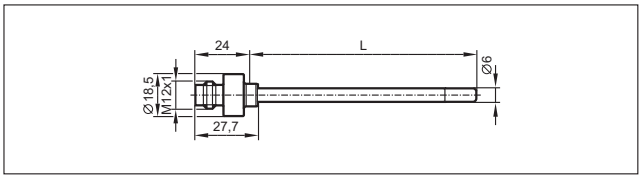

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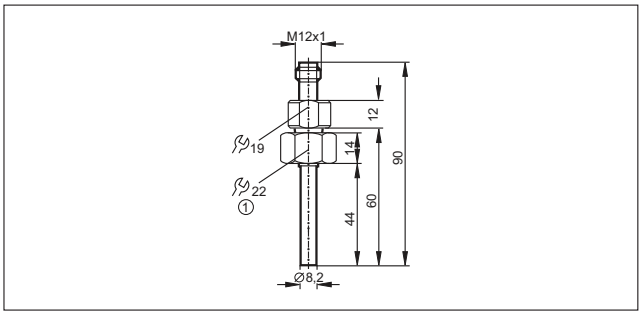

1: internal thread M18 x 1.5

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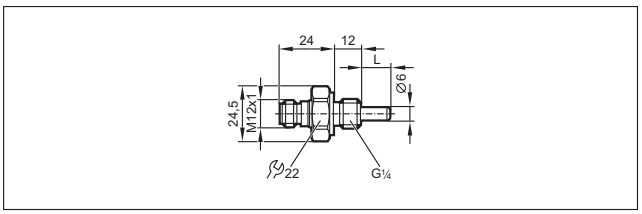

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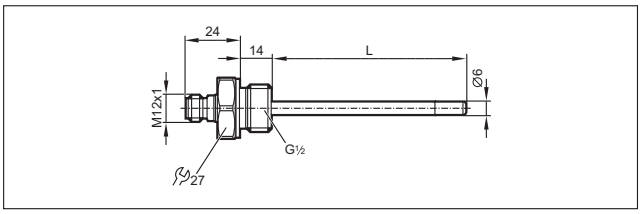

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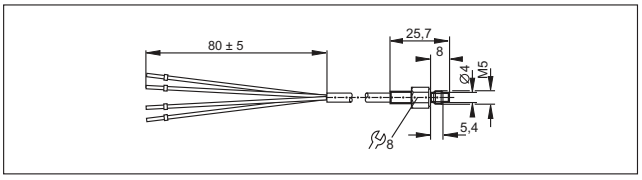

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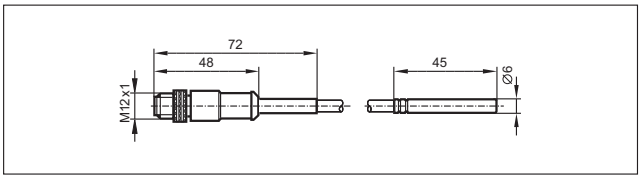

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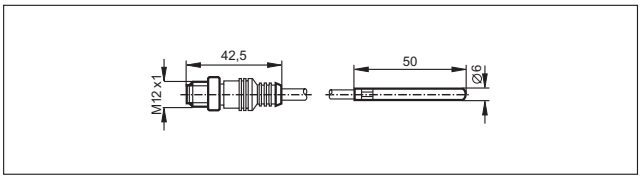

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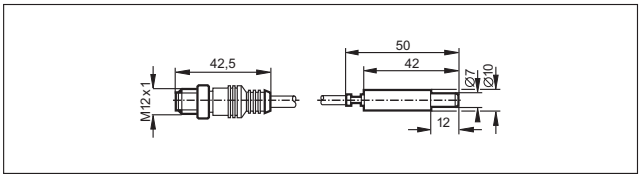

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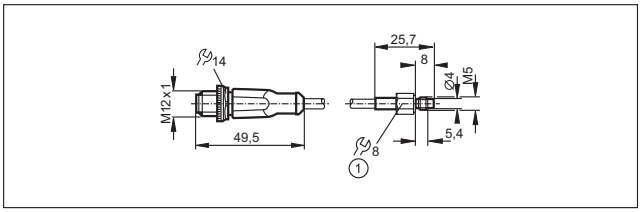

1: tightening torque 1.5 Nm

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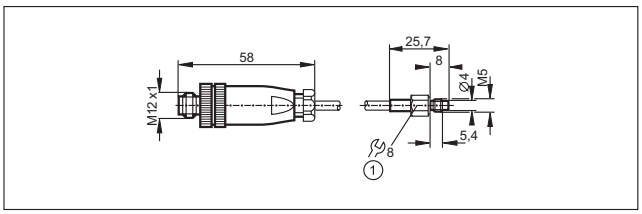

1: tightening torque 1.5 Nm

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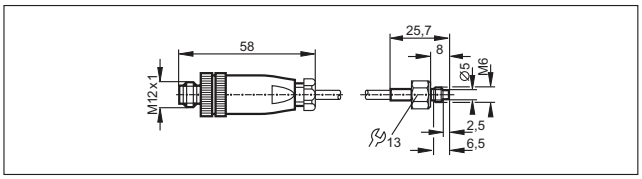

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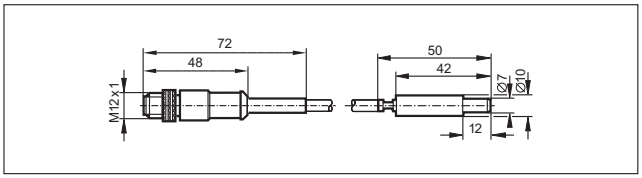

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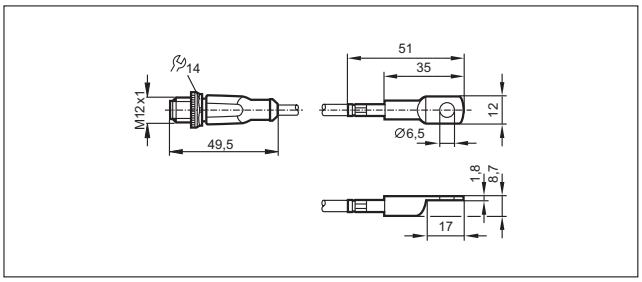

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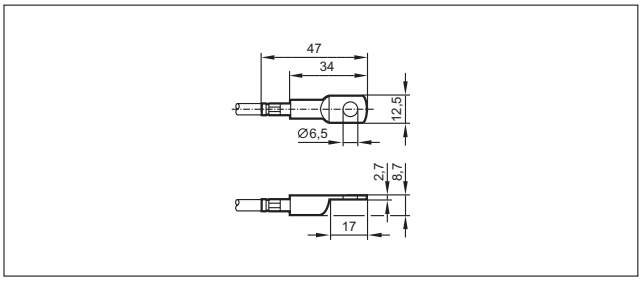

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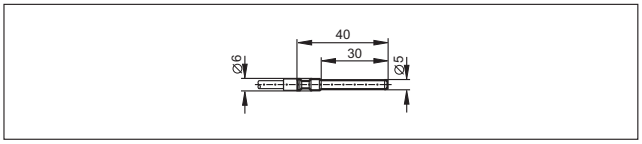

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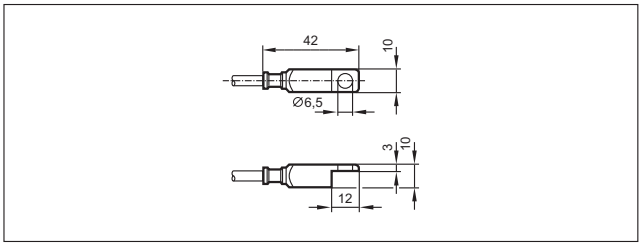

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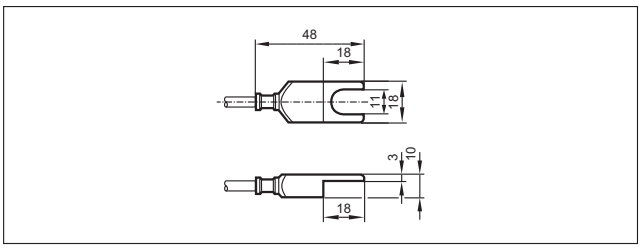

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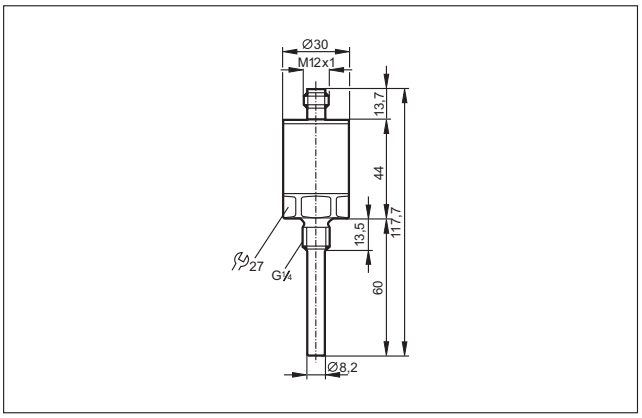

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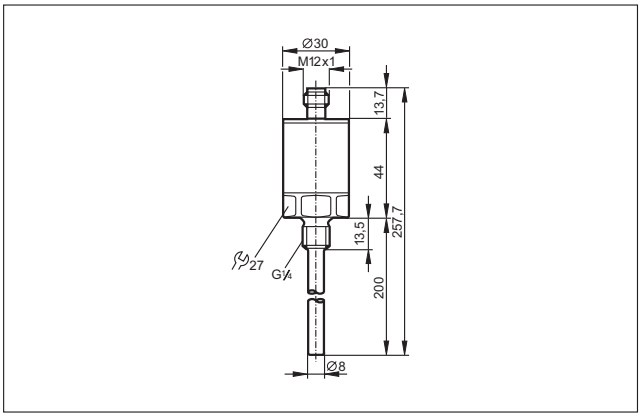

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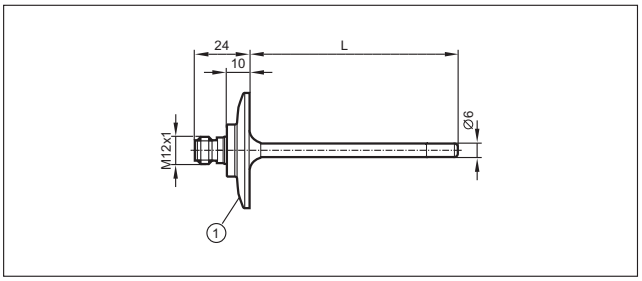

1: 1.5" clamp (ISO 2852)

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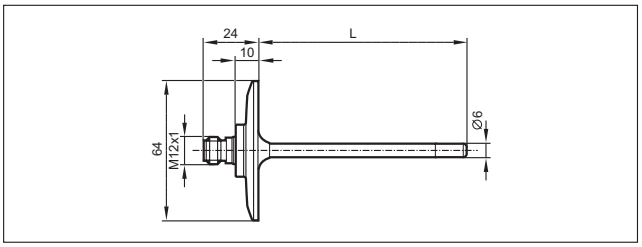

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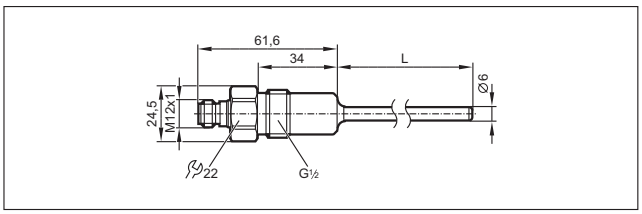

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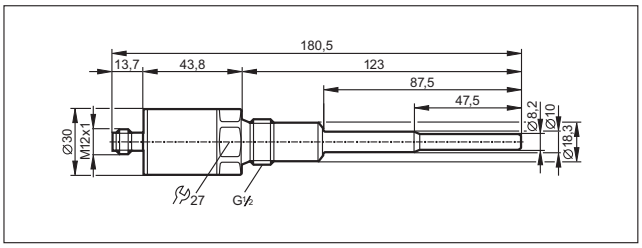

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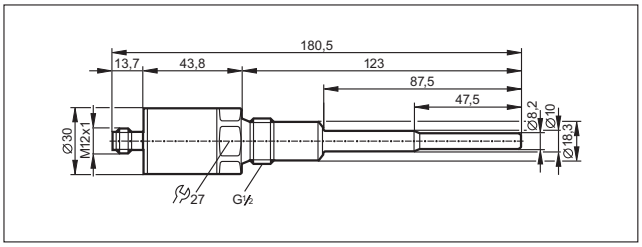

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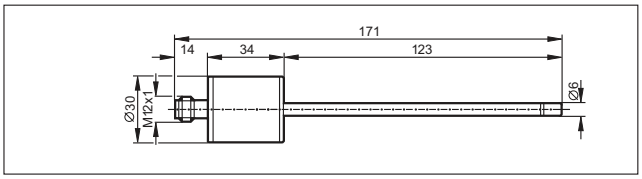

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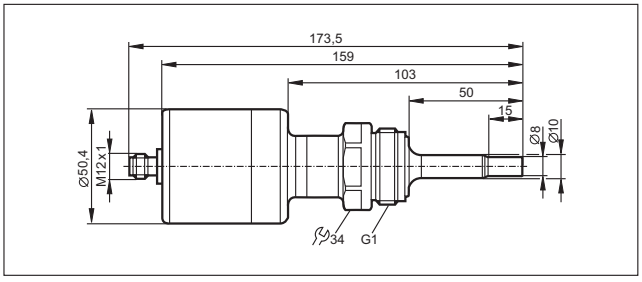

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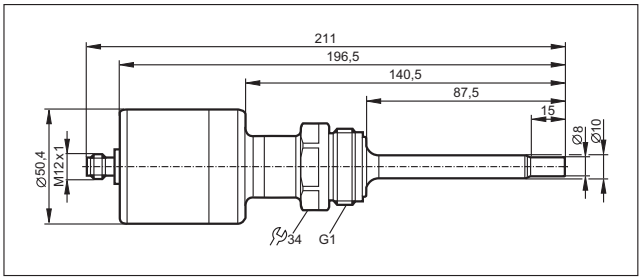

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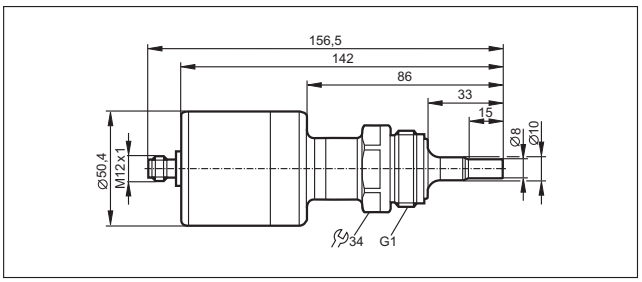

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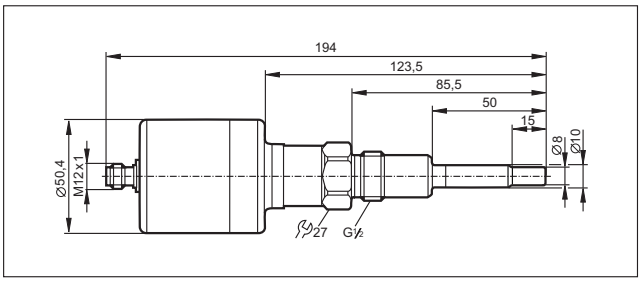

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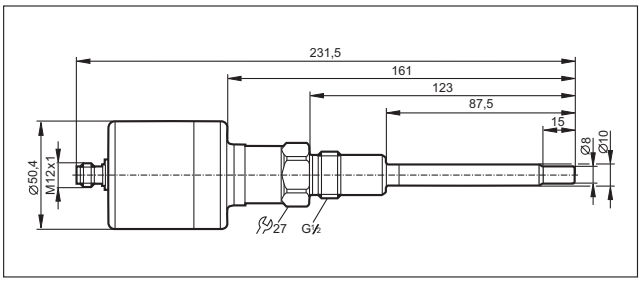

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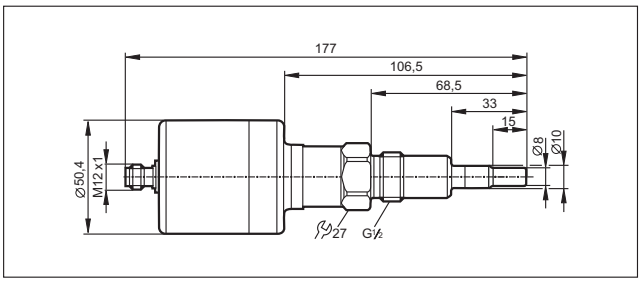

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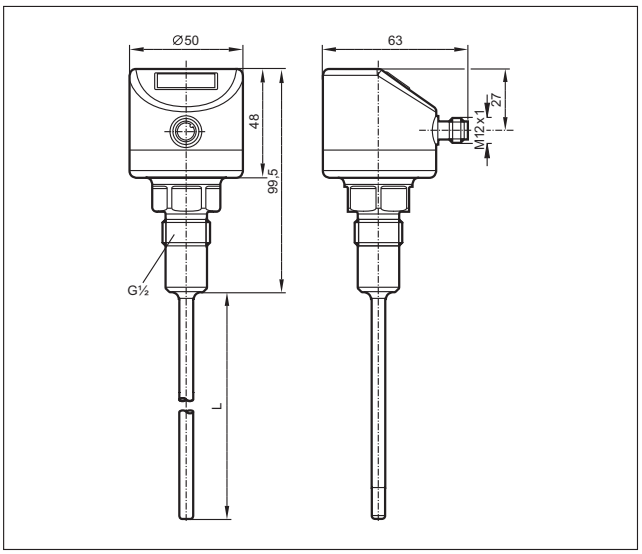

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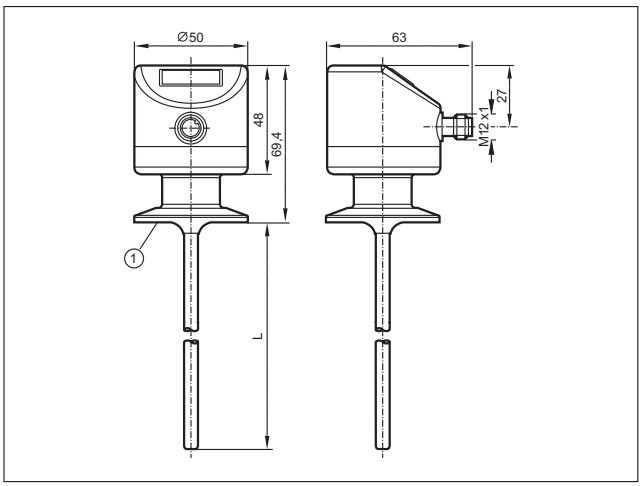
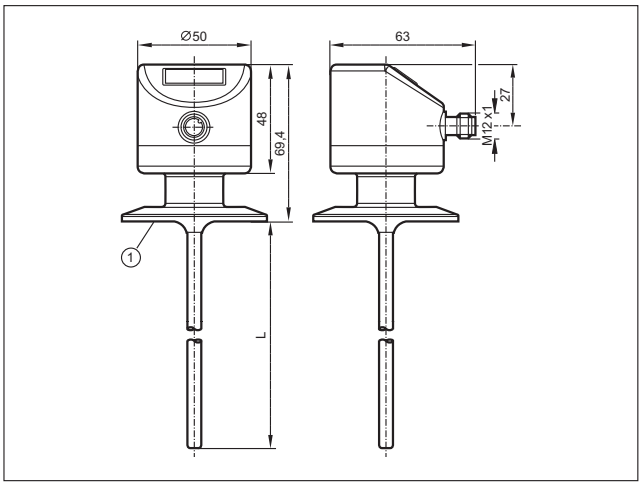


1.5" clamp (ISO 2852)

42



1: 2" triclamp (ISO 2852)

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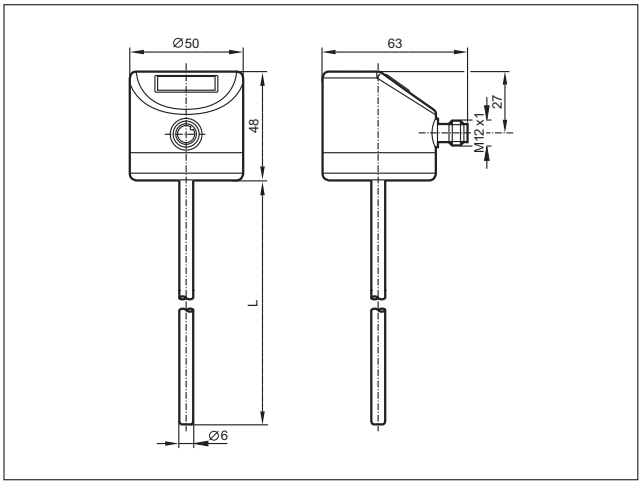

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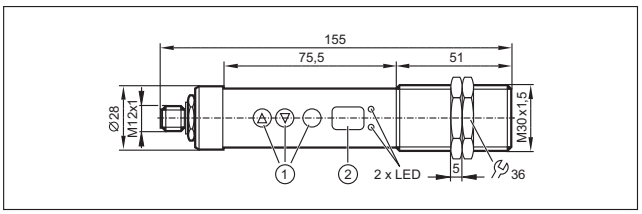
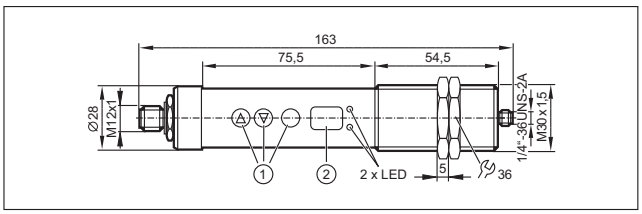


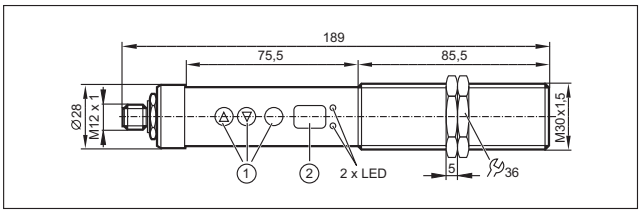
1: Programming buttons, 2: 7-segment LED display

46



1: Programming buttons, 2: 7-segment LED display

45



1: Programming buttons, 2: 7-segment LED display

- **Integrated flow, temperature and wire-break monitoring**
- **Adjustable switch points for flow and temperature**
- **Multicolour LED bar graph display for quick setting**
- **Signal output using potential-free relay contacts (changeover contacts)**
- **Connection options: Insulation displacement / screw terminals and cage clamps**

Evaluation systems for flow sensors

Various evaluation systems are offered for flow sensors types SF/SP. The VS3000 series ensures high functionality in a space-saving housing for control cabinet mounting. A multi-coloured LED bar graph indicates the flow. Moreover it is signalled via LEDs and relay outputs when an adjustable medium temperature has been reached or if there is a possible wire break from the sensor to the electronics. The operating elements are located on the front. The evaluation systems are available both for AC and for DC supply voltage.

Sensors and control monitors are designed and approved for use in hazardous areas for applications in potentially explosive atmospheres. Wire monitoring between sensor and evaluation system as well as medium-temperature monitoring with optical display and signalling via potential-free relay outputs are also standard here.

The evaluation systems for local mounting are connected directly at the measuring point with the flow sensor via M12 connectors. The units are set via pushbutton with feedback via the LED bar-graph display. Electronic locking of the setting values and the possibility to reset the parameters to the factory setting provide additional safety.

Evaluation system for control cabinet mounting.

Evaluation system for local mounting.

System overview	Page
Control monitors for industrial applications	548
Control monitors with ATEX approval	549
Control monitors with ATEX approval 2G	549
Accessories	549
Wiring diagrams	550
Scale drawings / drawing no. – CAD download: www.ifm.com	551

Control monitors for industrial applications

Type	U_b / Tolerance [V] / [%]	Current consumpt. [mA]	Power consumpt. [VA]	Power-on delay time [s]	Output when flow is present	Output when temperature is exceeded	Output in case of wire break	Drawing no.	Order no.
Combicon connector · Wiring diagram no. 3									
	90...240 AC / -5 /+10	–	4	10...80	relay energised	relay energised	relay de-energised	1	**SN0150***
Combicon connector · Wiring diagram no. 4									
	90...240 AC / -5 /+10	–	4	10...80	relay energised	–	relay de-energised	1	**SN0151***
Combicon connector · Wiring diagram no. 5									
	24 DC / +10 / -20	90	–	10...80	relay energised	relay energised	relay de-energised	1	**SR0150***
Combicon connector · Wiring diagram no. 6									
	24 DC / +10 / -10	90	–	10...80	relay energised	–	relay de-energised	1	**SR0153***
M12 connector · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150									
	19...36 DC	70	–	10	no / nc programmable	–	–	2	**SR5900**
1/2" UNF-Connector · Wiring diagram no. 2 · Connector group 30									
	85...265 AC / -5 / +10	–	< 3.5	10	no / nc programmable	–	–	3	**SR5906***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Control monitors with ATEX approval

Type	U_b / Tolerance [V] / [%]	Current consumpt. [mA]	Power consumpt. [VA]	Power-on delay time [s]	Output when flow is present	Output when temperature is exceeded	Output in case of wire break	Draw-ing no.	Order no.
15 terminals...2.5 mm²									
	230 AC / ± 10	–	5	30	relay energised	–	relay de-energised	4	**SN2301***
	110 AC / ± 10	–	5	30	relay energised	–	relay de-energised	4	**SN2302***
	24 DC / ± 10	125	–	30	relay energised	–	relay de-energised	4	**SR2301***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Control monitors with ATEX approval 2G

Type	U_b / Tolerance [V] / [%]	Current consumpt. [mA]	Power consumpt. [VA]	Power-on delay time [s]	Output when flow is present	Output when temperature is exceeded	Output in case of wire break	Draw-ing no.	Order no.
15 terminals...2.5 mm² · Wiring diagram no. 7									
	24 DC / ± 15	100	–	10	relay energised	–	–	5	**SR307A***

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Accessories

Type	Description	Order no.
	Combicon connector · with cage clamps 4 poles · Housing materials: current carrying parts: copper alloy tin-plated	**E40171**

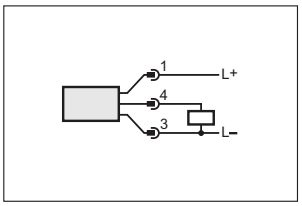
You can find wiring diagrams and scale drawings from page 550

Wiring diagrams

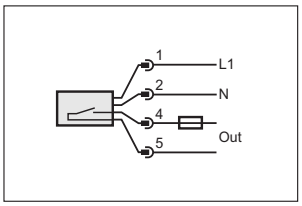
Core colours

BN	brown
BU	blue
BK	black
WH	white
GY	grey

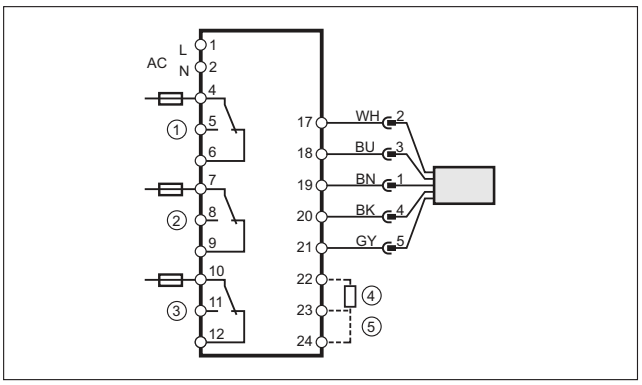
1



2

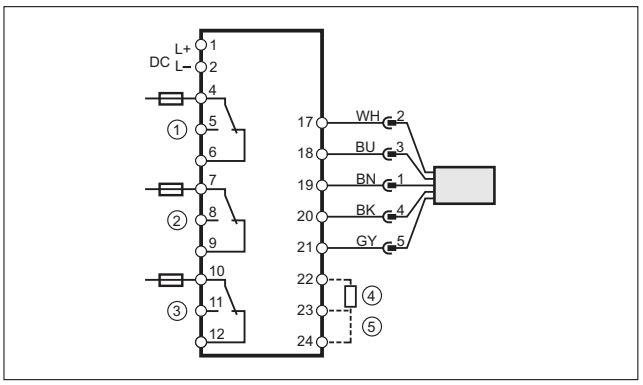


3



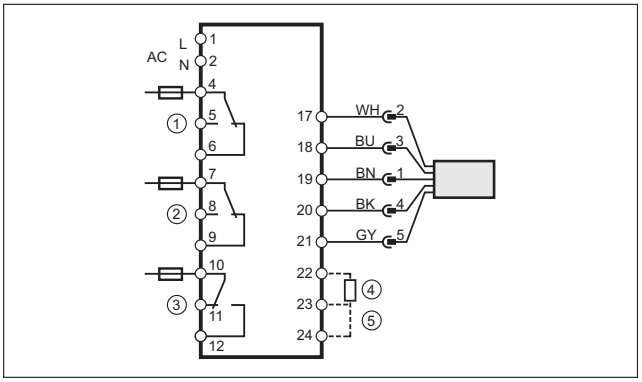
1: Flow monitoring, 2: Wire break monitoring, 3: Temperature monitoring, 4: Power-on delay time, 5: Selection liquid / gas

5



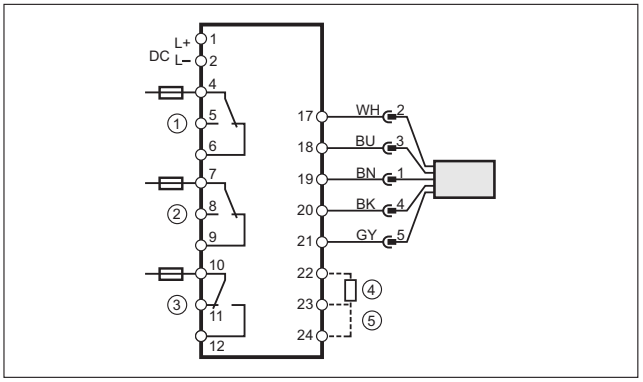
1: Flow monitoring, 2: Wire break monitoring, 3: Temperature monitoring, 4: Power-on delay time, 5: Selection liquid / gas

4



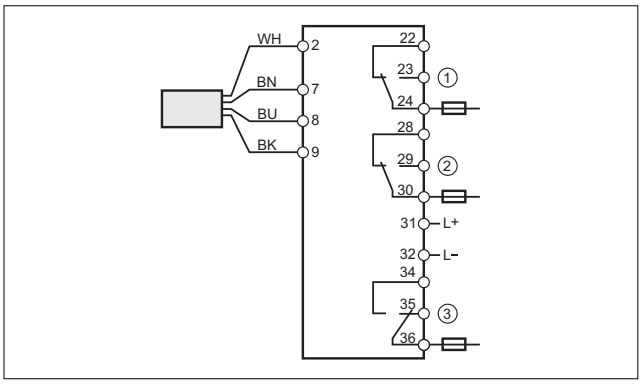
1: Flow monitoring, 2: Wire break monitoring, 3: Temperature monitoring, 4: Power-on delay time, 5: Selection liquid / gas, Note: miniature fuse to IEC60127-2 sheet 1,, ≤ 5 A (fast acting)

6



1: Flow monitoring, 2: Wire break monitoring, 3: Temperature monitoring, 4: Power-on delay time, 5: Selection liquid / gas, Note: miniature fuse to IEC60127-2 sheet 1,, ≤ 5 A (fast acting)

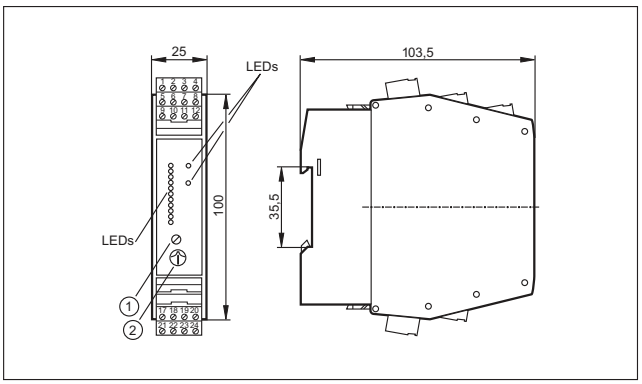
7



1: Flow monitoring, 2: Fault monitoring, 3: Temperature monitoring, Note: miniature fuse to IEC60127-2 sheet 1,, ≤ 5 A (fast acting), Place the fuse outside the hazardous area.

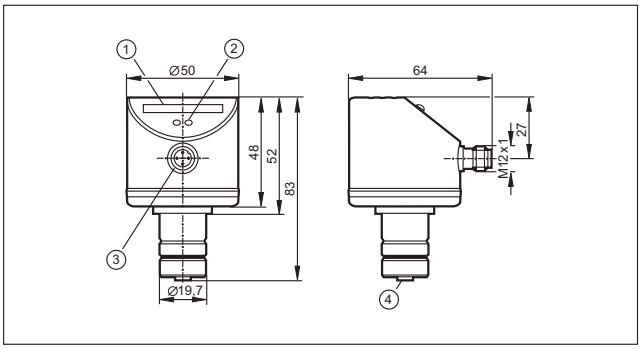
Scale drawings / drawing no. – CAD download: www.ifm.com

1



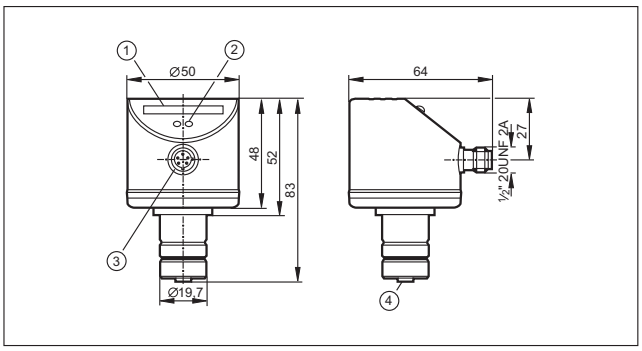
1: Potentiometer (switch point flow), 2: Potentiometer (switch point temperature)

2



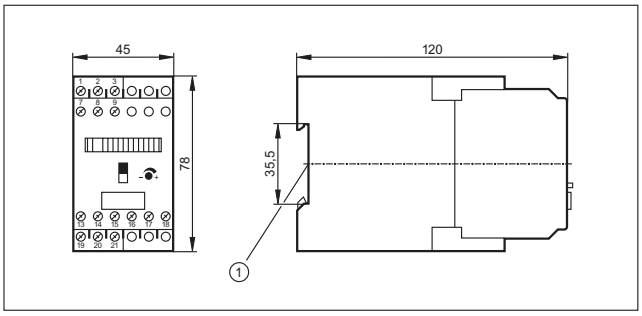
1: LED display, 2: setting pushbutton, 3: connection for voltage supply and output signals, 4: connection for flow sensor

3



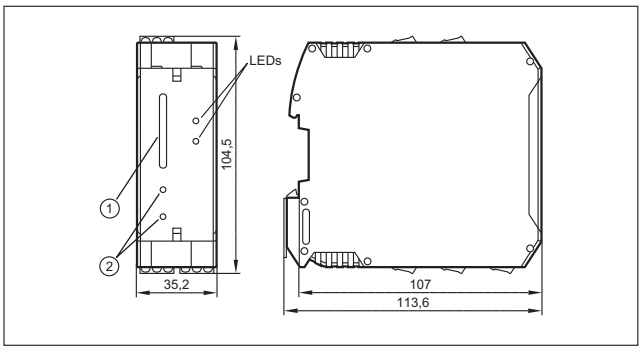
1: LED display, 2: setting pushbutton, 3: connection for voltage supply and output signals, 4: connection for flow sensor

4



1: Mounting on DIN rail

5



1: LED display, 2: setting pushbuttons

- **Dual inductive feedback sensors for pneumatic actuators and valves**
- **Designed for simple fit to common actuators based on VDI / VDE 3845**
- **AS-i versions for even simpler and neater wiring**
- **Compact, weatherproof and low maintenance**
- **Mounting sets available for manual valves and non-standard actuators**

Valve sensors

Butterfly and ball valves in a variety of specifications are common across a broad spectrum of industrial processes. A large proportion of these have been automated with the addition of a pneumatic actuator to drive the valve between its open and closed positions. Feedback can then be added to confirm that the valve has achieved its desired position. This often takes the form of a rotating cam arrangement with a couple of microswitches or small inductive sensors mounted inside a plastic switch box. Such switch boxes can be difficult to set up, suffer from ingress and the cams can sometimes slip under normal plant vibration.

Operating principle

In 1992 ifm electronic released our first alternative to this old and failure prone design. The IND dual sensor is essentially a pair of inductive sensors, operating at different frequencies so as not to interfere with each other, combined into a custom design housing which mechanically matches the top works on standard pneumatic actuators. The dual sensor fits neatly onto the actuator's existing M5 holes. A plastic target "puck" is then fitted onto the slotted actuator shaft, again using the existing threaded hole. The puck has two metal targets spaced 90 degrees apart which are picked up by either the OPEN sensor or the CLOSED sensor.

Advantages

This simple construction addresses all the shortcomings of the switchbox solution. It is weatherproof surviving heavy rain, ice and strong sunshine. It is low profile allowing valve / actuator packages to fit where a switchbox would not. This also means that feedback can be fitted to even small manually operated valves. It is low weight so will not fail even if pumps are causing pipe vibration. It allows for back wiring a local solenoid through the common multi-pin connector, saving on wiring and cable tray costs.

Feedback: Position monitoring of both pneumatically actuated and manual valves is needed for plant control.

System overview	*Page*
Sensors for industrial applications	*554 - 555*
Sensors for industrial applications, AS-i system	*555*
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Sensors with ATEX approval 3D and / or 3G	*556 - 557*
Sensors for rising stem valves	*557 - 558*
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Switching cams for sensors with quarter-turn actuators	*559 - 560*
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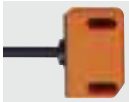
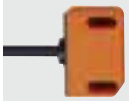
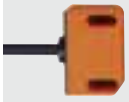
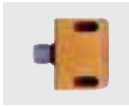
Scale drawings / drawing no. – CAD download: www.ifm.com	*563 - 565*

Sensors for industrial applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	1	**IN5251**
Cable 6 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PC (polycarbonate)	10...36	IP 67	1300	250	1	**IN5304**
Cable 10 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	1	**IN5323**
Cable 2 m · Output function ⎍/⎍ · AC/DC · Wiring diagram no. 2									
	40 x 26 x 40	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	2	**IN0110***
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 13 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	3	**IN5224**
M12 connector · Output function ⎍/⎍ · DC PNP/NPN · Wiring diagram no. 3 · Connector groups 8, 10, 18, 20, 123, 125, 150									
	40 x 26 x 47	4 nf	PBT	10...36	IP 67	250	250	4	**IN5331**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	3	**IN5225**
	40 x 26 x 47	4 nf	PBT	10...36	IP 67	1300	250	4	**IN5327**
M18 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector group 24									
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	5	**IN5285**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M18 connector · Output function ⎍⎽/⎍⎽ · AC/DC · Wiring diagram no. 5 · Connector group 24									
	40 x 26 x 40	4 nf	PBT	20...250	IP 67	25 / 50	350 / 100	6	**IN0108***
Rd 24 x 1/8 connector 6 pins · Output function ⎍⎽/⎍⎽ · DC PNP · Connector groups 34, 40									
	40 x 26 x 60	4 nf	PBT	10...36	IP 67	1300	250	7	**IN5334**
Terminals · Output function ⎍⎽/⎍⎽ · DC PNP · Wiring diagram no. 14									
	33 x 60 x 92	4 nf	PA (polyamide)	10...30	IP 67	500	100	8	**IN5409**

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

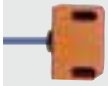
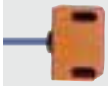
Sensors for industrial applications, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · 1 x 2 inputs · Wiring diagram no. 6 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 128, 129, 150, 152									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	9	**AC2315**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	10	**AC2316**
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	10	**AC2317**

f = flush / nf = non flush

You can find wiring diagrams and scale drawings from page 562

Sensors with ATEX approval 1G / 2G and 1D

Type	Dimensions [mm]	Sensing range [mm]	Material	$U_{nom.}$ at 1 KΩ [V]	U_b [V]	Internal capacit. [nF]	Internal inductance [µH]	f [Hz]	Drawing no.	Order no.
M12 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 7 · Connector group 146										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	11	**NN5008**
Cable 2 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	1	**NN5009**
Cable 10 m · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 8										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	140	1800	1	**NN5011**
M18 connector · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Wiring diagram no. 9 · Connector group 24										
	40 x 26 x 26	4 nf	PBT	8.2 DC	7.5...15 DC	140	130	1800	5	**NN5013**
Rd 24 x 1/8 connector 6 pins · Output function 2 x normally closed · Connection to certified intrinsically safe circuits with the max. values U = 15 V / I = 50 mA / P = 120 mW · Connector groups 34, 56, 64, 65, 137										
	40 x 26 x 60	4 nf	PBT	8.2 DC	–	150	150	250	7	**N95001**
	40 x 26 x 60	4 nf	PBT	8.2 DC	–	100	150	1300	7	**N95002**

f = flush / nf = non flush

Sensors with ATEX approval 3D and / or 3G

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	10	**AC317A**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	10	**AC316A**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 147, 149									
	55 x 60 x 35	4	PBT (Pocan)	26.5...31.6	IP 67	–	–	12	**AC326A**
M12 connector · 1 x 2 inputs · Wiring diagram no. 6 · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	9	**AC315A**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 147, 149									
	40 x 26 x 47	4	PBT	10...30	IP 67	1300	100	13	**IN507A**
Cable 2 m · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 1									
	40 x 26 x 26	4 nf	PBT (Pocan)	10...30	IP 67	1300	100	1	**IN508A**
M12 connector · Output function ⎍/⎍ · DC PNP · Wiring diagram no. 4 · Connector groups 147, 149									
	40 x 26 x 47	4 nf	PBT (Pocan)	10...30	IP 67	1300	100	4	**IN509A**

f = flush / nf = non flush

Sensors for rising stem valves

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable 2 m · Output function 1...5 V analogue · DC · Wiring diagram no. 10									
	67.5 x 43 x 110	–	PA	18...36	IP 65 / IP 67	–	–	14	**IX5002**
Cable 2 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 11									
	67.5 x 43 x 110	–	PA	18...36	IP 65 / IP 67	–	100	15	**IX5006**
Cable with connector 0.3 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 12 · Connector groups 128, 129, 152									
	65 x 52 x 110	–	PA	18...36	IP 65 / IP 67	–	100	16	**IX5010**

You can find wiring diagrams and scale drawings from page 562

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable with connector 0.3 m · Output function 3 x normally open · DC PNP · Wiring diagram no. 12 · Connector groups 128, 129, 152									
	65 x 43 x 110	0.2	PA	18...36	IP 65 / IP 67	–	100	17	**ZZ0214**

Sensors for rising stem valves, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
Cable with connector 0.3 m · AS-i · Wiring diagram no. 6 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 128, 129, 150, 152									
	65 x 52 x 110	–	PA	26.5...31.6	IP 65 / IP 67	–	–	16	**IX5030**

Added value packages with Bürkert solenoid valve

Type	Description	Order no.
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 20 mm · Hole spacing 80 mm · Connector	**AC0017**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 80 mm · Connector	**AC0019**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 130 mm · Connector	**AC0020**

Added value packages with Norgren Herion solenoid valve

Type	Description	Order no.
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 20 mm · Hole spacing 80 mm · Connector	**AC0021**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 80 mm · Connector	**AC0022**
	Added value package AS-i for pneumatic quarter-turn actuators · A/B slave · Shaft height 30 mm · Hole spacing 130 mm · Connector	**AC0023**

Switching cams for sensors with quarter-turn actuators

Type	Description	Order no.
	Target puck · Ø 53 mm · Adjustable between 0° and 360° · Housing materials: Target puck: PVC / screws: high-grade stainless steel	**E10661**
	Target puck · Ø 53 mm · 6 possible switching flag positions · with drain holes · Housing materials: Target puck: PA 6 / screws: high-grade stainless steel	**E17105**
	Target puck · Ø 53 mm · Housing materials: Target puck: PBT / screws: high-grade stainless steel	**E17118**
	Target puck · Ø 53 mm · 8 possible switching flag positions · with drain holes · Housing materials: Target puck: PA 6 / screws: high-grade stainless steel	**E17294**
	Target puck · Ø 53 mm · 3 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	**E17320**
	Target puck · Ø 53 mm · 8 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	**E17321**
	Target puck · Ø 53 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 blue / screws: V2A	**E17322**
	Target puck · Ø 53 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17323**
	Target puck · Ø 55 mm · Inverted function · Housing materials: Target puck: PVC / screws: high-grade stainless steel / Metal ring: stainless steel	**E17205**
	Target puck · Ø 59 mm · for Neles actuator type B1CU 6/20E · Housing materials: Target puck: POM	**E11278**
	Target puck · Ø 65 mm · Housing materials: Target puck: PVC / screws: high-grade stainless steel	**E17148**
	Target puck · Ø 65 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17324**
	Target puck · Ø 65 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17325**
	Target puck · Ø 65 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	**E17326**

You can find wiring diagrams and scale drawings from page 562

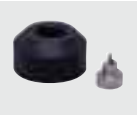
Type	Description	Order no.
	Target puck · Ø 65 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17327
	Target puck · Ø 102 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17328
	Target puck · Ø 102 mm · Housing colour: black · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17329
	Target puck · Ø 102 mm · Housing colour: blue · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17330
	Target puck · Ø 102 mm · Housing colour: red · 8 possible switching flag positions · Housing materials: Target puck: PA 6 / screws: V2A	E17331
	direction indicator black · 12 x 4.8 · For target puck · Housing materials: POM	E17295
	direction indicator yellow · 12 x 4.8 · For target puck · Housing materials: POM	E17296

Accessories for quarter-turn actuator sensors

Type	Description	Order no.
	Spacer · 10 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10579
	Spacer · 3 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10584
	Spacer · 5 mm · for compensation between target pucks and dual sensor IND · Housing materials: PBT	E10585
	Cable gland · M20 x 1.5 · Housing materials: PA 6.6	E12208
	Protective cap · M20 x 1.5 · Housing materials: PA 6.6	E12209
	Plug for covering the oblong holes · Housing materials: EPDM	E12212

Type	Description	Order no.
	reinforcement bracket · for type IND · Housing materials: stainless steel 316Ti / 1.4571	**E11310**
	protective housing · Accessory for valve sensors · for type IND · Housing materials: stainless steel	**E11984**
	Mounting kit · MS-MEC-KU-RA--F04A · for ball valve Mecafrance ISO5211/F04 DN25 PN40 · Detection of the "ON / OFF" position by means of the IND dual sensor	**E10597**
	Mounting kit for limit position feedback · tyco 792E-100 · for Keystone actuators	**E11243**

Accessories for rising stem valve sensors

Type	Description	Order no.
	Mounting adapter · for Kieselmann seat valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E12123**
	Mounting adapter · for Alfa Laval valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E11900**
	Mounting adapter · for Südmo valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E11989**
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M12 · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12009**
	Mounting adapter · for Georg Fischer diaphragm valve Diastar with mounting kit M16 · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12010**
	Mounting adapter · for Bardiani valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	**E12170**
	Mounting adapter · IX / Ø 30 mm · for Gemü actuators with mounting kit · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12042**
	Mounting adapter · IX / Ø 45 mm · for Gemü actuators with mounting kit · accessory for IX5010, IX5030 · Housing materials: adapter: POM / Target: stainless steel	**E12043**

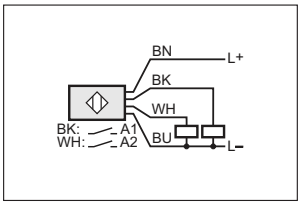
You can find wiring diagrams and scale drawings from page 562

Wiring diagrams

Core colours

BN	brown
BU	blue
BK	black
WH	white
GY	grey

1



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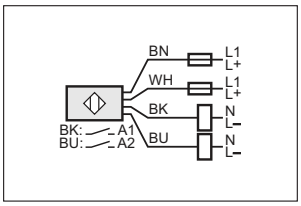

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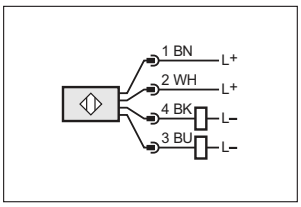

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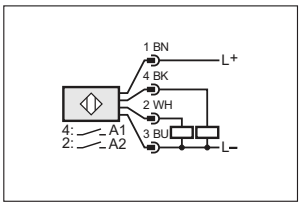

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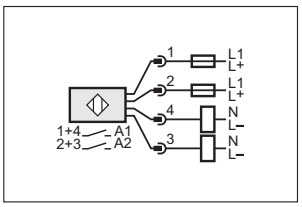

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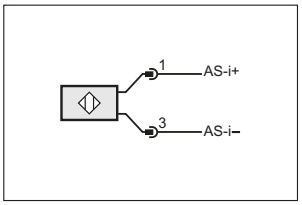

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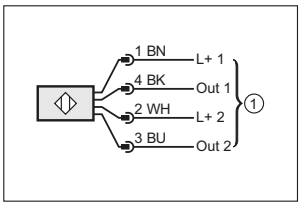

1: connection to NAMUR-amplifier

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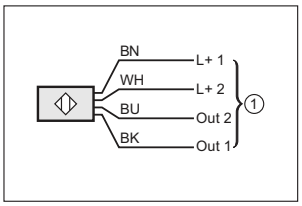

1: connection to NAMUR-amplifier

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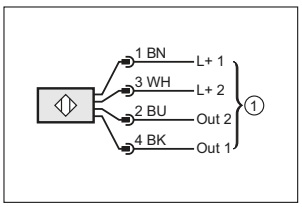

1: connection to NAMUR-amplifier

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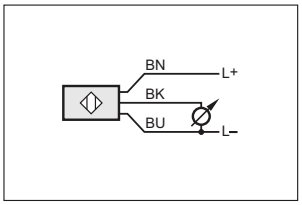

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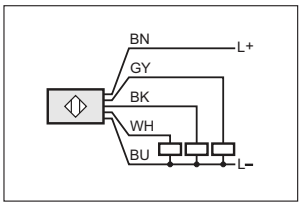

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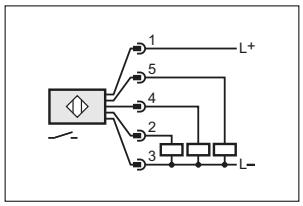

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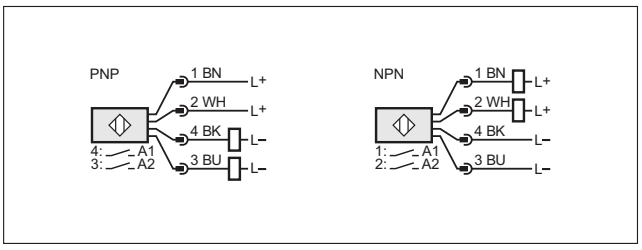

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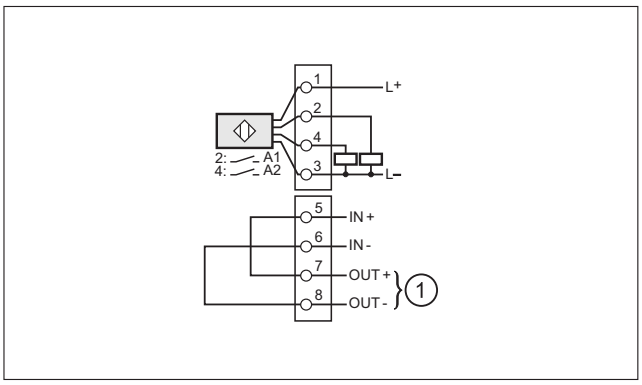

1: solenoid valve

Scale drawings / drawing no. – CAD download: www.ifm.com

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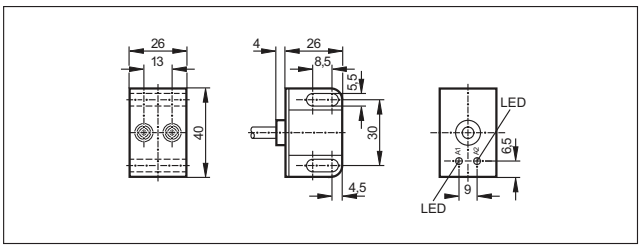

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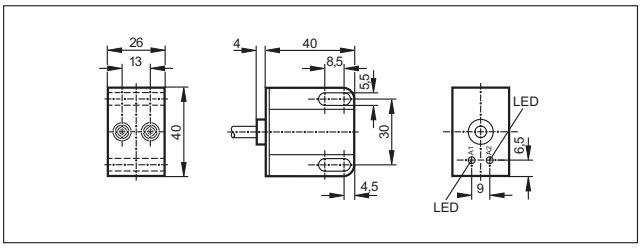

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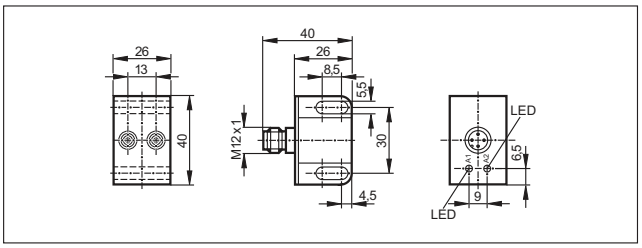

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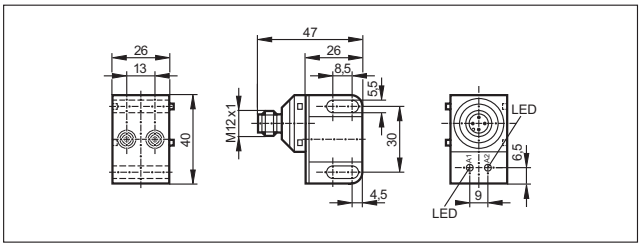

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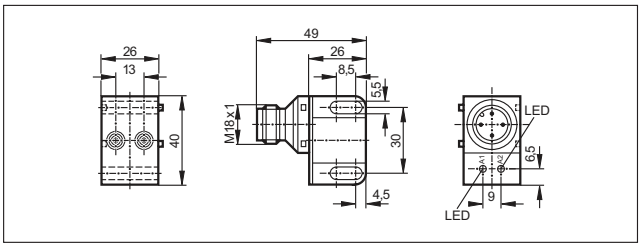

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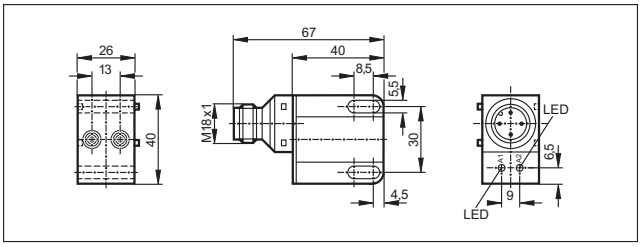

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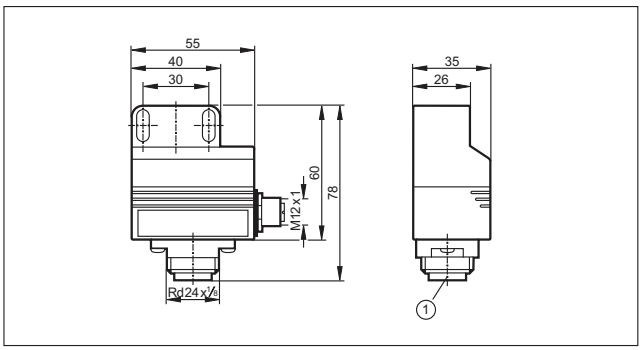

1: field connection

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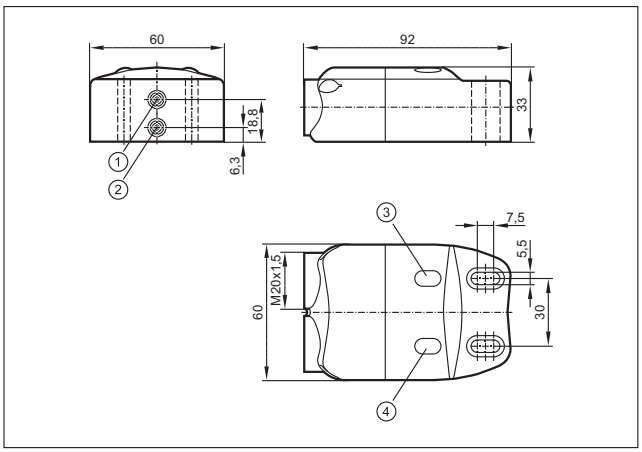
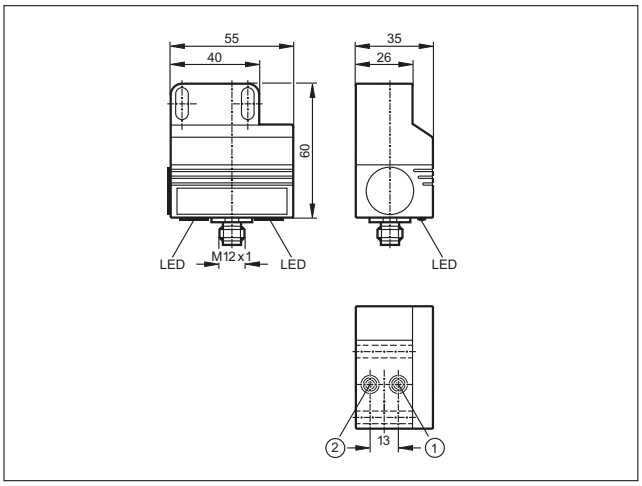


1: sensor 1, 2: sensor 2, 3: LED OUT 2, 4: LED OUT 1

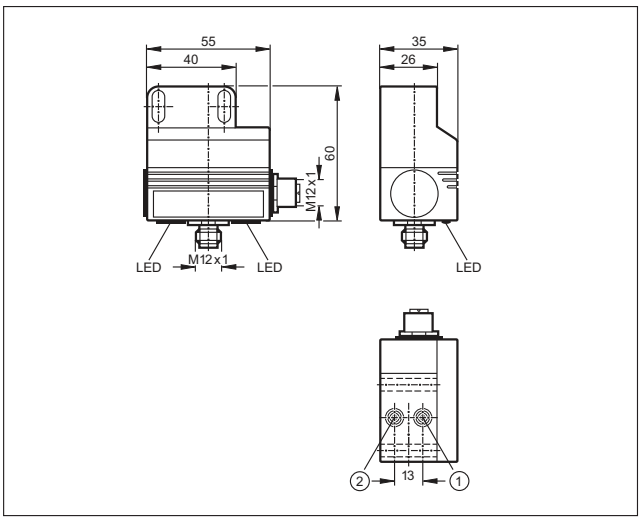
9



1: sensor 1, 2: sensor 2

Scale drawings / drawing no. – CAD download: www.ifm.com

10



1: sensor 1, 2: sensor 2

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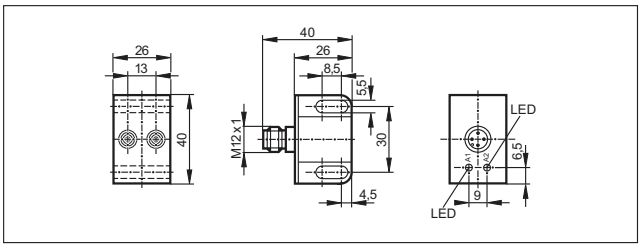

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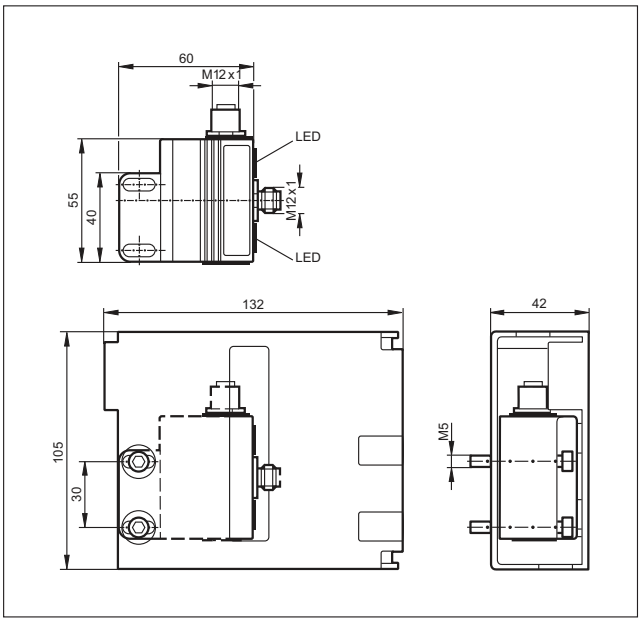

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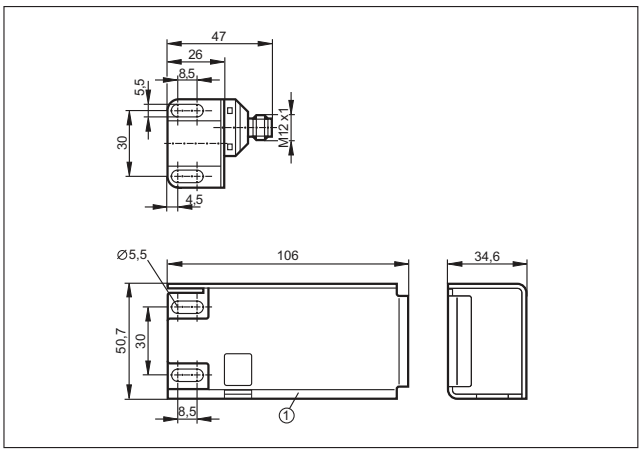
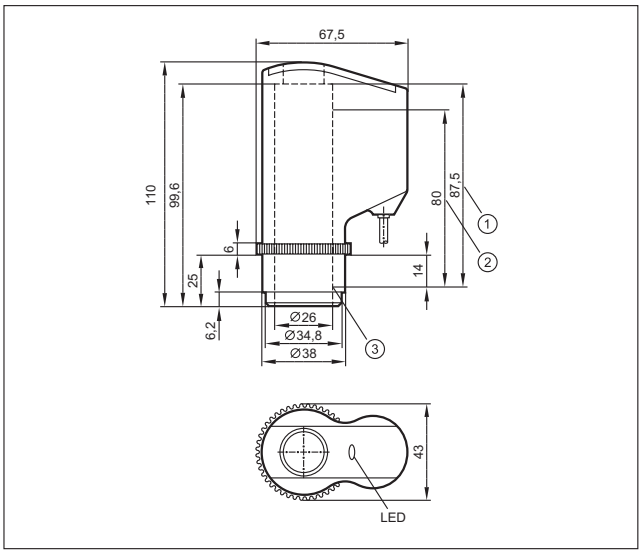


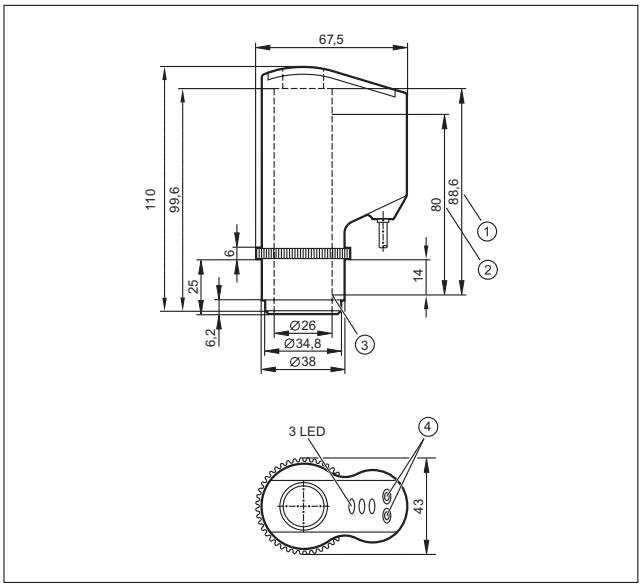
1: protective housing

14



1: Max. spindle stroke, 2: Measuring range, 3: Initial value of the measuring range (zero point)

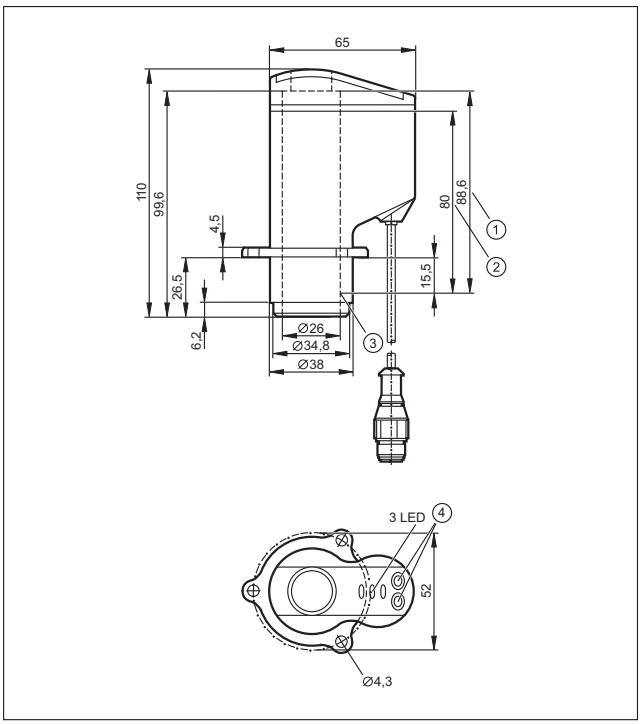
15



1: Max. spindle stroke, 2: Measuring distance, 3: Initial value of the measuring range (zero point), 4: Programming buttons

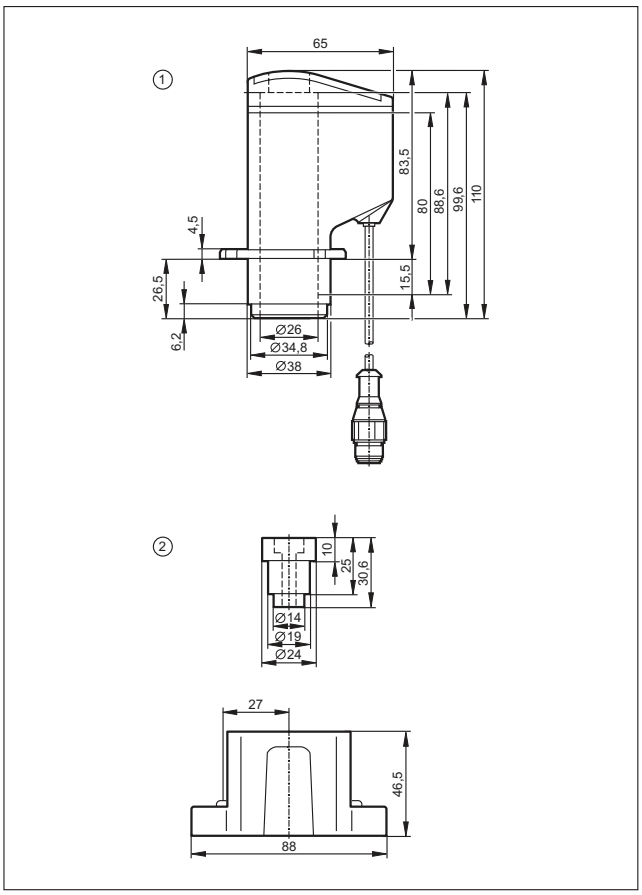
Scale drawings / drawing no. – CAD download: www.ifm.com

16



1: Max. spindle stroke, 2: Measuring distance, 3: Initial value of the measuring range (zero point), 4: Programming buttons

17



1: Valve sensor IX5010, 2: Mounting adapter E11900

Safe, easy, cost-optimised

Reduced cost: Reduced wiring complexity for faster installation and fewer error sources.

Bus system AS-Interface

AS-Interface (AS-i = actuator sensor interface) is a manufacturer-independent standard for the connection of actuators and sensors of the first field level. It is the only wiring system accepted worldwide. With more than 20 million slaves installed AS-i has been tried and tested as a low-cost feeder for all common fieldbuses for many years.

The product range includes AS-i components for different areas from packaging and conveying via silo applications, machine tools, robotics and automation to the food industry and mobile vehicles.

Safe

The sophisticated AS-i technology and the extended diagnostic possibilities provide high reliability and machine uptime.

"Safety at Work" is the extension of the AS-interface by safety-related components. Safety components up to the highest control category 4 to EN 954-1, SIL 3 to IEC 61508 and EN ISO 13849 - 1 / PL e can be connected to AS-i.

Easy

Due to the standardised system, the low wiring complexity and the quick connection technology, AS-i enables simple "Plug & Play". The reduction of terminals leads to reduced documentation.

Data and energy are jointly transmitted via a two-wire cable. The reverse polarity protected insulation displacement technology helps avoid errors. The modularity and the tree structure smoothly fit to the way the plant is put together.

Cost-optimised

It's the end result that matters: Wiring complexity, documentation and set-up times are significantly reduced. The decentralisation of the AS-i participants leads to smaller and less expensive control cabinets. Simple diagnosis and a clear system design result in high machine uptime and avoid downtimes.

	AS-Interface controllers / gateways	568 - 571
	AS-Interface power supplies / earth fault monitors	572 - 573
	AS-Interface I/O modules	574 - 591
	AS-Interface AirBoxes for pneumatics	592 - 595
	AS-Interface sensors	596 - 598
	AS-Interface devices for valves and valve actuators	600 - 601
	AS-Interface expansion	602 - 602
	AS-Interface Safety at Work	604 - 610

AS-Interface controllers / gateways

AS-i controller and gateways have AS-i master functionality and are thus an elementary part of AS-i networks. These components are usually in a control cabinet and ensure data communication. A wide product range provides suitability for different applications. An integrated CoDeSys-programmable PLC allows that the AS-i controllers can also be used as supplementary or independent control system.

System overview	Page
Controllers, gateways and software	568 - 569
Controllers / Gateways	569 - 570
AS-i manuals	570
Scale drawings / drawing no. – CAD download: www.ifm.com	570 - 571

Controllers, gateways and software

Type	Number of AS-i masters	Description	Drawing no.	Order no.
	1	AS-i DP controller E · AS-i PLC with Profibus-DP interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	1	**AC1365**
	2	AS-i DP controller E · AS-i PLC with Profibus-DP interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	1	**AC1366**
	1	AS-i controller E · AS-i controller freely programmable · Profibus DP interface · Ethernet programming interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	1	**AC1355**
	2	AS-i controller E · AS-i controller freely programmable · Profibus DP interface · Ethernet programming interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	1	**AC1356**
	1	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	2	**AC1327**
	2	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	2	**AC1337**
	1	AS-i DeviceNet controller E · AS-i controller with DeviceNet interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	3	**AC1318**
	2	AS-i DeviceNet controller E · AS-i controller with DeviceNet interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	3	**AC1324**

Type	Number of AS-i masters	Description	Drawing no.	Order no.
	1	AS-i CANopen Controller E · AS-i controller with CANopen interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	–	**AC1331**
	2	AS-i CANopen Controller E · AS-i controller with CANopen interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	–	**AC1332**
	1	AS-i controller E · AS-i controller freely programmable · Full master functions · Graphic display · Ethernet programming interface · Housing materials: aluminium / steel sheet galvanised	4	**AC1357**
	2	AS-i controller E · AS-i controller freely programmable · Full master functions · Graphic display · Ethernet programming interface · Housing materials: aluminium / steel sheet galvanised	–	**AC1358**
	–	CoDeSys for Automation Alliance · Software CD for controller E Version 2.3 in several languages · Single user licence · Compatible operating systems: Win2000 (32 bits), WinXP (32/64 bits), WinVista (32/64 bits), Win7 (32/64 bits)	–	**AC0340**

Controllers / Gateways

Type	Number of AS-i masters	Description	Drawing no.	Order no.
	1	SmartLink DP · AS-i gateway / Profibus DP · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	5	**AC1375**
	2	AS-i DP gateway · Full master functions · Graphic display · Profibus DP interface · Housing materials: aluminium / steel sheet galvanised	1	**AC1376**
	1	AS-i Profinet gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profinet RT device class B · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	6	**AC1401**
	2	AS-i Profinet gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profinet RT device class B · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	6	**AC1402**
	1	AS-i Profibus gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profibus DP (DPV0 + DPV1) · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	7	**AC1411**
	2	AS-i Profibus gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profibus DP (DPV0 + DPV1) · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	7	**AC1412**

You can find scale drawings from page 570

Type	Number of AS-i masters	Description	Draw-ing no.	Order no.
	1	AS-i EtherNet/IP gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	6	**AC1421**
	2	AS-i EtherNet/IP gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	6	**AC1422**
	–	AS-i data decoupling module · Combicon connection · Housing materials: Makrolon	8	**AC1250**

AS-i manuals

Type	Description	Order no.
	ecolog asi system · AS-Interface Manual (German)	**AC0115**
	ecolog asi system · AS-Interface Manual (English)	**AC0116**

Scale drawings / drawing no. – CAD download: www.ifm.com

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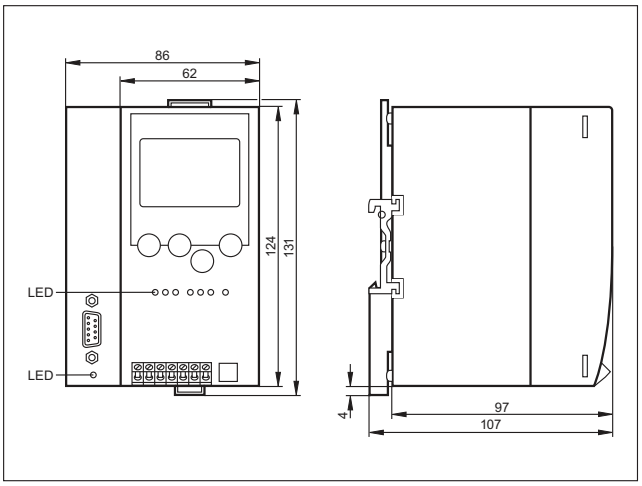

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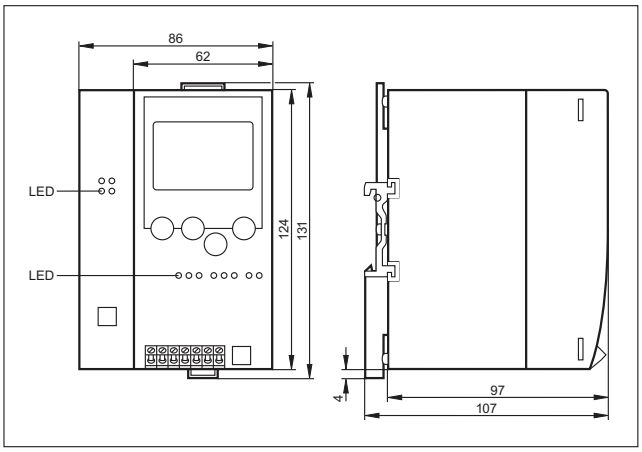
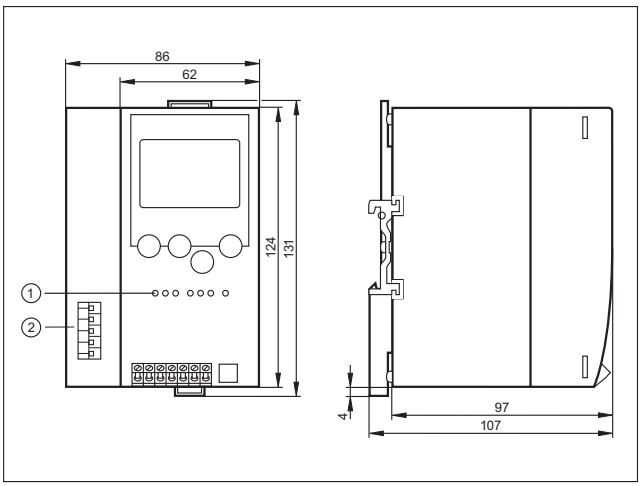


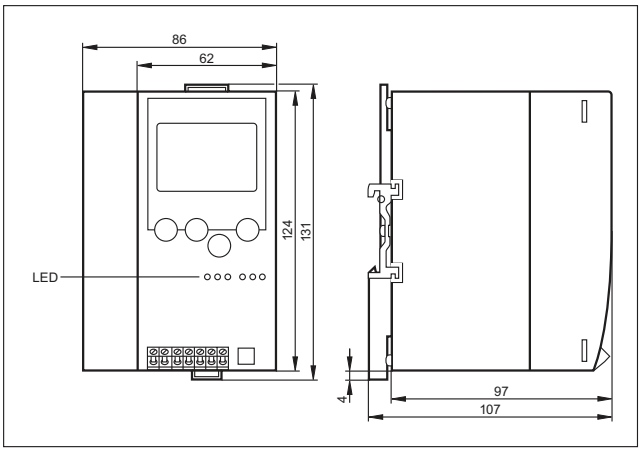
Scale drawings / drawing no. – CAD download: www.ifm.com

3



1: LED, 2: DeviceNet interface

4



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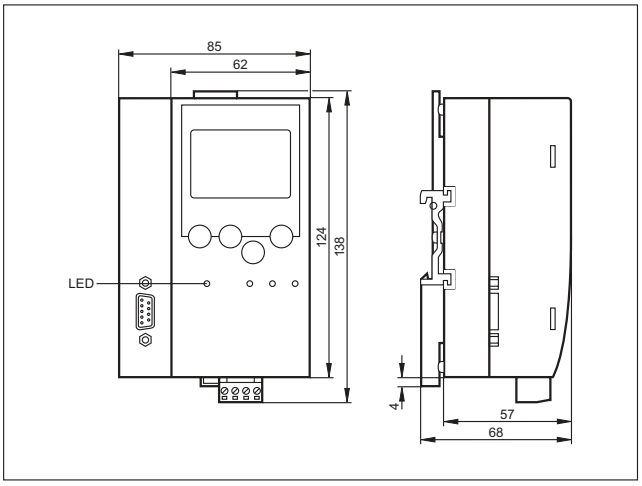
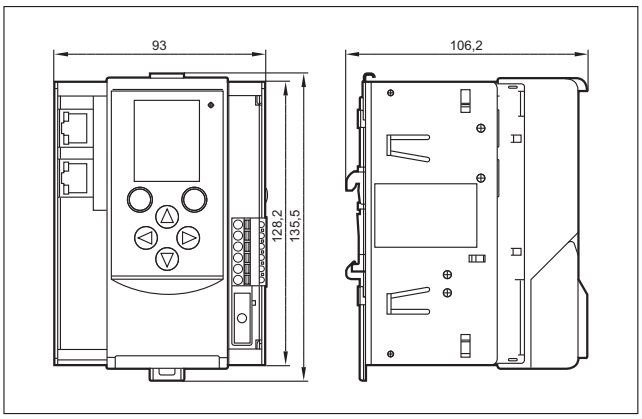
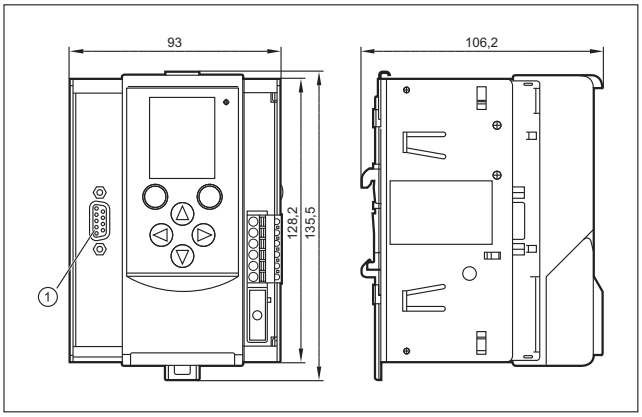


6

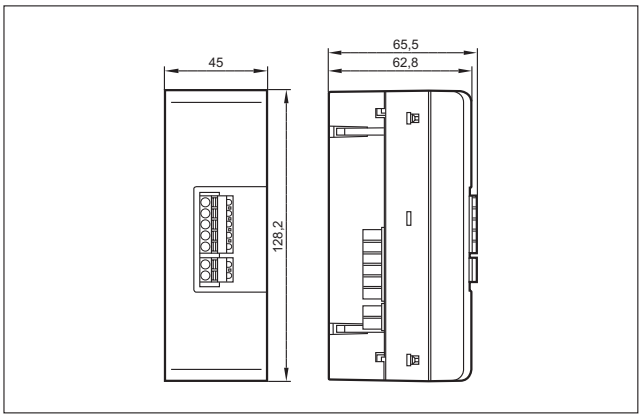


7



Sub-D (9-pole)

8



AS-Interface power supplies / earth fault monitors

AS-i needs special AS-i power supplies for the communication and the voltage supply of the AS-i modules and the connected inputs and outputs (partly). They supply an unearthed voltage that is in particular suitable for communication insensitive to interference, in particular in industrial environments. By means of earth fault monitors the installation can be monitored for earthing problems.

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AS-i power supplies	572
Insulation monitors	572 - 573
Scale drawings / drawing no. – CAD download: www.ifm.com	573

AS-i power supplies

Type	Output current AS-i [A]	Description	Drawing no.	Order no.
	2.8	Power supply · AS-i power supply 115/230 V AC · Integrated data decoupling · steel sheet	1	**AC1256**
	4	Power supply · DC convertor 24 V DC for AS-i system voltage · Integrated data decoupling · steel sheet	2	**AC1257**
	4	Power supply · AS-i power supply 115/230 V AC · Integrated data decoupling · steel sheet	1	**AC1254**
	8	Power supply · AS-i power supply 115/230 V AC · Integrated data decoupling · steel sheet	3	**AC1258**
	8	Power supply · Three-phase AS-i power supply 380...480 V AC · Integrated data decoupling · steel sheet	4	**AC1253**

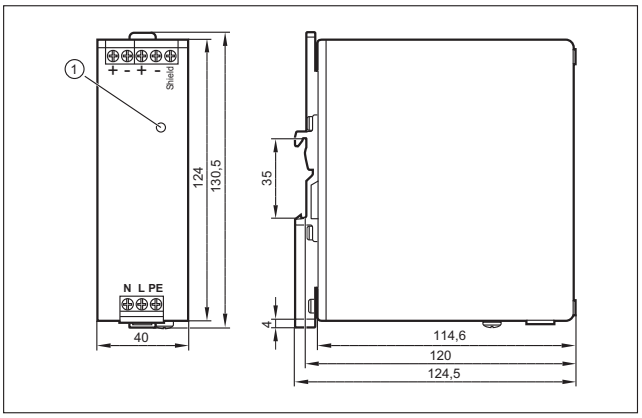
Insulation monitors

Type	Description	Drawing no.	Order no.
	AS-i insulation monitor · Detection of asymmetric insulation faults · Screw terminal	5	**AC2211**

Type	Description	Drawing no.	Order no.
	AS-i insulation monitor · Detection of symmetric and asymmetric insulation faults · Screw terminal	5	**AC2212**

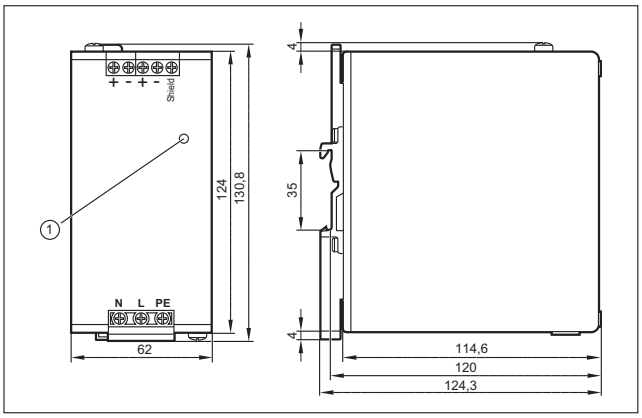
Scale drawings / drawing no. – CAD download: www.ifm.com

1



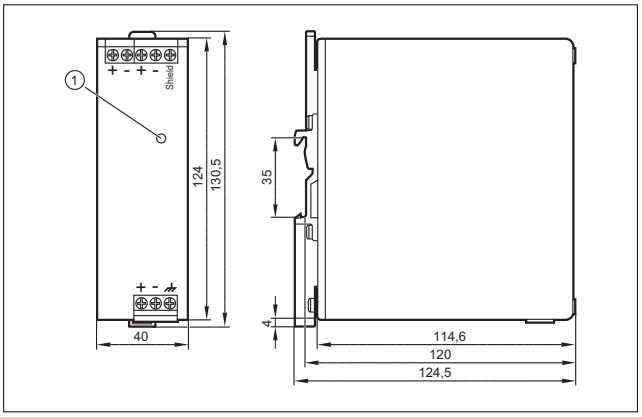
1: LED AS-i ok

3



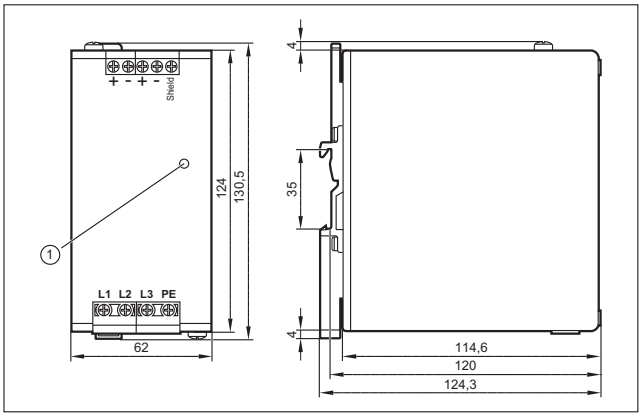
1: LED AS-i ok

2



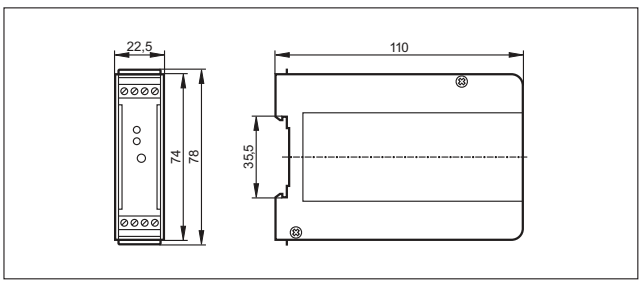
1: LED AS-i ok

4



1: LED AS-i ok

5



AS-Interface I/O modules

The I/O modules are decentralised input and output modules of the AS-i interface for the connection of your digital and analogue inputs and outputs. Different applications have various requirements on the I/O modules regarding protection rating, resistance and materials used. The product range covers PCB solutions, control cabinet modules and I/O modules with protection rating IP69K.

System overview	Page
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Field modules IP 69K and accessories	582
Module lower parts	582 - 583
Combicon connectors	583
Flat cable splitters and accessories	583 - 585
Accessories lower parts and addressing units	585 - 587
Scale drawings / drawing no. – CAD download: www.ifm.com	587 - 591

I/O modules for control cabinets

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 with extended addressing mode · Digital inputs · Combicon connection · PA	1	**AC2250**
	4 inputs	Active AS-i module · String mounting possible · Addressing socket · Input supply from external PELV voltage source · Version 2.1 with extended addressing mode · Digital inputs · Combicon connection · PA	1	**AC2254**
	4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 · Digital outputs · Combicon connection · PA	1	**AC2252**
	4 inputs / 2 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 with extended addressing mode · Digital inputs · Combicon connection · PA	1	**AC2256**

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs / 2 outputs	Active AS-i module · String mounting possible · Addressing socket · Input supply from external PELV voltage source · Version 2.1 with extended addressing mode · Digital inputs and outputs · Combicon connection · PA	1	**AC2255**
	4 inputs / 3 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 with extended addressing mode · Digital inputs and outputs · Combicon connection · PA	1	**AC2264**
	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 · Digital inputs and outputs · Combicon connection · PA	1	**AC2251**
	4 inputs / 4 outputs; bidirectional	Active AS-i module · String mounting possible · Addressing socket · External sensor supply PELV · Version 2.1 · Digital inputs and outputs · Combicon connection · PA	1	**AC2257**
	4 inputs / 4 outputs; bidirectional	Active AS-i module · String mounting possible · Addressing socket · External sensor supply PELV · Version 3.0 with extended addressing mode · Only for operation with AS-i masters with the profile M4 · Digital inputs and outputs · Combicon connection · PA	2	**AC2267**
	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 · Combicon connection · PA 6.6	3	**AC2258**
	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Input supply from external PELV voltage source · Version 2.1 · Combicon connection · PA 6.6	3	**AC2259**
	4 inputs 4...20 mA	Active AS-i module · AS-i profile S-7.3 · 4 analogue inputs 4...20 mA · Supply either from AS-i or an external 24 V source · For the connection of 2-wire, 3-wire or 4-wire sensors · Combicon connector for sensor connection · PA 6.6	1	**AC2216**
	4 inputs 0...10 V	Active AS-i module · AS-i profile S-7.3 · 4 analogue inputs 0...10 V · For the connection of 2-wire, 3-wire or 4-wire sensors · Combicon connector for sensor connection · PA 6.6	1	**AC2217**
	4 outputs 0...20 mA	Active AS-i module · AS-i profile S-7.3 · 4 analogue outputs 0...20 mA · For the connection of 2-wire actuators or 4-wire actuators with separate 24 V supply · Combicon connector for actuator connection · PA 6.6	1	**AC2218**
	4 outputs 0...10 V	Active AS-i module · AS-i profile S-7.3 · 4 analogue outputs 0...10 V · For the connection of 2-wire actuators or 4-wire actuators with separate 24 V supply · Combicon connector for actuator connection · PA 6.6	1	**AC2219**
	4 inputs Pt100	Active AS-i module · 4 analogue inputs temperature Pt100 · AS-i profile S-7.3 · Combicon connection · PBT	1	**AC2220**
	4 inputs / 4 outputs; bidirectional	Active AS-i module · PCB size 105 x 45 x 17 mm · Wire length 0.2 m · Digital inputs and outputs	4	**AC2709**
	4 inputs / 3 outputs; bidirectional	Active AS-i module · AS-i slave with extended addressing mode · PCB size 105 x 45 x 17 mm · Wire length 0.2 m · Digital inputs and outputs	4	**AC2739**
	2 inputs / 1 LED output	Active AS-i module · Only suited for mechanical contacts · Wire length 0.1 m	5	**AC2729**
	3 inputs / 3 outputs	Active AS-i module · AS-i version 2.1 with extended addressing mode	6	**AC2731**

You can find scale drawings from page 587

Field modules IP 67 AS-Interface

Type	Inputs / outputs	Description	Draw-ing no.	Order no.
	4-way splitter box	ClassicLine splitter box module · Three orientations of the flat cable are possible · AS-i and AUX splitter box for the connection of intelligent sensors/actuators · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5200**
	4 inputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5205**
	4 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5215**
	3 outputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5203**
	4 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5208**
	4 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital outputs 2 A · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5213**
	2 outputs / 2 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital outputs and inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5214**
	2 inputs / 2 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs and outputs (2 A) · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5211**
	2 outputs / 2 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Outputs supplied from AS-i · Digital outputs and inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5224**
	4 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5245**
	4 inputs / 3 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5274**

Type	Inputs / outputs	Description	Draw-ing no.	Order no.
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Only for operation with AS-i masters with the profile M4 · Addressing socket · Three orientations of the flat cable are possible · Version 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5275**
	4 inputs / 3 outputs; bidirectional	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · inputs externally supplied · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5292**
	8 digital inputs (2 slaves)	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5210**
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5209**
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs and outputs (2 A) · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5212**
	4 inputs / 3 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5204**
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Only for operation with AS-i masters with the profile M4 · Addressing socket · Three orientations of the flat cable are possible · Version 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5235**
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Version 3.0 with extended addressing mode · Only for operation with AS-i masters with the profile M4 · Digital inputs and outputs (2 A) · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC5236**
	2 pushbuttons / 2 LED displays	Active module upper parts AS-i illuminated pushbutton module · Power supply via AS-i cable · A/B slave · Pushbutton functions: normally open / normally closed · PBT	–	**AC2088**
	2 pushbuttons / 2 LED displays	Active module upper parts AS-i illuminated pushbutton module · Power supply via AS-i cable · Colour inserts changeable · PBT	9	**AC2086**
	1 pushbutton / 1 key-operated switch / 1 LED display	Active module upper part AS-i illuminated pushbutton module with key-operated switch · Power supply via AS-i cable · Version 2.1 with extended addressing mode · PBT	9	**AC2087**

You can find scale drawings from page 587

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs 4...20 mA	Active ClassicLine module · AS-i profile S-7.3 · 4 analogue inputs 4...20 mA · IR addressing possible · For the connection of 2-wire, 3-wire or 4-wire sensors · Sockets M12 x 1 · PBT	10	**AC2516**
	4 inputs 0...10 V	Active ClassicLine module · AS-i profile S-7.3 · 4 analogue inputs 0...10 V · IR addressing possible · For the connection of 2-wire, 3-wire or 4-wire sensors · Sockets M12 x 1 · PBT	10	**AC2517**
	2 inputs 4...20 mA	Active ClassicLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · Addressing socket · Three orientations of the flat cable are possible · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5222**
	2 inputs 4...20 mA	Active ClassicLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 4-wire sensors · Electrical isolation · Addressing socket · Three orientations of the flat cable are possible · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5223**
	2 digital inputs / 1 analogue input / 1 analogue output	Active classic module · Only for operation with AS-i masters with the profile M4 · Electrical isolation · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5230**
	2 IO-Link ports	Active ClassicLine module · 2 IO-Link ports · For the connection of IO-Link sensors and actuators, binary sensors and binary actuators · Addressing socket · Three orientations of the flat cable are possible · Only for operation with AS-i masters with the profile M4 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC5225**
	4 inputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC505A**
	4 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC515A**
	4 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC508A**
	2 inputs / 2 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Digital inputs and outputs (2 A) · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC507A**
	2 outputs / 2 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC514A**

Type	Inputs / outputs	Description	Drawing no.	Order no.
	2 inputs 4...20 mA	Active AS-i module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · Addressing socket · Three orientations of the flat cable are possible · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	7	**AC522A**
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Only for operation with AS-i masters with the profile M4 · Addressing socket · Three orientations of the flat cable are possible · Version 3.0 with extended addressing mode · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	8	**AC535A**

CompactLine modules

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4-way splitter box	Passive compact module · AS-i splitter box for the connection of intelligent sensors/actuators · Sockets M12 x 1 · PA 6.6 / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	11	**AC2413**
	2 inputs 4...20 mA	Active CompactLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · IR addressing possible · high-grade stainless steel · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated	12	**AC2402**
	2 inputs 4...20 mA	Active CompactLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 4-wire sensors · Electrical isolation · IR addressing possible · high-grade stainless steel · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated	12	**AC2403**
	4 inputs	Active CompactLine module · IR addressing possible · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	13	**AC2410**
	4 inputs	Active CompactLine module · IR addressing possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	13	**AC2457**
	4 inputs	Active CompactLine module · IR addressing possible · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated	13	**AC2451**
	4 inputs	Active CompactLine module · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	14	**AC2464**
	4 outputs	Active CompactLine module · IR addressing possible · Digital outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	15	**AC2417**

You can find scale drawings from page 587

Type	Inputs / outputs	Description	Drawing no.	Order no.
	2 inputs / 2 outputs	Active CompactLine module · 60 x 118.2 x 27 · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	15	**AC2411**
	2 inputs / 2 outputs	Active CompactLine module · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	15	**AC2458**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	16	**AC2465**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · 60 x 152 x 27 · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	17	**AC2412**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	17	**AC2459**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · External sensor supply PELV · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	17	**AC2466**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated	17	**AC2452**
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · Version 3.0 with extended addressing mode · Only for operation with AS-i masters with the profile M4 · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	17	**AC2471**
	2 outputs / 2 inputs	Compact M8 AS-i module · 90.5 x 30 x 23.5 · Digital inputs and outputs · Version 2.11 and 3.0 with extended addressing mode · M8 ecolink interface · Sockets M8 x 1 · PBT / Piercing contacts: CuSn6 surface nickel and tin-plated	18	**AC2482**
	4 inputs	Compact M8 AS-i module · 90.5 x 30 x 23.5 · Digital inputs · Version 2.11 and 3.0 with extended addressing mode · M8 ecolink interface · Sockets M8 x 1 · PBT / Piercing contacts: CuSn6 surface nickel and tin-plated	18	**AC2484**
	8 inputs	Compact M8 AS-i module · 134.5 x 30 x 23.5 · Digital inputs · Version 3.0 with extended addressing mode · M8 ecolink interface · Only for operation with AS-i masters with the profile M4 · Sockets M8 x 1 · PBT / Piercing contacts: CuSn6 surface nickel and tin-plated	19	**AC2488**

Field modules IP 67 Profibus DP

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 IO-Link ports / 4 digital inputs	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2625**
	8 inputs	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2630**
	4 inputs / 4 outputs	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2631**
	4 inputs Pt100	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2634**
	4 analogue inputs 0/4...20 mA	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2636**
	4 analogue outputs 0/4...20 mA	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2637**
	4 analogue inputs -10...0 V / 10 V	I/O modules for field applications · Profibus DP interface · Sockets M12 x 1 · housing: PA 6 / potting compound: PU / Contact pins: Brass gold-plated	20	**AC2638**

Universal modules AS-Interface

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs	Active module upper part AS-universal module · Digital inputs · Connection via cage clamps · PBT / stainless steel	21	**AC2032**
	4 inputs / 4 outputs; bidirectional	Active module upper part AS-universal module · Digital inputs and outputs · Connection via cage clamps · PBT / stainless steel	22	**AC2035**
	2 inputs 4...20 mA	Active AS-i module IP 65 · 2 analogue inputs 4...20 mA · AS-i profile S-7.3 · For the connection of 2-wire, 3-wire or 4-wire sensors · Connection via cage clamps · PBT	23	**AC2616**

You can find scale drawings from page 587

Type	Inputs / outputs	Description	Drawing no.	Order no.
	2 inputs 0...10 V	Active AS-i module IP 65 · 2 analogue inputs 0...10 V · AS-i profile S-7.3 · For the connection of 2-wire, 3-wire or 4-wire sensors · Connection via cage clamps · PBT	23	**AC2617**
	2 outputs 0...20 mA	Active AS-i module IP 65 · 2 analogue outputs 0...20 mA · AS-i profile S-7.3 · For the connection of 2-wire actuators or 4-wire actuators with separate 24 V supply · Connection via cage clamps · PBT	23	**AC2618**
	2 outputs 0...10 V	Active AS-i module IP 65 · 2 analogue outputs 0...10 V · AS-i profile S-7.3 · For the connection of 2-wire actuators or 4-wire actuators with separate 24 V supply · Connection via cage clamps · PBT	23	**AC2619**
	4 inputs Pt100	Active AS-i module IP 65 · 4 analogue inputs temperature Pt100 · AS-i profile S-7.3 · Connection via cage clamps · PBT	22	**AC2620**

Field modules IP 69K and accessories

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs / 3 outputs	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs and outputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	24	**AC2904**
	8 digital inputs (2 slaves)	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	25	**AC2910**
	8-way splitter box	Passive splitter box AS-i ProcessLine · Protection rating IP 69K · high-grade stainless steel · AS-i and AUX splitter box for the connection of intelligent sensors/actuators · Sockets M12 x 1 · high-grade stainless steel / Makrolon	26	**AC2900**
	4 inputs 4...20 mA	Active AS-i module · 4 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · Threaded bush: stainless steel 316L / 1.4404 / Makrolon / O-ring: EPDM	27	**AC2916**
	AS-i / 24 V	FC splitter · V4A · AS-i voltage and external auxiliary voltage via the M12 socket · Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	–	**E70354**
	AS-i	FC splitter · AS-i voltage via M12 socket · Metal parts: stainless steel 316L / 1.4404 / O-ring: EPDM / socket: PP GF30 / blade seal: TPE	–	**E70454**
	AS-i / 24 V	FC splitter · Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	–	**E70377**

Module lower parts

Type	Inputs / outputs	Description	Drawing no.	Order no.
	FC coupling module	Module lower part flat cable · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT	28	**AC5000**

Type	Inputs / outputs	Description	Draw-ing no.	Order no.
	FC-E coupling module with external power supply	FC-E coupling module · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT	28	**AC5003**
	FC coupling module	Module lower part flat cable · with addressing plug · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT	29	**AC5010**
	FC-E coupling module with external power supply	FC-E coupling module · with addressing plug · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT	29	**AC5011**
	FC coupling module	Module lower part flat cable · stainless steel · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT / stainless steel	28	**AC5014**
	FC-E coupling module with external power supply	FC-E coupling module · stainless steel · AS-i interface to module upper part · Quick mounting technology for AS-i flat cable · PBT / stainless steel	28	**AC5015**

Combicon connectors

Type	Description	Order no.
	Combicon connector · with screw terminals 4-pole · Housing materials: current carrying parts: copper alloy tin-plated	**E70230**
	Combicon connector · with screw terminals 4-pole · Housing materials: current carrying parts: copper alloy tin-plated	**E70231**
	Combicon connector · with cage clamps 4 poles · Housing materials: current carrying parts: copper alloy tin-plated	**E70232**
	Combicon connector · with cage clamps 4 poles · Housing materials: current carrying parts: copper alloy tin-plated	**E70233**
	Combicon connector · with insulation displacement terminals 4-pole (0.75...1 mm^2) · Housing materials: current carrying parts: copper alloy tin-plated	**E70236**

Flat cable splitters and accessories

Type	Description	Order no.
	PAAS M12 · AS-i and external voltage via M12 socket · Sockets M12 x 1 · Housing materials: PA 6.6 / socket housing: stainless steel 316L / 1.4404 / screws: stainless steel 316L / 1.4404 / O-Ring : NBR	**E70188**
	PAAS splitter box · Distribution of the AS-i voltage or the external 24 V supply · Housing materials: PA / screws: stainless steel 316L / 1.4404 / sealing: NBR	**E70200**

You can find scale drawings from page 587

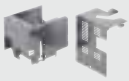
Type	Description	Order no.
	FC splitter · Distribution of the AS-i voltage or the external 24 V supply · Housing materials: PA 6 GF35 Grivory	E70381
	FC splitter · AS-i voltage via M12 socket · Housing materials: Metal parts: stainless steel 316L / 1.4404 / O-ring: EPDM / socket: PP GF30 / blade seal: TPE	E70454
	FC splitter · AS-i voltage and external auxiliary voltage via the M12 socket · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E70354
	FC splitter · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E70377
	FC splitter · high-grade stainless steel · ATEX approval · Group II, category 3D/3G · AS-i voltage and external auxiliary voltage via the M12 socket · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E7354A
	FC splitter · ATEX approval · Group II, category 3D/3G · Distribution of the AS-i voltage or the external 24 V supply · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E7377A
	FC insulation displacement connector · Socket M12 - AS-i flat cable · Housing materials: PA 6-GF-FR / Brass nickel-plated	AC5005
	FC insulation displacement connector · Socket M12 - AS-i flat cable · Housing materials: sealing: NBR / housing: PA / O-ring: FPM / screws: stainless steel / nut: stainless steel / Contact pins: bronze gold-plated	E70271
	FC insulation displacement connector · Socket M12 - AS-i flat cable · Housing materials: PA	E70096
	FC insulation displacement connector · Distribution of the AS-i voltage and the external 24 V supply to M12 socket · 1 m · Housing materials: housing: PA 6 GF35 Grivory / Socket: PUR	E70481
	FC insulation displacement connector · Distribution of the AS-i voltage to M12 socket · 0.6 m · Housing materials: housing: PA66 - GF25	E70483
	FC insulation displacement connector · Transition from flat cable to round cable · Cable length 2 m · 2 m · Housing materials: PA 6 GF35 Grivory / round cable: PUR / core insulation: PVC	E70498
	FC insulation displacement connector · Transition from flat cable to round cable · Cable length 5 m · 5 m · Housing materials: PA 6 GF35 Grivory / round cable: PUR / core insulation: PVC	E70499
	Flat cable insulation displacement connector	E79995

Type	Description	Order no.
	FC insulation displacement connector · straight / angled	E79998
	Splitter box · 8 way · Cable · 25 m · Housing materials: high-grade stainless steel	E11847
	T splitter · M12 plug - 2 M8 sockets · Free from halogen · Free from silicone · Gold-plated contacts · Housing materials: PUR	E10802
	T splitter · M12 plug - 2 M12 sockets · Free from halogen · Free from silicone · Gold-plated contacts · Housing materials: PUR	E10803
	Protective cap · M8 · for CompactM8 modules · Housing materials: ULTRAMID black	E73005
	Protective cap · M12 · for M12 sockets of ClassicLine modules, CompactLine modules and AirBoxes · Housing materials: PA black	E73004
	Protective cap · M12 · for M12 socket to cover the unused inputs and outputs on the module; for unused inputs of splitter boxes · for ProcessLine modules · Housing materials: PVC	E70297
	Connector for analogue modules · for AC5222, AC5223, AC2516, AC2566 · Housing materials: PVC	E75222

Accessories lower parts and addressing units

Type	Description	Order no.
	AS-i addressing unit · AS-i version 3.0 with extended addressing mode	AC1154
	Addressing cable · for AS-i slaves · 1.6 m	E70213
	Addressing cable · for the addressing of active AS-i compact modules	E70423
	Addressing cable · for the addressing of active AS-i modules with infrared addressing interface · 1 m	E70211
	Programming cable for controller E · Western connector RJ11 6 poles / D-Sub socket 9 poles · 1.55 m	E70320

You can find scale drawings from page 587

Type	Description	Order no.
	Screw terminal insert for AC5101/AC5031 for additional 24 V supply	**AC5007**
	impact protection housing · for ATEX ClassicLine modules and ATEX AirBoxes · Housing materials: housing: stainless steel / button head hexagon socket screw: stainless steel	**E7000A**
	Use of the lower part as branching box · Housing materials: plastics	**AC3000**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74100**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74110**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74000**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74010**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74200**
	AS-i flat cable · reverse polarity protection due to special shape · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74210**
	AS-i flat cable · reverse polarity protection due to special shape · for the food industry · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74300**
	AS-i flat cable · reverse polarity protection due to special shape · for the food industry · form supplied: ring · for use in insulation displacement connector technology for FC lower parts and compact modules · 100 m	**E74310**
	JOKARI flat cable stripping tool	**E70062**
	Flat cable blank · Length: 60 mm · to cover the unused cable entry · for FC splitter E70354 · Housing materials: silicone rubber blue	**E70299**
	Flat cable blank · Length: 60 mm · to cover the unused cable entry · for CompactLine modules (AC24xx), ClassicLine modules (AC52xx) or AirBoxes (AC52xx) · Housing materials: EPDM black	**E70399**

Type	Description	Order no.
	Heat-shrink cap · for sealing the flat cable ends · Housing materials: plastics	E70113
	Flat cable seal · Housing materials: ULTRAMID / sealing: NBR	E70413
	Cable clip for fixing the AS-i flat cable · for AC4000 / AC4002 · Housing materials: PA 6.6	E70067
	Torque wrench	E70390

Scale drawings / drawing no. – CAD download: www.ifm.com

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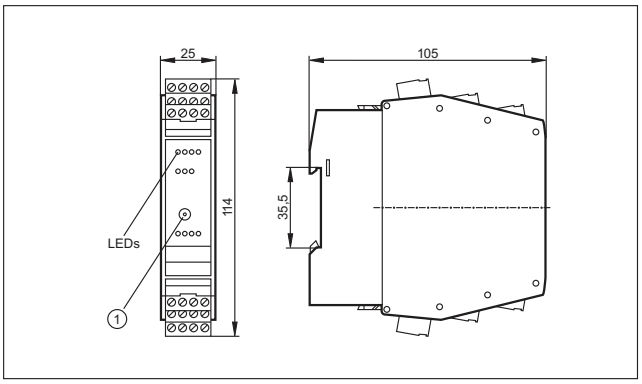

1: Addressing socket

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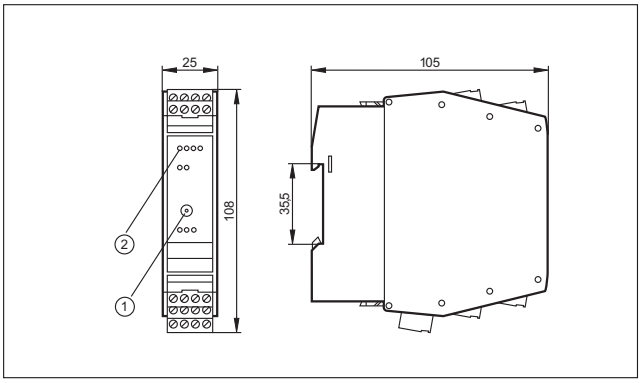

1: Addressing socket, 2: LED

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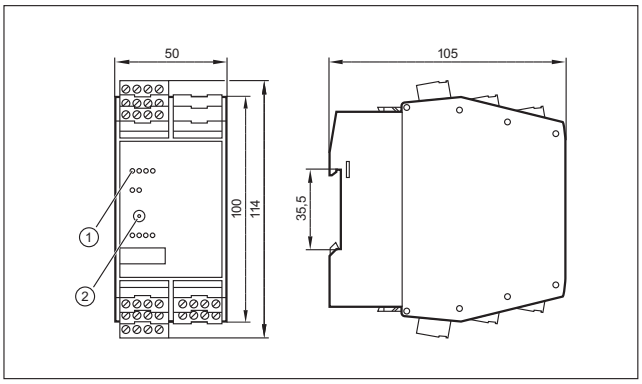

1: LED, 2: Addressing socket

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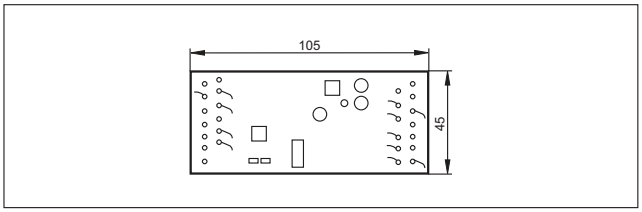

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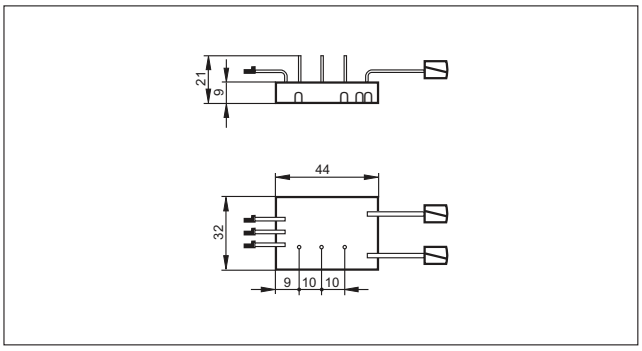

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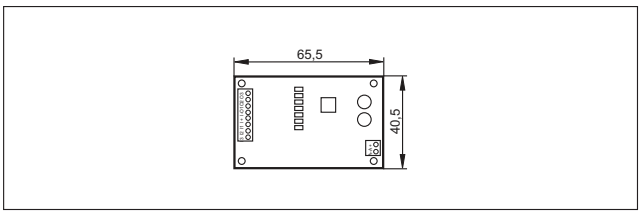

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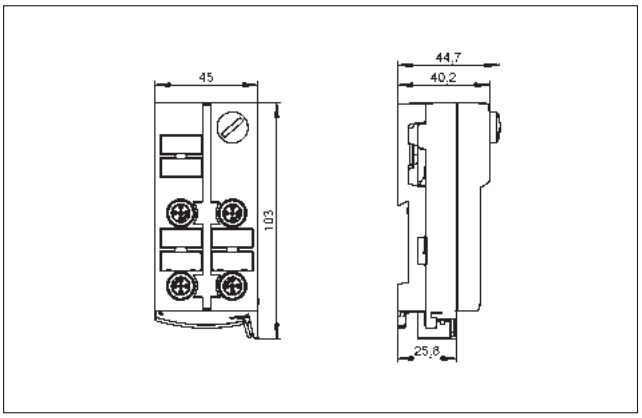

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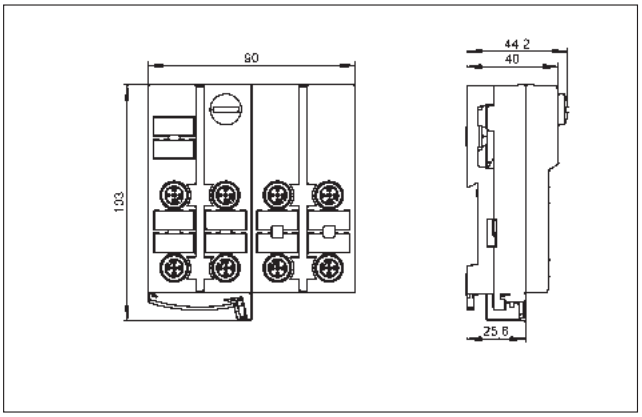

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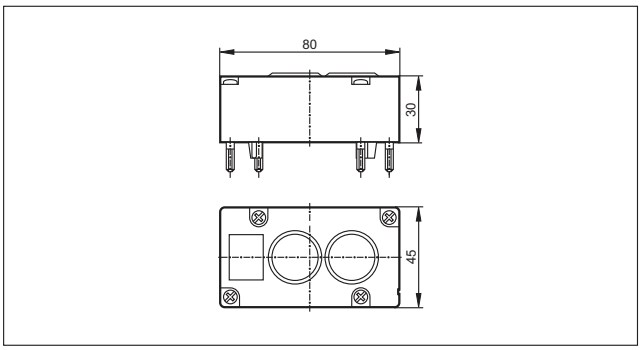

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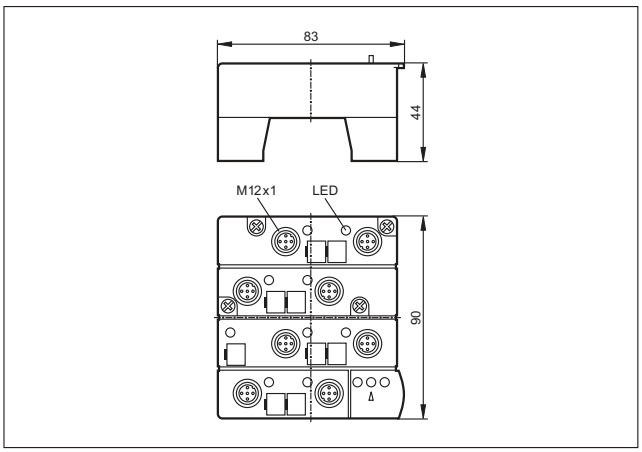

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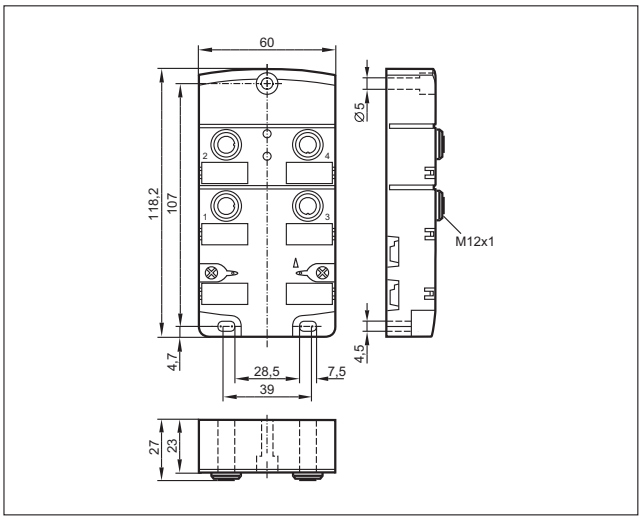

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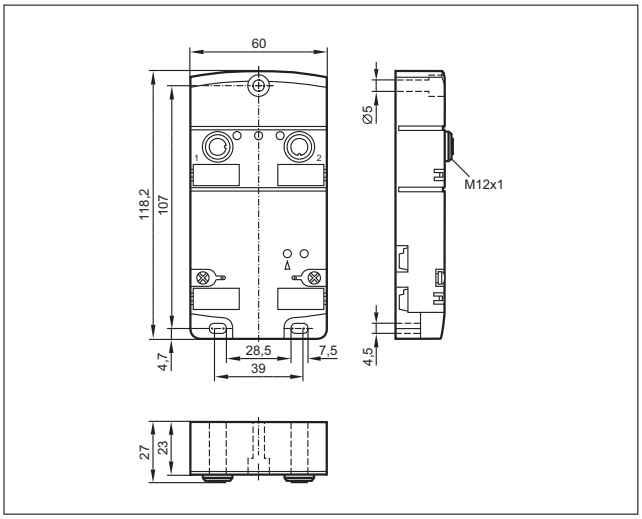

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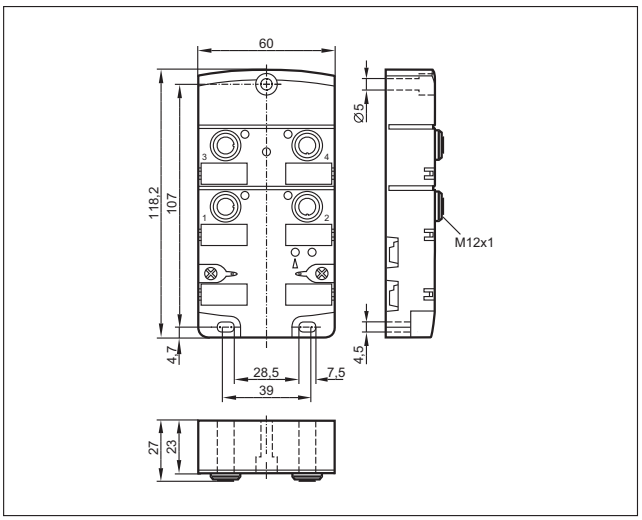

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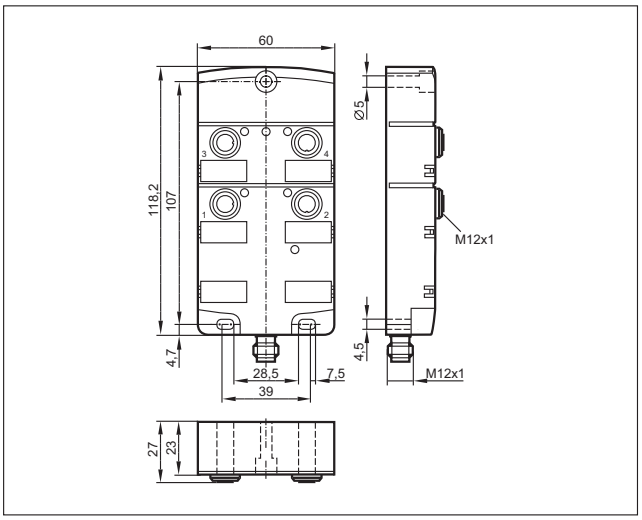

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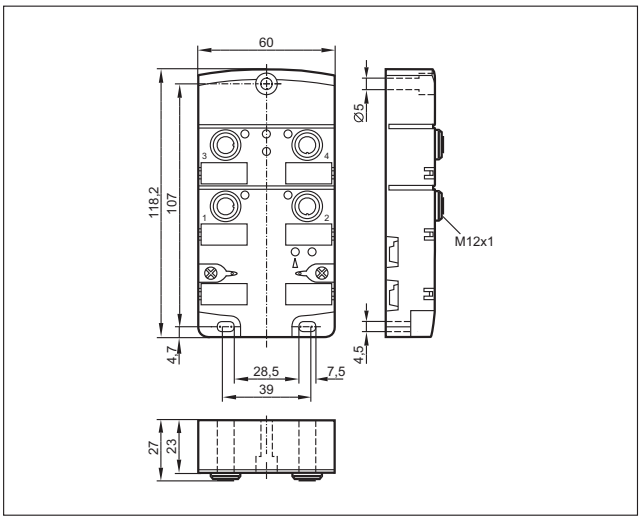

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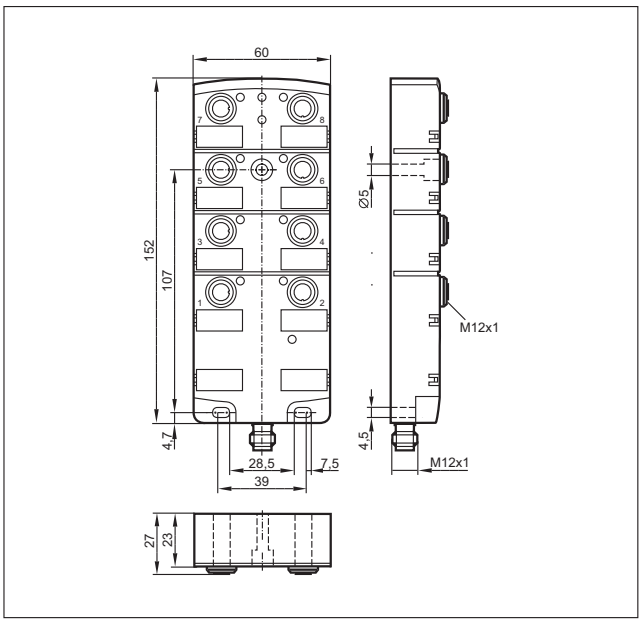

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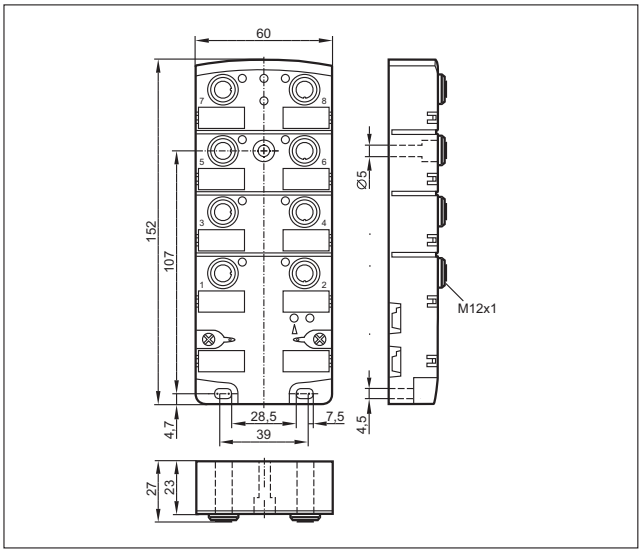

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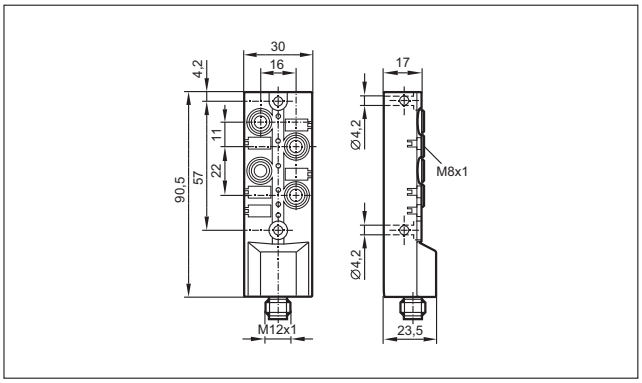

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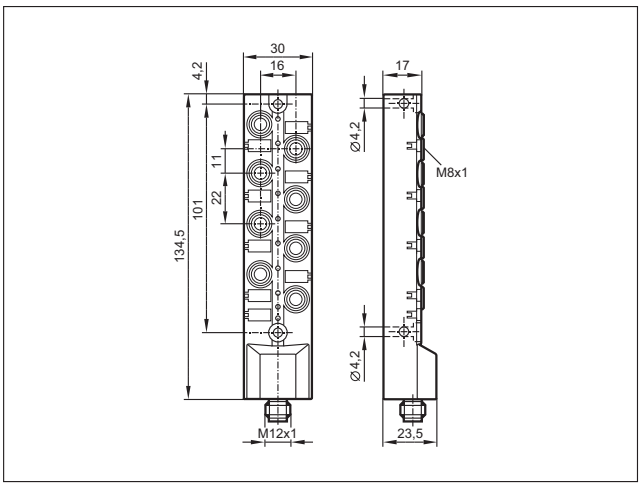

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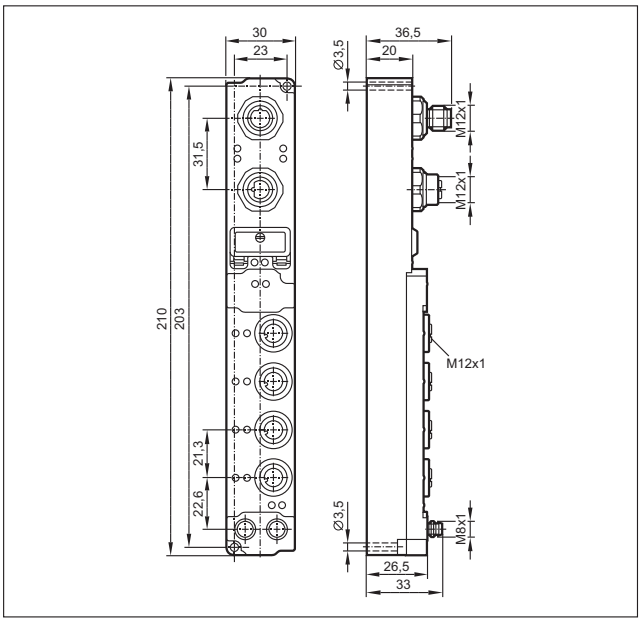

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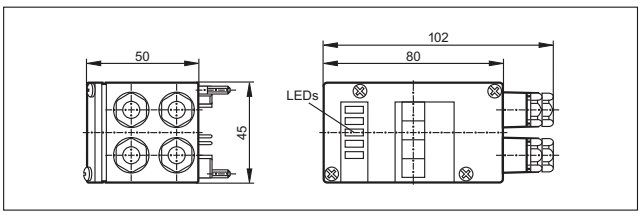

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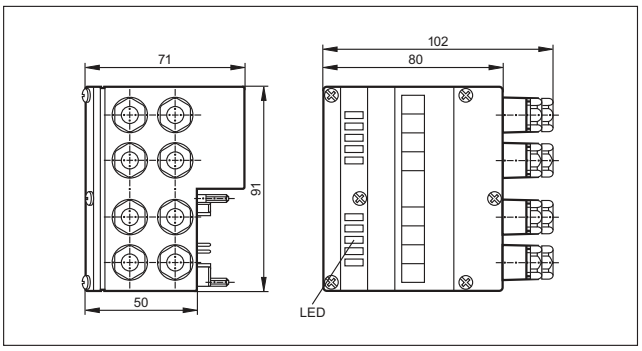

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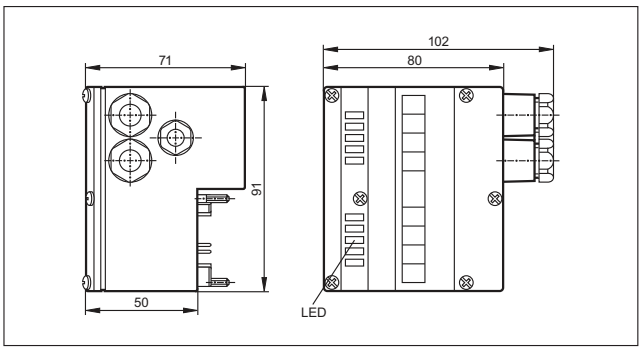

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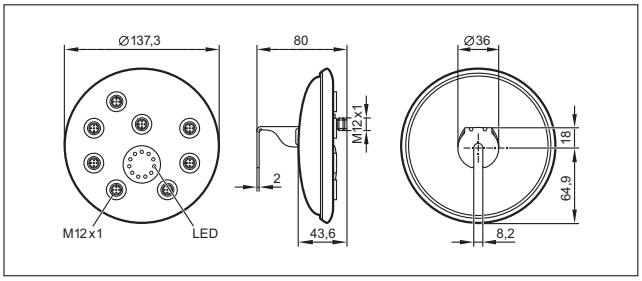

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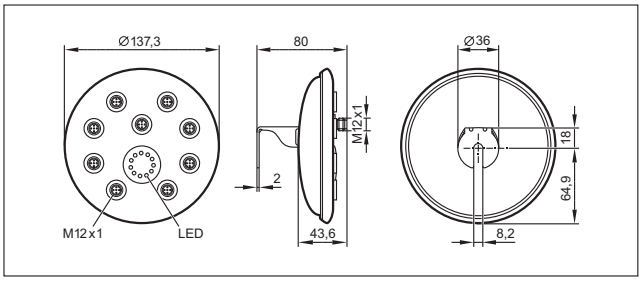

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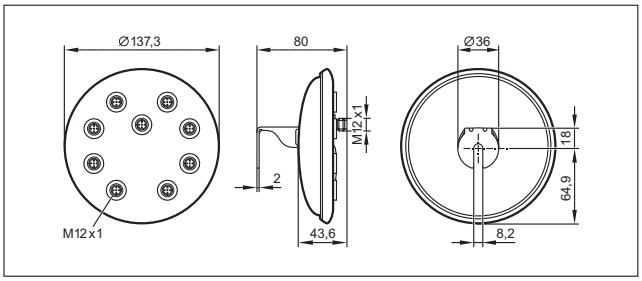

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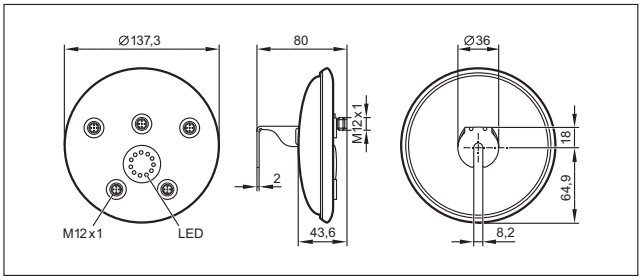

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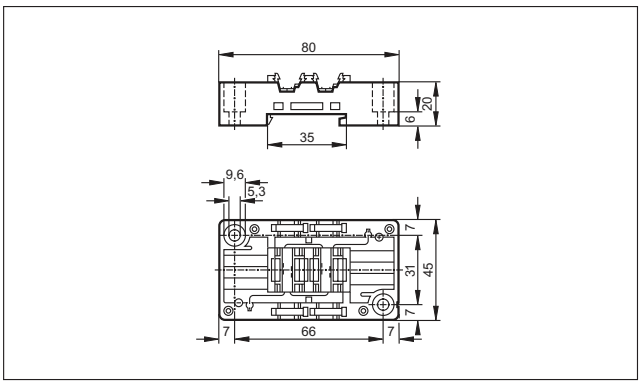

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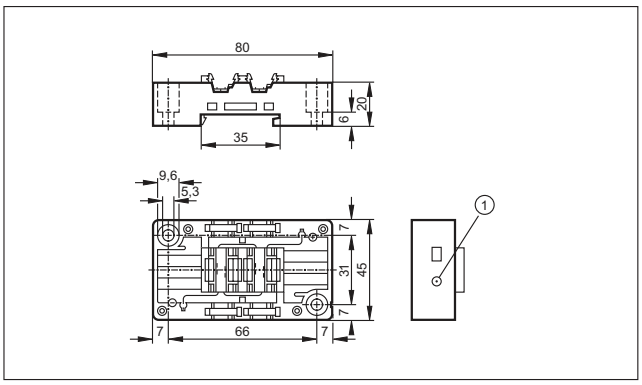


1: Addressing socket

AS-Interface AirBoxes for pneumatics

The AS-i AirBoxes are compact pneumatic valves, complemented by digital feedback inputs. The easy mounting of the AirBoxes onto the AS-i flat cable using the new quick mounting technology provides maximum security for the user. 3/2, 5/2 and 5/3-way valves are available in this version.

System overview

System overview	Page
Pneumatic solutions (quick mounting)	592 - 593
Pneumatic solutions (screw mounting)	593 - 594
Accessories pneumatic components	594
Scale drawings / drawing no. – CAD download: www.ifm.com	594 - 595

Pneumatic solutions (quick mounting)

Type	Inputs / outputs	Description	Drawing no.	Order no.
	2 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · AS-i profile S-3.F.F · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	AC5227
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	AC5228
	4 inputs / 2 outputs; AirBox supply via external 24 V DC	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	AC5243
	4 inputs / 1 output ; AirBox supply via AS-i	AS-i AirBox · 5/2-way slide valve free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	2	AC5246
	4 inputs / 1 output; AirBox supply via external voltage 24 V DC	AS-i AirBox · 5/2-way slide valve free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	2	AC5249
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/2-way bistable slide valve free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	AC5251

Type	Inputs / outputs	Description	Drawing no.	Order no.
	4 inputs / 2 outputs; AirBox supply via external 24 V DC	AS-i AirBox · 5/2-way bistable slide valve free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC5253**
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/3-way slide valve free from overlapping · closed · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC5270**
	4 inputs / 2 outputs; AirBox supply via external 24 V DC	AS-i AirBox · 5/3-way slide valve free from overlapping · closed · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · Version 2.11 and 3.0 with extended addressing mode · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC5271**
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · monostable · Three orientations of the flat cable are possible · Digital inputs · Addressing socket · AS-i profile S-7.F.F · Versions 2.11 and 3.0 · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC542A**
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC528A**
	4 inputs / 1 output ; AirBox supply via AS-i	AS-i AirBox · 5/2-way slide valve free from overlapping · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	2	**AC546A**
	2 inputs / 1 output; AirBox supply via AS-i	AS-i AirBox · 5/2-way slide valve free from overlapping · monostable · Three orientations of the flat cable are possible · Digital inputs · Addressing socket · AS-i profile S-3.F.F · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC246A**
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/2-way bistable slide valve free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC551A**
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/3-way slide valve free from overlapping · closed · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · ATEX approval · Group II, category 3D · Only in conjunction with impact protection housing E7000A or equivalent protection · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	1	**AC570A**

Pneumatic solutions (screw mounting)

Type	Inputs / outputs	Description	Drawing no.	Order no.
	2 x 2 inputs / 2 outputs	AS-i AirBox · Connection to the pneumatic system by tube fittings · Manual override by pressing/releasing or pressing/turning/locking · 2 x 2 digital inputs · 2 pneumatic outputs · Sockets M12 x 1 · housing: PBT / Metal parts: stainless steel / sealing: Viton	3	**AC2055**

You can find scale drawings from page 594

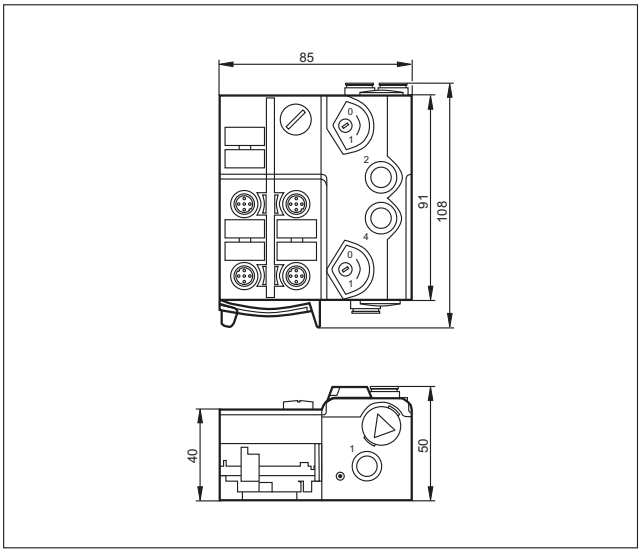
Type	Inputs / outputs	Description	Draw-ing no.	Order no.
	2 inputs / 1 output NO/NC selectable (monostable)	AS-i AirBox · Connection to the pneumatic system by tube fittings · 1 x 2 or 2 x 1 digital inputs · 1 pneumatic output (NO/NC selectable) · Sockets M12 x 1 · housing: PBT / Metal parts: stainless steel / sealing: Viton	4	**AC2057**

Accessories pneumatic components

Type	Description	Order no.
	Silencer · Housing materials: connection piece: PP / filter: PE	**E75232**
	Push-in T-fitting · Housing materials: housing: PBT / release ring: polyoxymethylene / tooth lock washer: stainless steel / form ring: acrylonitrile butadiene caoutchouc	**E75227**
	Push-in L-fitting · Housing materials: housing: PBT / release ring: polyoxymethylene / tooth lock washer: stainless steel / form ring: acrylonitrile butadiene caoutchouc	**E75228**
	Sealing plug for AirBox · Housing materials: housing: PA66	**E75231**

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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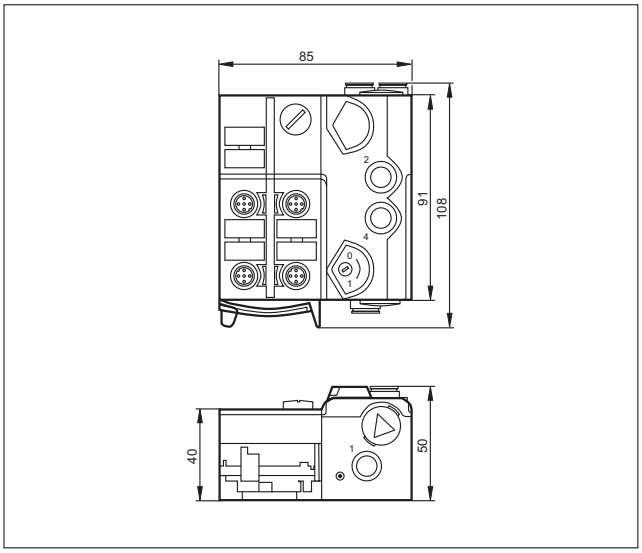

Scale drawings / drawing no. – CAD download: www.ifm.com

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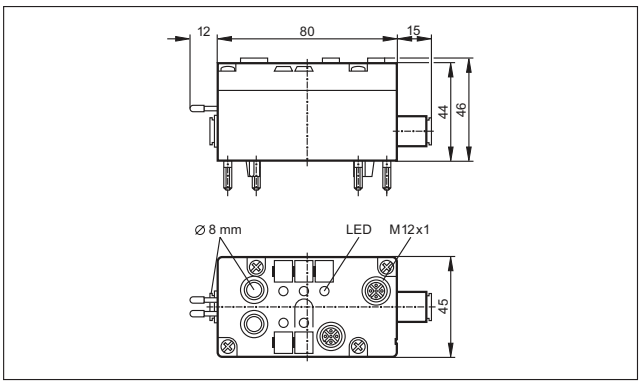

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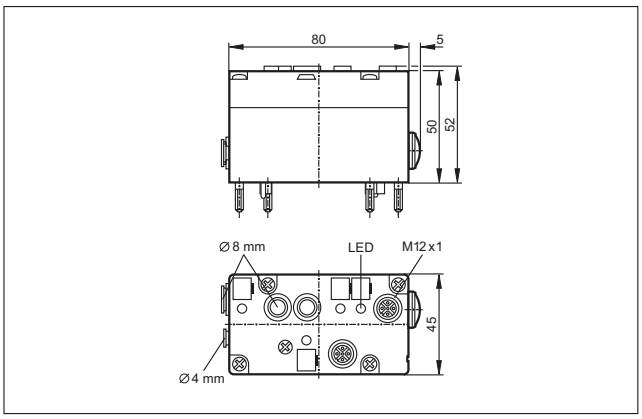


AS-Interface sensors

The bus connection is already integrated in the intelligent AS-i sensors. So they can be directly connected to the yellow cable. In addition to the pure sensor information, further diagnostic data are available via the AS-interface, which can be transmitted and evaluated at a low cost.

System overview	Page
AS-i sensors	596 - 597
Scale drawings / drawing no. – CAD download: www.ifm.com	597 - 598

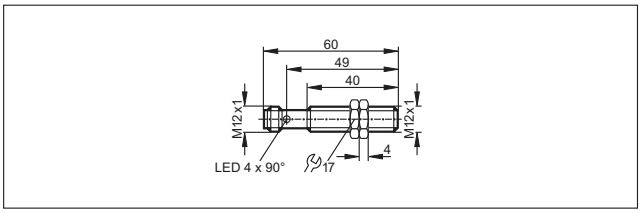
AS-i sensors

Type	Description	Drawing no.	Order no.
	Inductive sensor · M12 x 1 · Sensing range 4 mm · Gold-plated contacts · Connector, Gold-plated contacts · stainless steel / active face: LCP uncoloured	1	IFC247
	Inductive sensor · M12 x 1 · Sensing range 7 mm · Gold-plated contacts · Connector, Gold-plated contacts · stainless steel / active face: LCP uncoloured	2	IFC248
	Inductive sensor · M18 x 1 · Sensing range 8 mm · Gold-plated contacts · Connector, Gold-plated contacts · threaded sleeve: stainless steel / active face: LCP uncoloured / lock nuts: Brass	3	IGC234
	Inductive sensor · M18 x 1 · Sensing range 12 mm · Gold-plated contacts · Connector, Gold-plated contacts · threaded sleeve: stainless steel / active face: LCP uncoloured / lock nuts: Brass	4	IGC235
	Inductive sensor · M30 x 1.5 · Sensing range 14 mm · Gold-plated contacts · Connector, Gold-plated contacts · stainless steel / active face: LCP uncoloured	5	IIC220
	Inductive sensor · M30 x 1.5 · Sensing range 22 mm · Gold-plated contacts · Connector, Gold-plated contacts · stainless steel / active face: LCP uncoloured	6	IIC221
	Inductive sensor · Sensing range 15 mm · 5 positions of the sensing face selectable · Connector, rotatable, locking · PBT / PPE	7	IM5118
	Electronic pressure sensor · Analogue value (16 bit value incl. sign) · AS-i profile S-7.3 · Measuring range 0...400 bar · Connector, Gold-plated contacts · stainless steel / PA	8	PPA020
	Electronic pressure sensor · Analogue value (16 bit value incl. sign) · AS-i profile S-7.3 · Measuring range 0...10 bar · Connector, Gold-plated contacts · stainless steel / PA	9	PPA024

Type	Description	Drawing no.	Order no.
	Temperature transmitter · Analogue value (16 bit value incl. sign) · AS-i profile S-7.3 · Max. medium temperature · 150°C / 302°F (max. 40 min.) · Connector, Gold-plated contacts · stainless steel 316L / 1.4404 / stainless steel / stainless steel / PA	10	**TAA131**
	Temperature transmitter · Analogue value (16 bit value incl. sign) · AS-i profile S-7.3 · Max. medium temperature · 150°C / 302°F (max. 40 min.) · Connector, Gold-plated contacts · stainless steel 316L / 1.4404 / stainless steel / stainless steel / PA	11	**TAA431**
	Read/write head · With integrated AS-i slave profile 7.4 · M12 connector · , rotatable · PA	12	**DTA100**
	Read head · with integrated AS-i slave profile 7.3 · M12 connector · , rotatable · PA	12	**DTA101**
	Read/write head · With integrated AS-i slave profile 7.4 · M12 connector · 5 positions of the sensing face selectable · , rotatable, locking · PA	7	**DTA200**
	Read head · with integrated AS-i slave profile 7.3 · M12 connector · 5 positions of the sensing face selectable · , rotatable, locking · PA	7	**DTA201**
	Read/write head · With integrated AS-i slave profile 7.4 · M12 connector · , rotatable · housing: PPE / Metal parts: diecast zinc / brass nickel-plated	13	**DTA300**

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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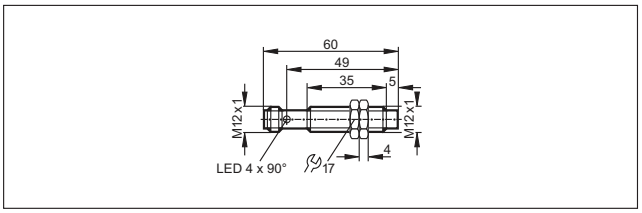

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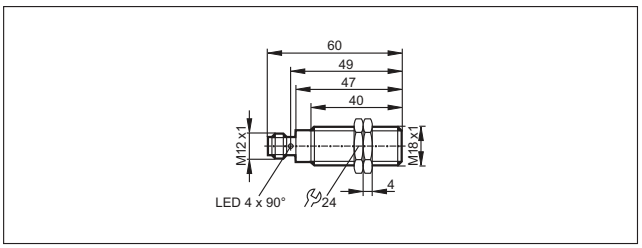

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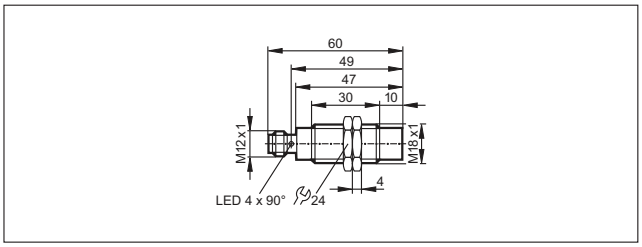

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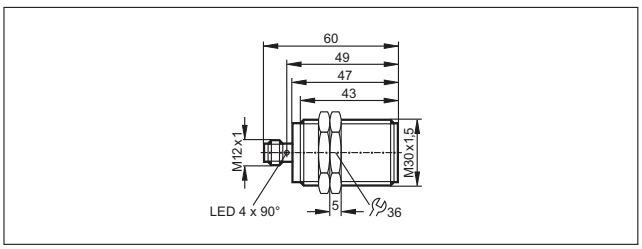

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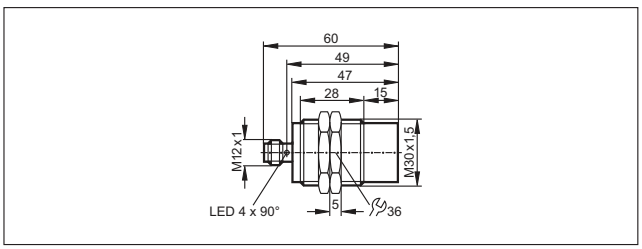

Scale drawings / drawing no. – CAD download: www.ifm.com

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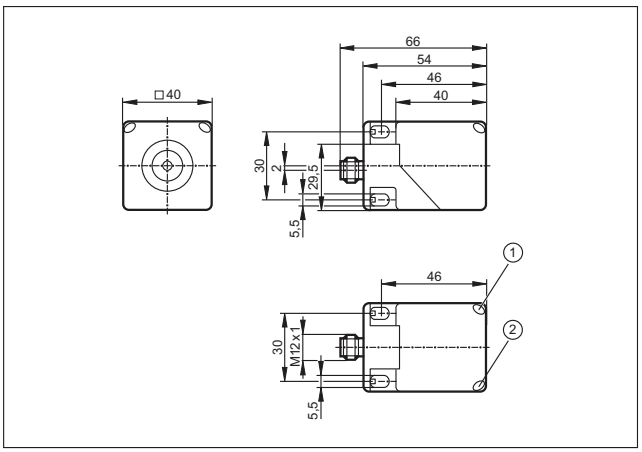
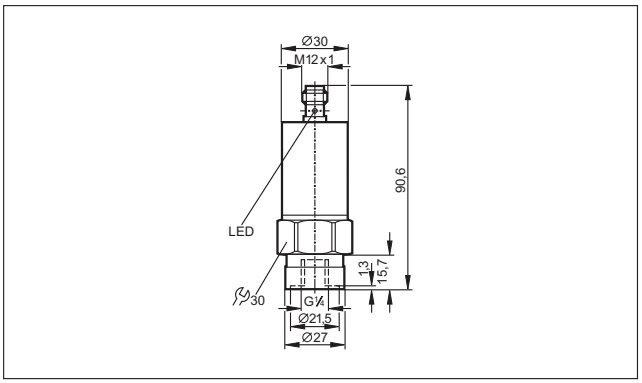


1: LED yellow, 2: LED green

8



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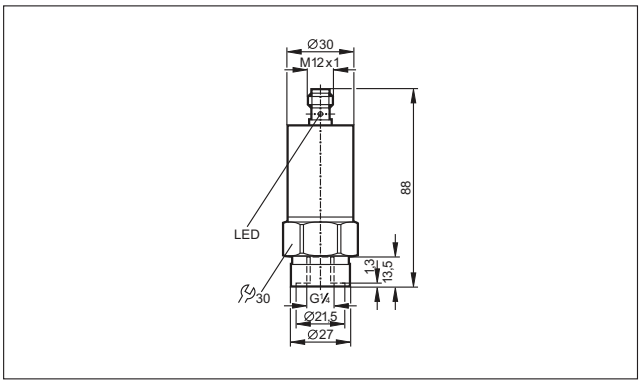

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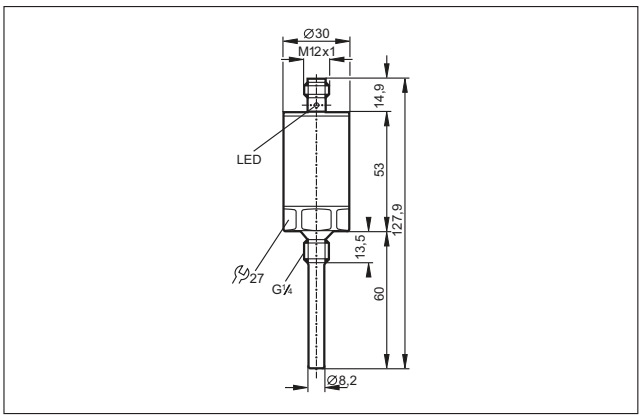

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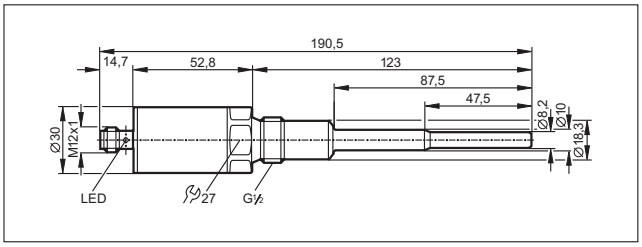

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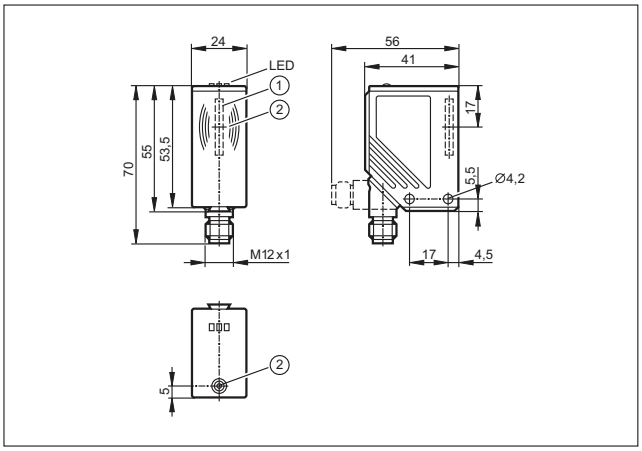
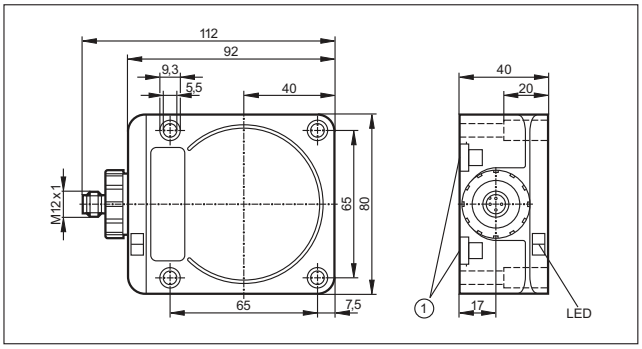


1: integrated antenna, 2: tag positioning mark (middle of the antenna)

13



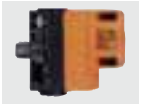
1: Mounting on DIN rail

AS-Interface devices for valves and valve actuators

The valve controls for pneumatic quarter-turn actuators can be directly mounted to most quarter-turn actuators by means of the standardised mechanical interface. They contain two inductive sensors for position feedback, one or two outputs for the control of the pilot valve, and an AS-i slave.

System overview	Page
Sensors with ATEX approval 3D and / or 3G	600
Sensors for industrial applications, AS-i system	601
Wiring diagrams	601
Scale drawings / drawing no. – CAD download: www.ifm.com	601

Sensors with ATEX approval 3D and / or 3G

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	1	**AC317A**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	1	**AC316A**
M12 connector · 1 x 2 inputs · Wiring diagram no. 1 · Connector groups 147, 149									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 5x	–	–	2	**AC315A**

f = flush / nf = non flush

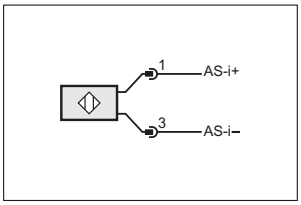
Sensors for industrial applications, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f AC / DC [Hz]	I_{load} AC / DC [mA]	Drawing no.	Order no.
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector group --									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	1	**AC2310**
M12 connector · 1 x 2 inputs · Wiring diagram no. 1 · Connector groups 10, 12, 13, 18, 19, 20, 21, 123, 128, 129, 150, 152									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	2	**AC2315**
M12 connector · Output function transistor PNP · 2 inputs / 1 output · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	1	**AC2316**
M12 connector · Output function transistor PNP · 2 inputs / 2 outputs · Connector groups 8, 10, 18, 20, 40, 123, 125									
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	1	**AC2317**

f = flush / nf = non flush

Wiring diagrams

1



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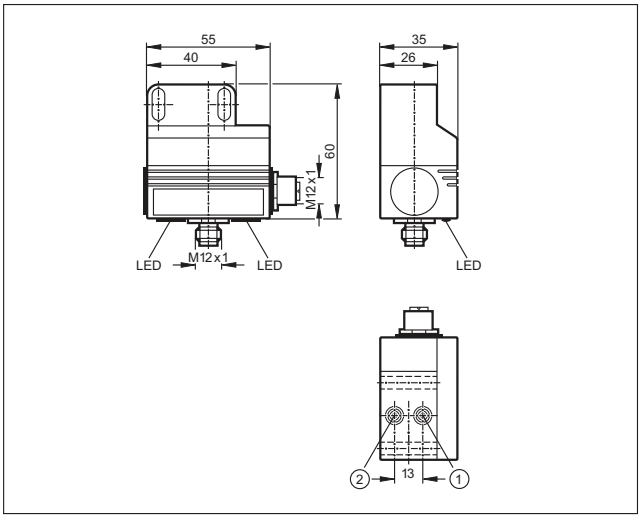
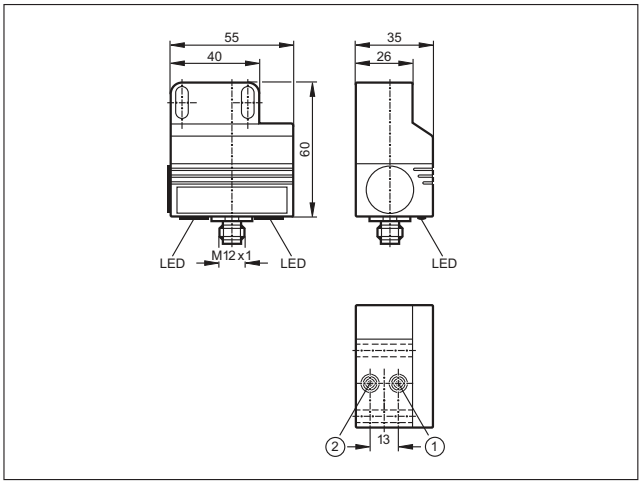
1



1: sensor 1, 2: sensor 2

2



1: sensor 1, 2: sensor 2

AS-Interface expansion

There are different ways to extend the AS-i cable. The specified one hundred metres can be extended up to 1000 metres in extreme cases.

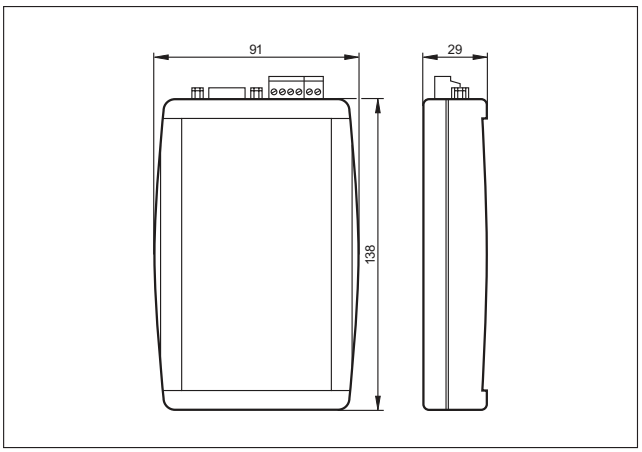
System overview	Page
AS-i repeaters	602
Scale drawings / drawing no. – CAD download: www.ifm.com	602

AS-i repeaters

Type	Description	Drawing no.	Order no.
	AS-i repeater · Extension of the AS-i network by another 100 m · One additional AS-i power supply necessary · Combicon connection · PA 6.6	–	AC2225
	Passive AS-i bus termination · Extension of the cable to a maximum of 200 m without additional repeater · Improvement of the signal quality · Monitoring of the supply voltage by means of LEDs	–	AC1147
	eASI-Tester · Local diagnosis of the AS-i network · Creation of test reports for AS-i networks · User-friendly diagnosis and evaluation via the connected PC	1	AC1145
	AS-i tuner diagnostic module · Extension of the cable to a maximum of 200 m without additional repeater · Monitoring of the message quality · Display of critical states by "traffic light" LEDs · PBT	2	AC1146

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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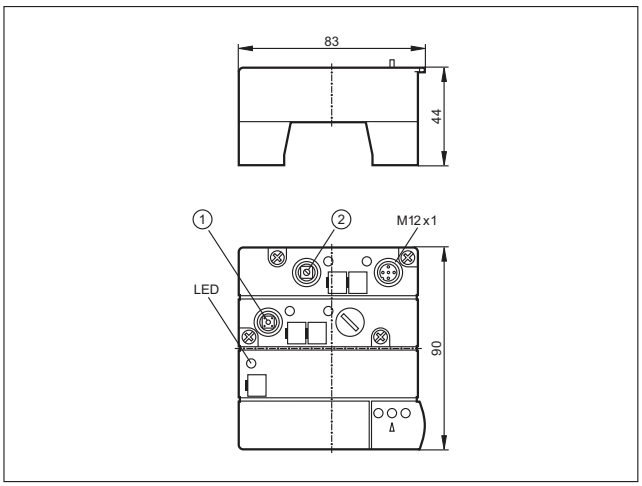

1: tune button, 2: mode selector

AS-Interface Safety at Work

The sophisticated AS-i technology and the extended diagnostic possibilities provide high reliability and machine uptime. "Safety at Work" is the extension of the AS-interface by safety-related components. Safety components up to the highest control category 4 to EN 954-1, SIL 3 to IEC 61508 and EN ISO 13849 - 1 / PL e can be connected to AS-i.

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Accessories Safety at Work	606 - 607
AS-i manuals	607
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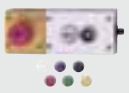
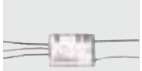
Safety at Work

Type	Description	Drawing no.	Order no.
	AS-i safety monitor · Basic version · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC001S
	AS-i safety monitor · Basic version · 2-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC002S
	AS-i safety monitor · Extended functionality · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC003S
	AS-i safety monitor · Extended functionality · 2-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	1	AC004S
	AS-i safety monitor · Extended functionality · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	2	AC031S
	AS-i safety monitor · Extended functionality and integrated safe slave for triggering a safe AS-i output · 2-channel · Control category 4 to EN954-1, IEC 61508 / SIL 3 and EN ISO 13849 - 1 PL e · Configuration and setup by configuration software ASIMON V3.0 · Screw terminal · polyamide black · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	2	AC032S
	AS-i safety monitor · 2 safe semi-conductor outputs · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · Chip card to save the configuration data · Configuration and setup by configuration software ASIMON V3 G2 · USB 2.0 interface · Chip card and Combicon screw terminals supplied with the device · Screw terminal	3	AC041S
	Safe active AS-i module · Performance Level e to EN ISO 13849-1 et IEC 61508 / SIL 3 for the connection of mechanical contacts · Combicon connection · PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	4	AC009S

Type	Description	Drawing no.	Order no.
	Safe active AS-i output module · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · for the safe triggering of actuators · Combicon connection · PA · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	5	**AC030S**
	Safe active AS-i module · Connection via M12x1 sockets or cage clamps · Control category 4 according to EN954-1 and IEC 61508 / SIL 3 · For connection of an electro-sensitive protective equipment (ESPE) type 4 to EN 61496-1 · PA 6 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	6	**AC007S**
	AS-i Safety at Work · Safe AS-i input module 2SI - 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 4* · ISO 13849-1: PL e* · IEC 62061: SILcl 3	7	**AC505S**
	AS-i Safety at Work · Safe AS-i input module 4SI / 2DO T / 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn braid · Complies with the requirements: · ISO 13849-1: PL d · IEC 62061: SILcl 2	7	**AC506S**
	Safe active AS-i ClassicLine module · IR addressing possible · Performance Level e to EN ISO 13849-1 for the connection of mechanical contacts · Sockets M12 x 1 · PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	8	**AC006S**
	Illuminated E-STOP · front mounting · reset by turning · 2 NC contacts / 1 red LED · fool-proof E-STOP to EN ISO 13850	–	**E7007S**
	Illuminated E-STOP with integrated AS-i connection · fool-proof E-STOP to EN ISO 13850 · Pull to reset · AS-i interface via AS-i flat cable IP 67 · PC GF20 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	9	**AC010S**
	Key-release E-STOP with integrated AS-i connection · Connector M12 x 1 · AS-i interface via AS-i flat cable IP 67 · fool-proof E-STOP to EN ISO 13850 · Reset by key operation · PC GF20 · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	10	**AC011S**
	safe AS-i e-stop operating unit with integrated AS-i connection · AS-i interface via M12 x 1 connector · fool-proof E-STOP to EN ISO 13850 · Pull to reset · interchangeable button inserts	11	**AC012S**
	Safe active AS-i ClassicLine module · AS-i version 2.1 · IR addressing possible · Control category 4 according to EN954-1 · For the connection of fail-safe inductive sensors of the control category 4 · Sockets M12 x 1 · PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	–	**AC016S**
	AS-i safety PCB · Connection of mechanical contact and LED components · Certification according to EN 954-1 / category 4 and IEC 61508 / SIL 3 · Complies with the requirements: · IEC 61508: SIL 3	12	**AC015S**
	Fail-safe inductive sensor · M12 connector, Gold-plated contacts · PPE / diecast zinc · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	13	**GM504S**
	Fail-safe inductive sensor · M12 connector, Gold-plated contacts · PPE / diecast zinc · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	13	**GM505S**
	Fail-safe inductive sensor · M18 x 1 · M12 connector, Gold-plated contacts · high-grade stainless steel / PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	14	**GG505S**
	Fail-safe inductive sensor · M30 x 1.5 · M12 connector, Gold-plated contacts · PEEK / high-grade stainless steel / O-ring: EPDM · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	15	**GI505S**
	Safety switch with guard locking · Normally closed principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply ext. from 24 V DC · M12 connector · thermoplastic reinforced glass-fibre	16	**AC901S**

You can find scale drawings from page 608

Type	Description	Drawing no.	Order no.
	Safety switch with guard locking · Normally open principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply ext. from 24 V DC · M12 connector · thermoplastic reinforced glass-fibre	16	**AC902S**
	Safety switch with guard locking · Normally closed principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply from AS-i · M12 connector · thermoplastic reinforced glass-fibre	17	**AC903S**
	Safety switch with guard locking · Normally open principle · Rotatable actuating head made of metal · Mechanical release on the front · Supply via AS-i / solenoid supply from AS-i · M12 connector · thermoplastic reinforced glass-fibre	17	**AC904S**

Accessories Safety at Work

Type	Description	Order no.
	AS-i Safety at Work · ASIMON programming software · Version 3.0 · Configuration, set-up and diagnostics of the AS-i safety monitor	**E7040S**
	Software ASIMON V3 G2 · Configuration, set-up and diagnostics of the AS-i safety monitor · AC041S	**E7050S**
	USB interface cable for the connection of the safety monitor AC041S to the PC · cable length 1.8 m · 1.8 m	**E7051S**
	Chip card to save the configuration data of the AS-i safety monitor AC041S · 256 K	**E7052S**
	Safe contact expander without delay · 2 independent channels · 4 contact blocks (NO) per channel · 1 feedback circuit (NC) per channel · Mounting on DIN rail · Screw terminal	**E7053S**
	Connection cable PC / AS-i safety monitor · Parameter setting cable PC / AS-i safety monitor · Western connector RJ 45 8 poles / D-Sub socket 9 poles · 2.5 m	**E7001S**
	Connection cable AS-i safety monitor / AS-i safety monitor · Download cable AS-i safety monitor / AS-i safety monitor · Western connector RJ 45 8 poles · 0.3 m	**E7002S**
	EMERGENCY STOP label IP66 4 languages D,GB,F,I · EMERGENCY STOP label 4 languages for a safe illuminated EMERGENCY STOP button with integrated AS-i interface AC010S · 50 x 50 mm	**E7003S**
	EMERGENCY STOP protective collar · EMERGENCY STOP protective collar for safe E-STOP AC010S / AC011S / AC012S · Housing materials: PC GF20 RAL 1004	**E7004S**
	bridging plug for safety modules · Housing materials: PUR	**E7005S**

Type	Description	Order no.
	Adapter plug · straight · M20 - M12 · M12 connector · 0.07 m · Housing materials: polyamide	E7006S
	Bolt for safety guards · for heavy doors · For right or left hinged doors without escape release · No additional door handle required · screw mounting onto common aluminium profiles and machine panels · Housing materials: diecast aluminium yellow	E7901S
	Bolt for safety guards · for heavy doors · For right or left hinged doors without escape release · No additional door handle required · screw mounting onto common aluminium profiles and machine panels · Housing materials: glass-fibre reinforced plastic yellow	E7902S
	Actuator S standard straight · With rubber bush, overtravel 5 mm · Suitable for a maximum pull force of 2500 N for the door switches AC901S - AC904S	E7903S
	Actuator S standard angled · With rubber bush, overtravel 5 mm · Suitable for a maximum pull force of 2500 N for the door switches AC901S - AC904S	E7904S
	Hinged actuator left / right · For left or right hinged doors, overtravel 5 mm	E7905S
	Hinged actuator top / bottom · For top and bottom hinged doors, overtravel 5 mm	E7906S

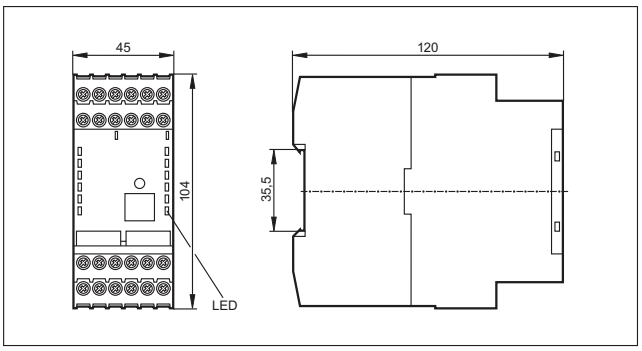
AS-i manuals

Type	Description	Order no.
	ecolog asi system · AS-Interface Manual (German)	AC0115
	ecolog asi system · AS-Interface Manual (English)	AC0116
	AS-i Manual -- Tips and tricks for users · German version	AC0350
	AS-i Manual -- Tips and tricks for users · English version	AC0351
	AS-i Manual -- Tips and tricks for users · French version	AC0352

You can find scale drawings from page 608

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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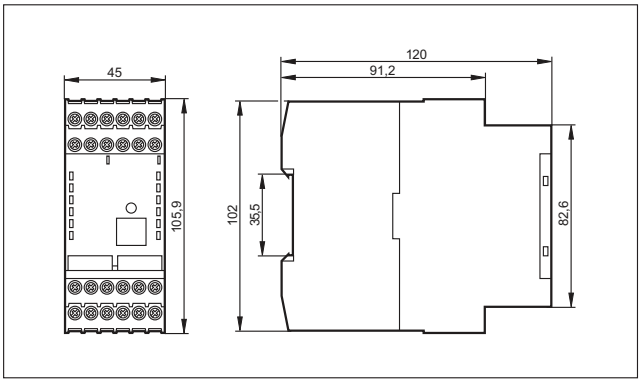

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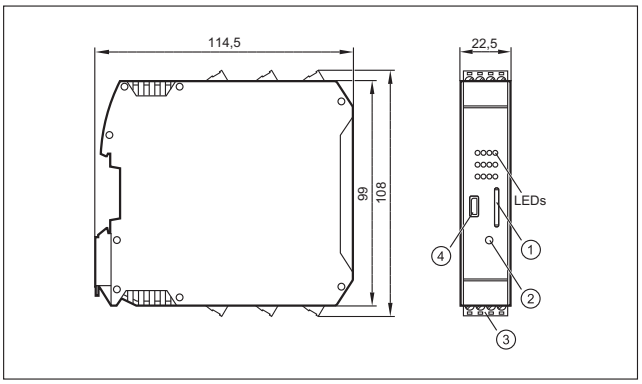
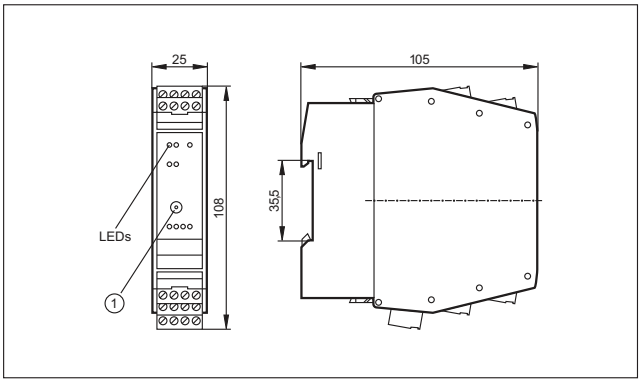


1: Chip card, 2: service button, 3: Combicon connector with screw terminals, 4: Micro USB interface

4



1: Addressing socket

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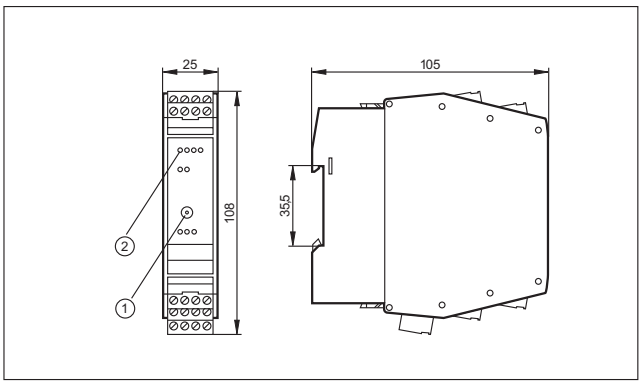
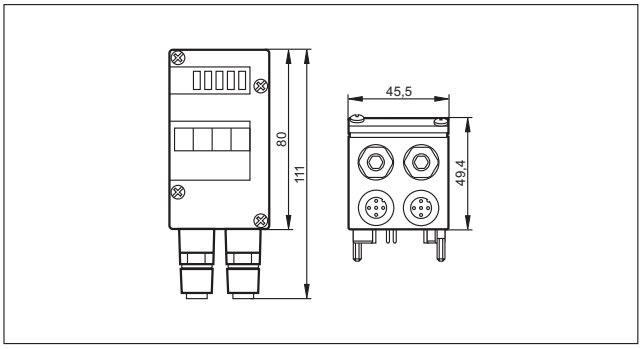


1: Addressing socket, 2: LED

6



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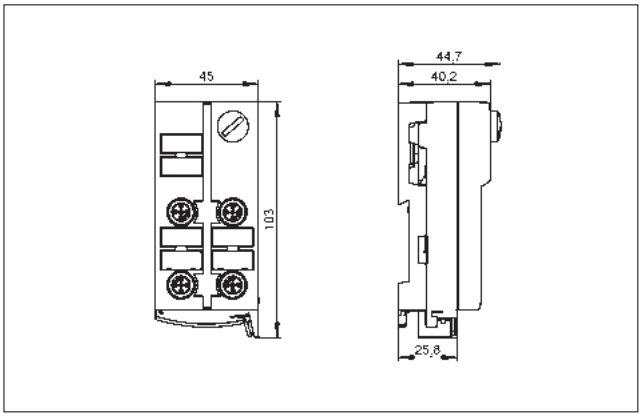

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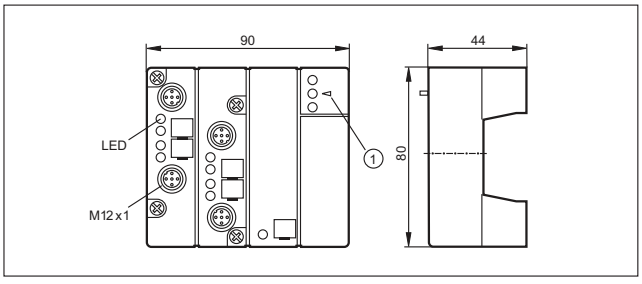
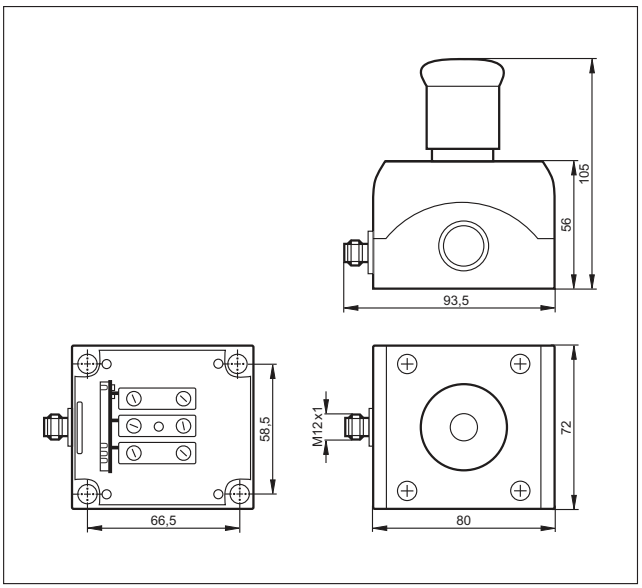


1: fixture infrared adapter

Scale drawings / drawing no. – CAD download: www.ifm.com

9



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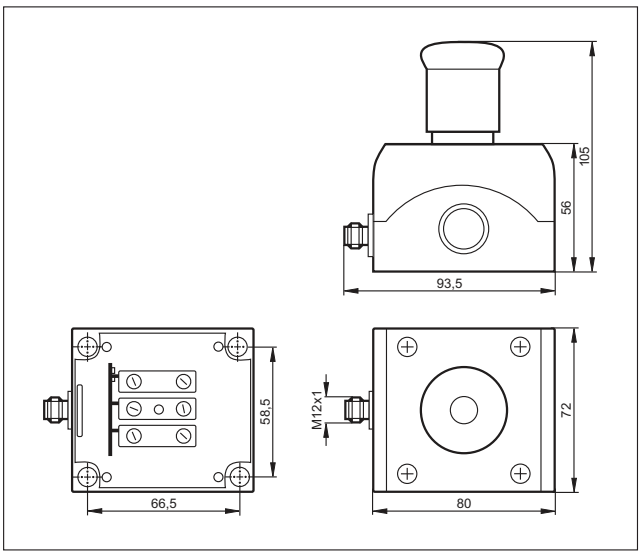

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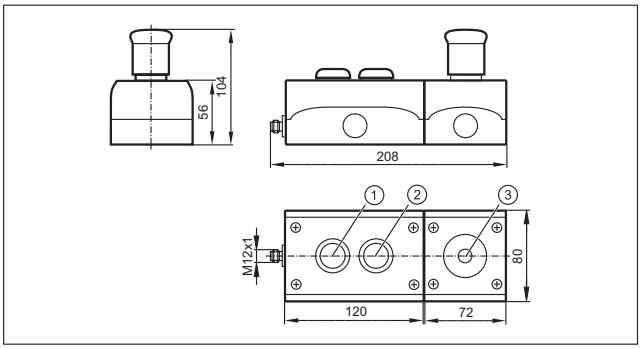

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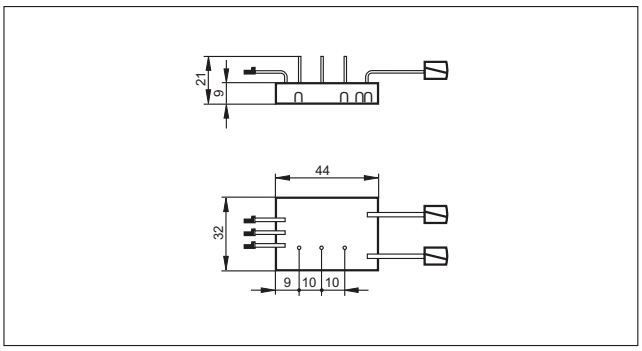

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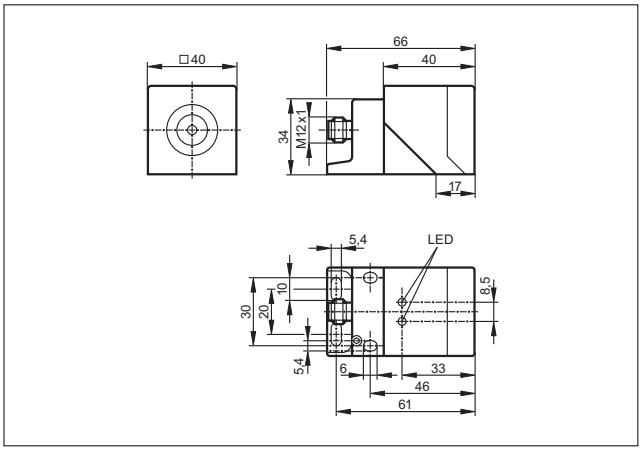

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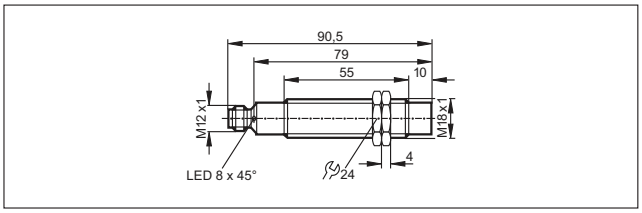

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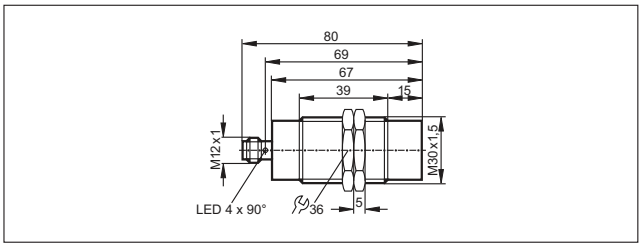

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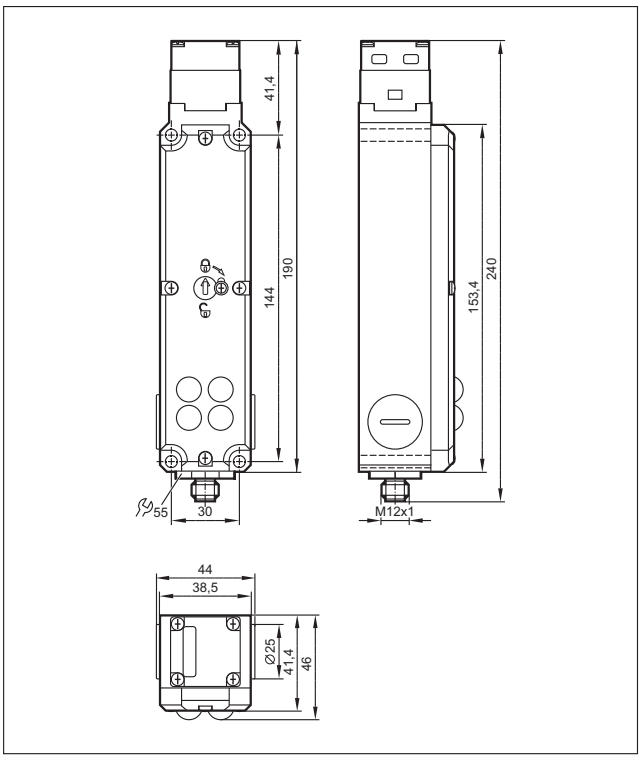
16



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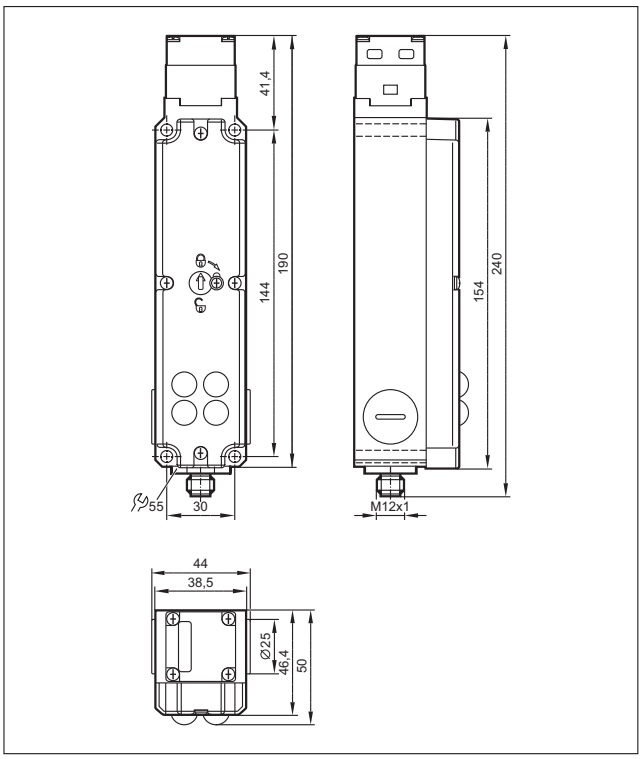


For more transparency in the system

Multicode reader type O2I – the compact all-rounder for optical identification tasks.

Multicode readers

ifm multicode readers handle not only the ECC200 Data Matrix code, but also many more 2D and 1D codes. Code reading is not dependent on the orientation of the code to the sensor. The industrially compatible mounting and wiring technology as well as the standardised process interfaces enable easy and quick integration into the industrial control system.

There is a wide range of applications for multicode readers in industry – from product tracking and production control to product identification. They are used for the automotive and food industries, conveying, the production of solar installations as well as machine tools and print machines.

RF identification systems

ifm electronic offers different RFID systems using different frequencies, ranges, interfaces and data volumes.

LF 125 kHz system with AS-Interface

ifm electronic supplies the first RFID system for AS-Interface worldwide. Up to 31 read / write heads can be connected to one AS-i master. Antenna, electronics and AS-Interface are integrated in a compact housing.

LF 125 kHz / HF 13.56 MHz system with fieldbus interfaces

The RFID evaluation units DTE10x with integrated fieldbus interfaces and web server is widely used in production to mark tools, for quality assurance, to monitor production steps, in conveying and in automation technology. The antenna concept guarantees easy and quick connection of the LF and HF RFID antennas to the evaluation unit by means of M12 connectors.

UHF system with Ethernet

As components of the UHF system platform, the read / write units DTE800 and DTE900 are compliant with the UHF bands in Europe and the USA respectively. The data transmission and parameter setting are carried out via Ethernet. The ultra low and low range antennas achieve selectivities of a few centimetres. The mid range antenna is chosen for applications in the near / far field with reading ranges of up to 2 m. The wide range antenna attains reading ranges of up to 10 m.

	RFID 125 kHz	614 - 618
	RFID 13.56 MHz	620 - 622
	RFID UHF	624 - 627
	1D/2D code readers	628 - 632

RFID 125 kHz

RFID systems based on 125 kHz for production and conveying technology, identification of workpiece carriers and products.

- System DTS 125 with AS-Interface
- System DTE102 with EtherNet/IP
- System DTE 100 with Profibus DP

System overview

System overview	Page
RFID system 125 kHz with AS-Interface	614 - 615
ID tags 125 kHz for system DTS 125	615
Handheld readers for system DTS 125	616
Fixing components	616
DTE102 RFID system with EtherNet/IP	616
RFID system DTE 100 with Profibus DP	617
RFID antennas 125 kHz for system DTE 100, DTE 102	617
RFID tags 125 kHz for antenna ANT512	617
Accessories DTE 100	617
Scale drawings / drawing no. – CAD download: www.ifm.com	618

RFID system 125 kHz with AS-Interface

Type	Dimensions [mm]	Travel speed read / write [m/s]	Process interface	Drawing no.	Order no.
M12 connector · Connector groups 8, 10, 18, 20, 123, 125, 150					
	55 x 24 x 41	read: ≤ 0.5 (distance to the ID tag 15 mm) write: only static	AS-i	1	**DTA100**
	55 x 24 x 41	read: ≤ 0.5 (distance to the ID tag 15 mm)	AS-i	1	**DTA101**
	40 x 40 x 54	read: ≤ 0.5 (distance to the ID tag 30 mm) write: only static	AS-i	2	**DTA200**
	40 x 40 x 54	read: ≤ 0.5 (distance to the ID tag 30 mm)	AS-i	2	**DTA201**

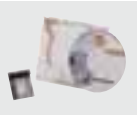
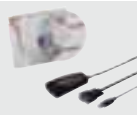
Type	Dimensions [mm]	Travel speed read / write [m/s]	Process interface	Draw-ing no.	Order no.
M12 connector · Connector groups 8, 10, 18, 20, 123, 125, 150					
	92 x 80 x 40	read: ≤ 0.5 (distance to the ID tag 40 mm) write: only static	AS-i	3	**DTA300**
	92 x 80 x 40	read: ≤ 0.5 (distance to the ID tag 40 mm)	AS-i	3	**DTA301**

ID tags 125 kHz for system DTS 125

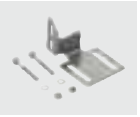
Type	Description	Order no.
	ID tag · ID-TAG/M5x16.5/01 · M5 x 16.5 mm · Screw mounting · Housing materials: PA black (RAL 9005)	**E80301**
	ID tag · ID-TAG/TRIANGLE HOUSING/01 · with ID tag E80301 · Housing materials: PBT orange (RAL 2003) / PA black (RAL 9005)	**E80302**
	ID tag · ID-TAG/M18x1/01 · M18 x 1 · Screw mounting · in metal · Housing materials: threaded sleeve: PBT orange	**E80311**
	ID tag · ID-TAG/D12x2/01 · Ø 12 x 2 mm · Housing materials: PPS black	**E80312**
	ID tag · ID-TAG/D20x2.15/01 · Ø 20 x 2.15 mm · Housing materials: polycarbonate black	**E80317**
	ID tag · ID-TAG/D30x2.15/01 · Ø 30 x 2.15 mm · Housing materials: polycarbonate black	**E80318**
	ID tag · ID-TAG/D50x2.2/01 · Ø 50 x 2.2 mm · Housing materials: polycarbonate black	**E80319**
	ID tag · ID-TAG/D26x4/01 · Ø 26 x 4 mm · Housing materials: PA High Temperature	**E80322**
	ID tag · ID-TAG/ISO-Card/01 · 54 x 86 x 1 mm · Housing materials: PVC white	**E80320**

You can find scale drawings from page 618

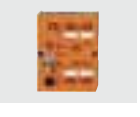
Handheld readers for system DTS 125

Type	Description	Order no.
	RFID Handheld Reader USB · suitable for use in PCs or notebooks · 125 kHz · 1.8 m · Housing materials: PS	**E80321**
	RFID Handheld Reader CF Card · suitable for use in handheld PCs, pocket PCs or PDAs with CompactFlash interface · 125 kHz	**E80323**
	RFID Handheld Reader RS-232 · suitable for use in PCs or notebooks · 125 kHz · Housing materials: PS	**E80324**

Fixing components

Type	Description	Order no.
	Angle bracket · Housing materials: stainless steel	**E80304**
	Mounting set · Clamp mounting · aluminium profile · for type OC · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20901**
	Mounting bracket · with integrated snap-on rail · for type IDC · Housing materials: stainless steel	**E10730**
	Mounting set · Clamp mounting · aluminium profile · for type OC · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	**E20901**
	Dovetail clamp · for type DTS, O4, O5 · Housing materials: AlMgSi0.5	**E21088**

DTE102 RFID system with EtherNet/IP

Type	Description	Drawing no.	Order no.
Type DTE1 · M12 connector			
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	4	**DTE102**

RFID system DTE 100 with Profibus DP

Type	Description	Drawing no.	Order no.
Type DTE1 · M12 connector			
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	5	**DTE100**

RFID antennas 125 kHz for system DTE 100, DTE 102

Type	Description	Drawing no.	Order no.
	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	2	**ANT512**

RFID tags 125 kHz for antenna ANT512

Type	Description	Order no.
	ID tag · ID-TAG/30X2.5/05 - 256 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	**E80360**
	ID tag · ID-TAG/30X2.5/05 - 2048 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	**E80361**

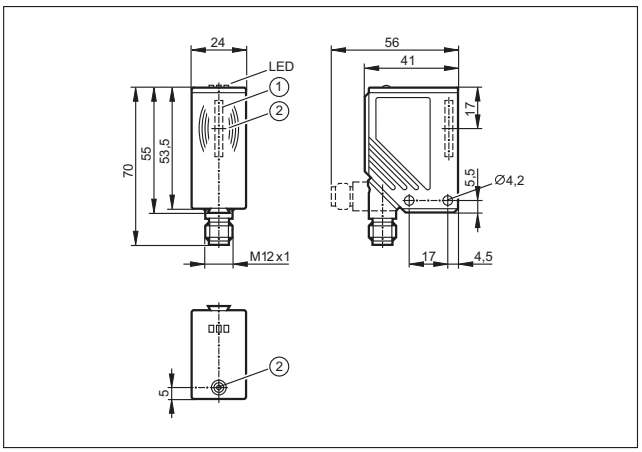
Accessories DTE 100

Type	Description	Order no.
	Terminating resistor plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · Housing materials: PUR	**E12315**
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 10 m · Housing materials: PUR	**E12317**
	Cable plug · straight · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	**E12319**
	Socket · straight · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	**E12321**

You can find scale drawings from page 618

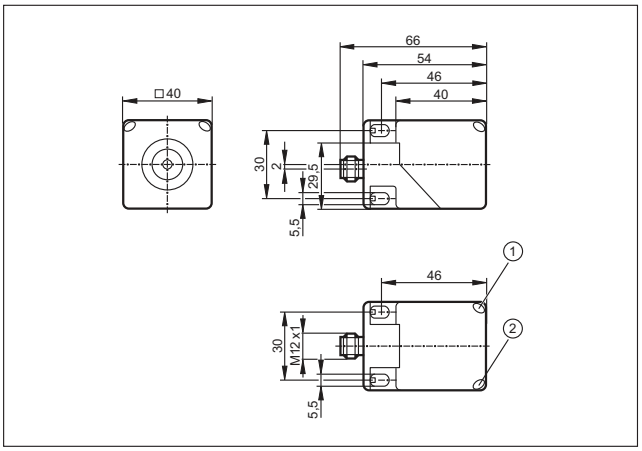
Scale drawings / drawing no. – CAD download: www.ifm.com

1



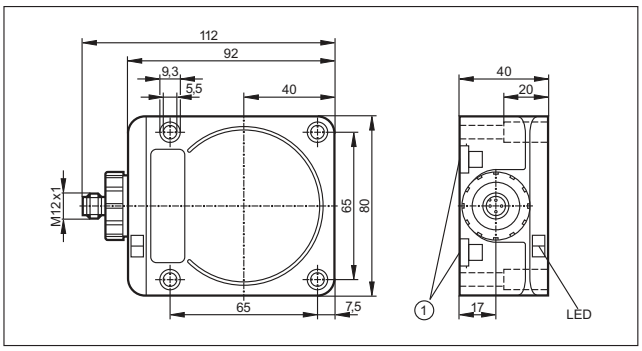
1: integrated antenna, 2: tag positioning mark (middle of the antenna)

2



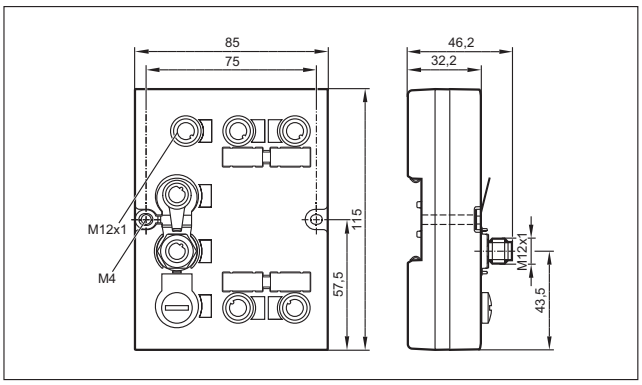
1: LED yellow, 2: LED green

3



1: Mounting on DIN rail

4



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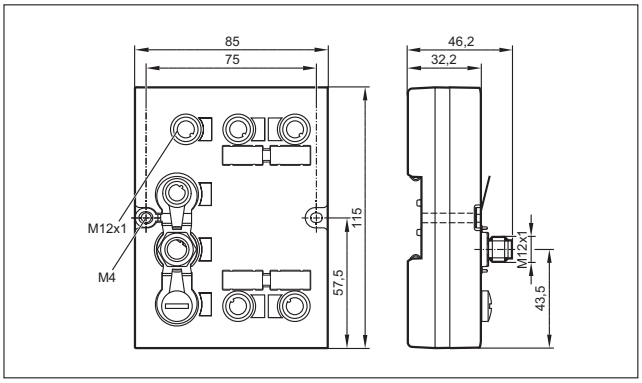


RFID 13.56 MHz

Flexible system for production, assembly and handling technology. Ensures fast data transmission and supports the ISO 15693 standard.

- DTE102 system with EtherNet/IP
- DTE100 system with Profibus DP

System overview	Page
DTE102 RFID system with EtherNet/IP	620
RFID system DTE 100 with Profibus DP	620
RFID antennas 13.56 MHz for system DTE 100, DTE 102	621
RFID tags 13.56 MHz for antennas ANT513, ANT410, ANT411, ANT430, ANT431	621
Accessories DTE 100	621
Scale drawings / drawing no. – CAD download: www.ifm.com	622

DTE102 RFID system with EtherNet/IP

Type	Description	Drawing no.	Order no.
Type DTE1 · M12 connector			
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	1	**DTE102**

RFID system DTE 100 with Profibus DP

Type	Description	Drawing no.	Order no.
Type DTE1 · M12 connector			
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	2	**DTE100**

RFID antennas 13.56 MHz for system DTE 100, DTE 102

Type	Description	Drawing no.	Order no.
	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	3	**ANT513**
	Read/write head · M12 connector · Housing materials: housing: stainless steel	4	**ANT410**
	Read/write head · M12 connector · Housing materials: housing: stainless steel	5	**ANT411**

RFID tags 13.56 MHz for antennas ANT513, ANT410, ANT411, ANT430, ANT431

Type	Description	Order no.
	ID tag · ID-TAG/30X2.8/03 - 16 Kbit · Ø 30 x 2.8 mm · Housing materials: PA 6 black	**E80370**
	ID tag · ID-TAG/30X2.5/06 - 896 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	**E80371**

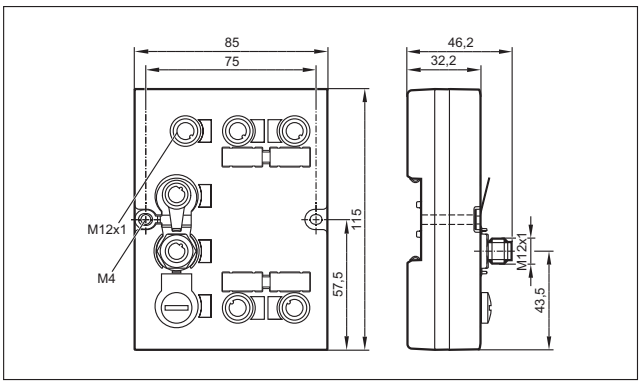
Accessories DTE 100

Type	Description	Order no.
	Terminating resistor plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · Housing materials: PUR	**E12315**
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 10 m · Housing materials: PUR	**E12317**
	Cable plug · straight · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	**E12319**
	Socket · straight · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: PUR	**E12321**

You can find scale drawings from page 622

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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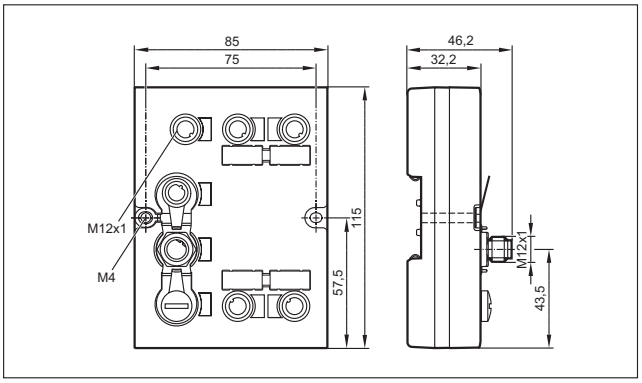

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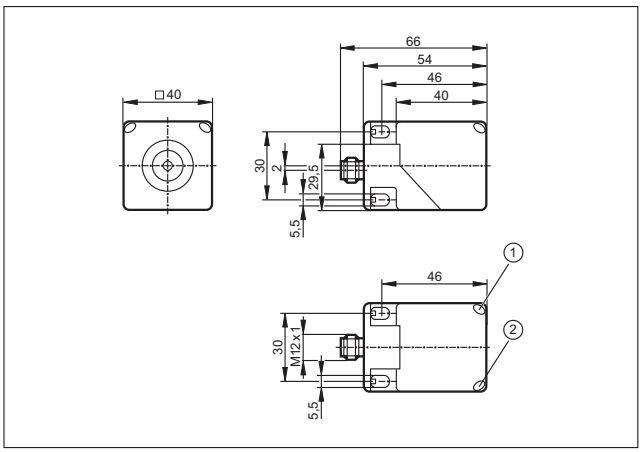
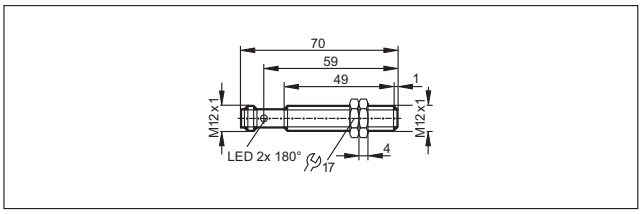
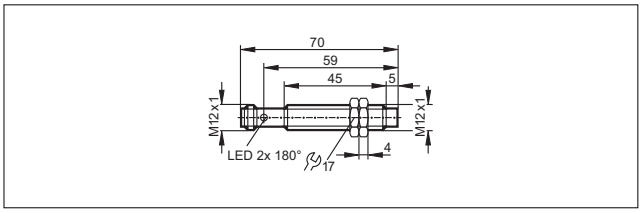


1: LED yellow, 2: LED green

4



5



RFID UHF

The system is optimised for applications in production control, asset management, material flow control, track & trace and supply chain management:

- System DTE 800 for EU/ETSI
- System DTE 900 for US/FCC

System overview

System overview	Page
RFID UHF readers	624
RFID UHF antennas	625
ID tags UHF	625
Accessories for UHF systems	626
Scale drawings / drawing no. – CAD download: www.ifm.com	626 - 627

RFID UHF readers

Type	Dimensions [mm]	Operating frequency [MHz]	Transmission power [mW ERP]	Number of antenna inputs	Process interface	Output	Drawing no.	Order no.
M12 connector · Connector groups 8, 10, 18, 20, 123, 125, 150								
	233.5 x 270 x 68	865-868 (ETSI)	2000	4	Ethernet TCP/IP	–	1	**DTE800**
	233.5 x 270 x 68	902...928 (FCC)	2000	4	Ethernet TCP/IP	–	1	**DTE900**
	233.5 x 270 x 68	865-868 (ETSI)	2000	4	EtherNet/IP	–	1	**DTE810**
	233.5 x 270 x 68	902...928 (FCC)	2000	4	EtherNet/IP	–	1	**DTE910**

RFID UHF antennas

Type	Dimensions [mm]	Operating frequency [MHz]	Antenna gain [cBic]	Max. input power [mW]	Protection	Draw-ing no.	Order no.
TNC socket							
	63 x 28 x 90	865...928	-30	1000	IP 67	2	**ANT805**
	63 x 28 x 90	865...870	-15	500	IP 67	2	**ANT810**
	126 x 37 x 156	865...870	4	–	IP 67	3	**ANT820**
	271 x 270 x 42	865...870	8.5	–	IP 67	4	**ANT830**
	63 x 28 x 90	902...928 (FCC)	-15	500	IP 67	2	**ANT910**
	271 x 270 x 42	902...928 (FCC)	8.3	–	IP 65	4	**ANT930**

ID tags UHF

Type	Description	Order no.
	ID tag · ID-TAG/D50x3.3/04 · Ø 50 x 3.3 mm · Housing materials: PA 6	**E80350**
	ID tag · ID-TAG/D55x13/04 · Ø 55 x 13 mm · Housing materials: PA 6	**E80351**
	ID tag · ID-TAG/R30X10/04 · Ø 30 x 10 mm · Housing materials: PU black	**E80353**
	ID tag · ID-TAG/R40X10/04 · 40 x 32 x 8 mm · Housing materials: nylon black	**E80354**

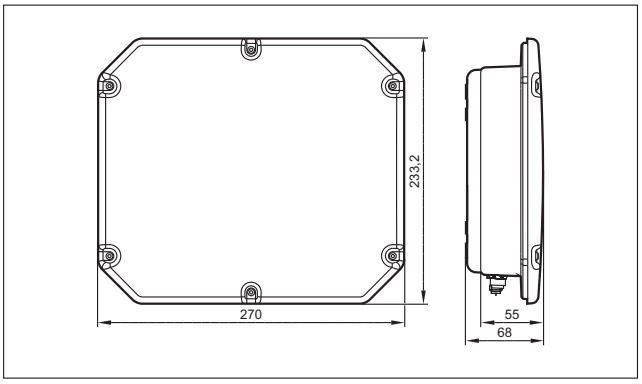
You can find scale drawings from page 626

Accessories for UHF systems

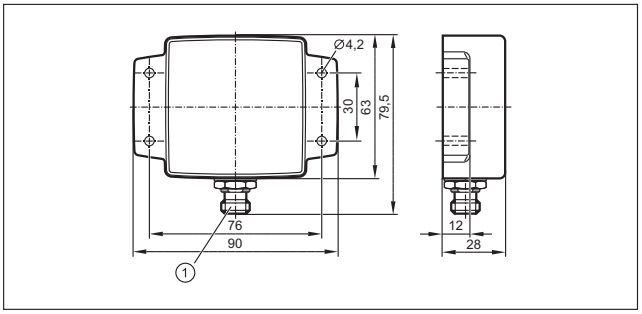
Type	Description	Order no.
	Jumper · straight / straight · For RFID antenna · 3 m	E80330
	Jumper · straight / straight · For RFID antenna · 6 m	E80331
	Jumper · straight / straight · For RFID antenna · 10 m	E80332
	Jumper · straight / straight · For RFID antenna · 15 m	E80333
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 10 m · Housing materials: PUR / PC	E12204
	Clamp · for RFID UHF readers DTE800/DTE900 and antennas ANT830/ANT930 · Housing materials: fixture: steel sheet galvanised / screws: stainless steel / Fixing strap: stainless steel	E80340

Scale drawings / drawing no. – CAD download: www.ifm.com

1

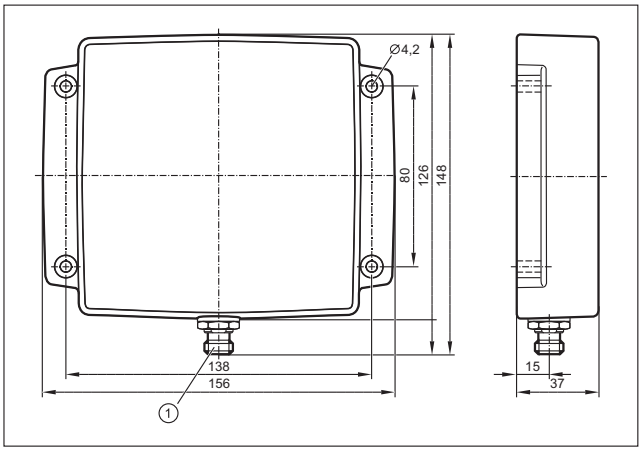


2



1: TNC socket

3

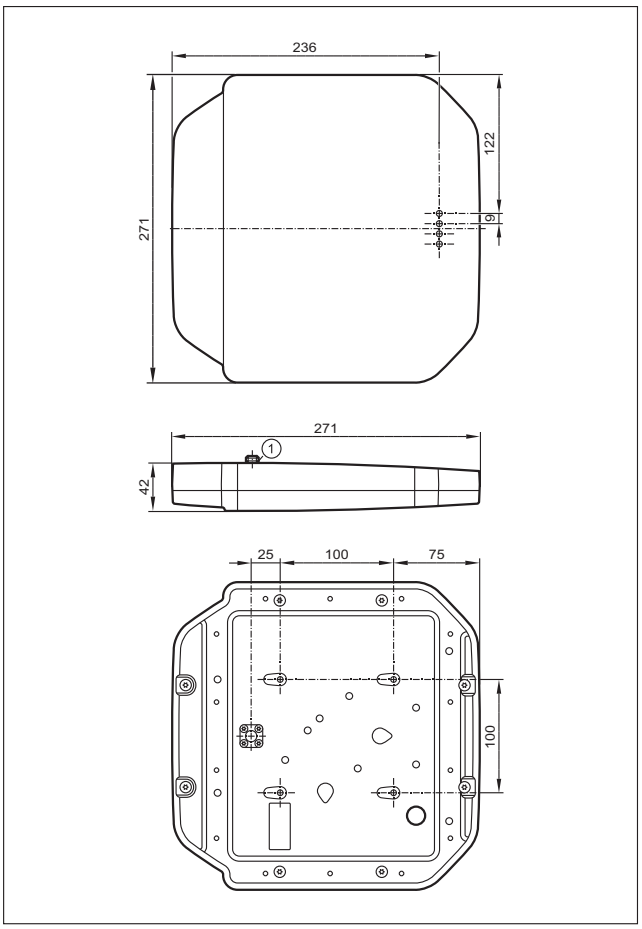


1: TNC socket

Product selectors and further information can be found at: www.ifm.com

Scale drawings / drawing no. – CAD download: www.ifm.com

4



1: TNC socket

1D/2D code readers

Photoelectric multicode reader for 1D bar codes and 2D codes.Versions with infrared light and red light as well as different field of view sizes are available.

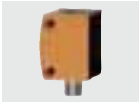
System overview	Page
Multicode reader	628 - 629
Illumination units	629
Software	629
Panel PC for Multicode Reader	630
Fixing components	630 - 631
Protective panes and diffusers	631
Connection technology	631
Wiring diagrams	632
Scale drawings / drawing no. – CAD download: www.ifm.com	632

Multicode reader

Type	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed int. / ext. lighting [m/s]	Process interface	Drawing no.	Order no.
Multicode Reader · M12 plug, 8 poles · M12 socket, 4 poles · Connector groups 16, 17							
	60 x 42 x 53.5	64 x 48	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	1	**O2I100**
	60 x 42 x 53.5	132 x 94	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	1	**O2I102**
	60 x 42 x 59	400 x 300	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	2	**O2I104**
	60 x 42 x 53.5	64 x 48	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	1	**O2I101**
	60 x 42 x 53.5	132 x 94	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	1	**O2I103**

Type	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed int. / ext. lighting [m/s]	Process interface	Draw-ing no.	Order no.
Multicode Reader · M12 plug, 8 poles · M12 socket, 4 poles · Connector groups 16, 17							
	60 x 42 x 59	400 x 300	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	2	**O2I105**

Illumination units

Type	Dimensions [mm]	Type of light	Active illuminated area [mm]	I_0 normal light intensity [mA]	I_0 high light intensity [mA]	Trigger	Draw-ing no.	Order no.
M12 connector · metal · DC · Wiring diagram no. 1 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	42 x 42 x 31	Red	–	180	90	External; 24 V PNP to IEC61131-1	3	**O2D909**
	42 x 42 x 32.2	Red	–	180	90	External; 24 V PNP to IEC61131-1	4	**O2D913**

Software

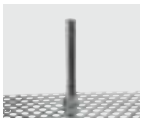
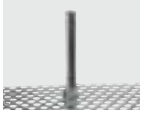
Type	Description	Number of connections	Order no.
	Operating software · O2I · for multicode reader · Create and manage application-specific configurations Monitor mode for set-up and service Service reports for statistical evaluations	–	**E2I200**
	Multicode reader OPC server · Software · German/English	25	**E2I210**
	Multicode reader OPC server · Software · German/English	50	**E2I211**
	Multicode reader OPC server · Software · German/English	75	**E2I212**
	Multicode reader OPC server · Software · German/English	100	**E2I213**

You can find wiring diagrams and scale drawings from page 632

Panel PC for Multicode Reader

Type	Description	Order no.
	Touch Panel PC · AFL-12A-ATOM-N270/WT-R/1GB-R20 · 12.1" colour display · Intel Atom CPU 1.6 GHz · 1 GByte RAM · Windows XP Embedded	E2D400

Fixing components

Type	Description	Order no.
	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 12 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D110
	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 14 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D112
	clamp · Ø 12 mm; M10 · Free-standing M10 · Housing materials: clamp: stainless steel	E20946
	clamp · Ø 12 mm · rod mounting Ø 12 mm · Housing materials: clamp: stainless steel	E21110
	clamp · Ø 14 mm; M12 · free-standing M12 · Housing materials: clamp: stainless steel	E20948
	clamp · Ø 14 mm · rod mounting Ø 14 mm · Housing materials: clamp: stainless steel	E21109
	mounting rod · Ø 12 · Length: 200 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21112
	mounting rod · Ø 12 · Length: 300 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E21113
	mounting rod · Ø 12 / M10 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20938
	mounting rod · Ø 12 / M10 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	E20940
	mounting rod · Ø 14 / M12 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20939

Type	Description	Order no.
	mounting rod · Ø 14 / M12 · Length: 200 mm · angled · Housing materials: stainless steel 316Ti / 1.4571	E20941
	Connection piece · Ø 20 mm · for the connection of two clamps with Ø 20 mm · Housing materials: stainless steel 316L / 1.4404	E21076

Protective panes and diffusers

Type	Description	Order no.
	Plastic diffuser · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21165
	Plastic protective pane for the food industry · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21166
	Glass protective pane · O2D / O2I · Housing materials: housing: diecast zinc black / lens: float glass	E21168
	Laser protection pane plastic · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA / filter: polycarbonate	E21169

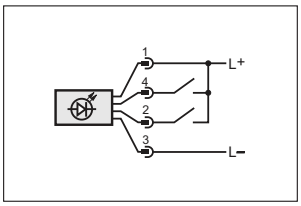
Connection technology

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Jumper · straight / straight · Ethernet · Patch cable · 2 m · Housing materials: PUR / PC	E12090
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 10 m · Housing materials: PUR / PC	E12204
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 20 m · Housing materials: PUR / PC	E12205

You can find wiring diagrams and scale drawings from page 632

Wiring diagrams

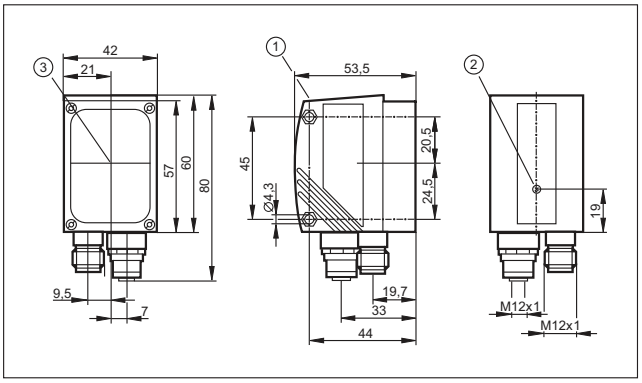
1



1: Trigger, 2: Operating mode
"high light intensity"

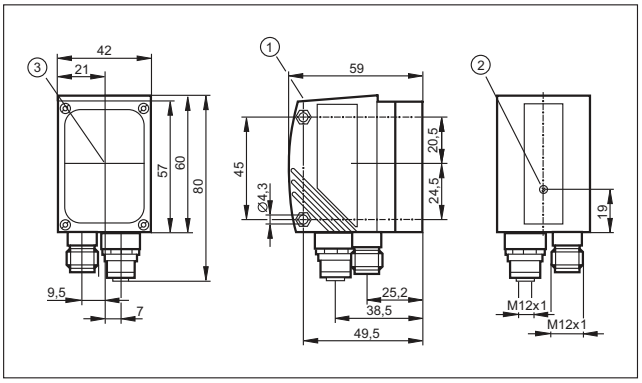
Scale drawings / drawing no. – CAD download: www.ifm.com

1



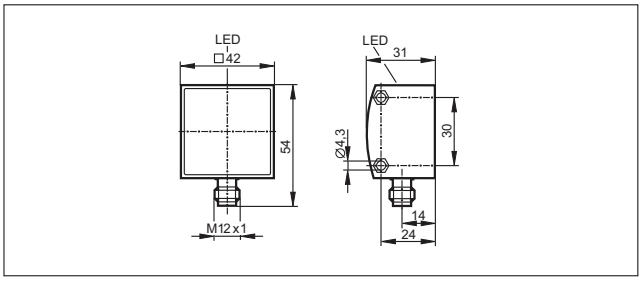
1: display, 2: Focus setting, 3: Centre of the lens axes

2

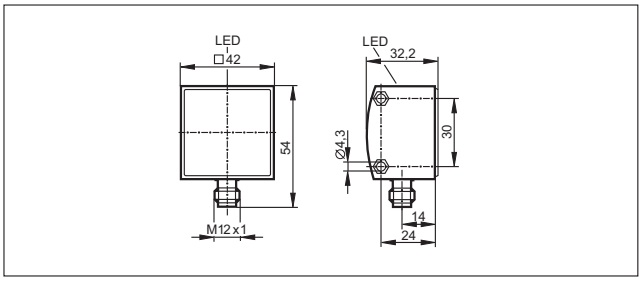


1: display, 2: Focus setting, 3: Centre of the lens axes

3



4



Condition monitoring made transparent

Condition monitoring on a machine tool.

Condition-based monitoring of plant and assets has been shown to be the most cost effective strategy for ensuring high production efficiency. Timely intervention based on good information is the key. Too much and too early is wasteful, too little and too late means long unscheduled stoppages and even collateral damage.

Continuous vibration monitoring

Vibration monitoring offers a key indicator of plant condition, forming a core part of any CBM strategy. Typically used on rotating equipment such as fans, pumps, large motors, gear boxes and so on the cost effective octavis units from ifm allow permanent monitoring to be added not only to critical assets but to any piece of plant.

Consumption of compressed air

Compressed air is one of the most expensive energy carriers in the world.

efector metris monitors compressed air and specialty gases to detect leakage areas and improve energy efficiency. By identifying leakage areas, efector metris can optimize compressed air and gas usage, improve system performance and reduce energy costs.

Flow at a glance

The use of liquid coolants has a direct influence on the quality of the end product. It is therefore important to monitor the coolant flow to improve efficiency and reduce costs.

The SM magmeter efector mid which also measures the medium temperature is a cost-effective solution with high benefits. The unit also has a KTW approval which makes it suitable for use in drinking water.

Oil quality sensor

Excessive water content in oil causes damage to plant, reduces plant efficiency and shortens the useful life of the oil. The LDH sensor from ifm measures the oil humidity and generates an analogue signal across the 0…100 % humidity range.

An additional analogue output for temperature allows the asset manager to choose values at which action can be taken to minimise any damage.

For more product information we refer you to www.ifm.com

Vibration monitoring systems 636 - 640

Flow meters for compressed air 642 - 643

Flow meters for water 644 - 648

Systems for oil quality monitoring 650 - 651

Vibration monitoring systems

efector octavis is a simple to implement vibration monitoring system which detects vibration data and automatically determines the machine diagnosis directly on the machine.

The machine condition is forwarded to the PLC or to SCADA systems.

It fulfils the main requirements for modern machine monitoring: compatibility, modularity, and transferable configuration.

System overview

System overview	Page
Vibration monitors for vibration monitoring of machines and plants to ISO 10816 type VK	636
Accessories VK	637
Vibration transmitters for vibration monitoring of machines and plants to ISO 10816 type VT	637
Compact vibration sensors type VN	637
Accessories VN	637
Diagnostic electronics – control cabinet modules for vibration diagnosis type VSE	638
Accessories VSE	638
Connection cables VSE	638
Vibration sensors for connection to external diagnostic electronics VSE – type VSA / VSP	639
VSA / VSP accessories	639
Scale drawings / drawing no. – CAD download: www.ifm.com	640

Vibration monitors for vibration monitoring of machines and plants to ISO 10816 type VK

Type	Description	Drawing no.	Order no.
	Vibration monitor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 0...25 mm/s · Switching outputs: normally closed and analogue 4...20 mA · PBT / PC / FPM / stainless steel 316L / 1.4404	1	VKV021
	Vibration sensor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 0...50 mm/s · Switching outputs: normally closed and analogue 4...20 mA · PBT / PC / FPM / stainless steel 316L / 1.4404	1	VKV022

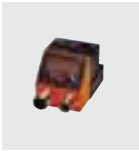
Accessories VK

Type	Description	Order no.
	Protective cover · with lead seal option · for pressure sensors type PK · for temperature sensors type TK · for vibration sensors type VK · Housing materials: PP transparent	**E30094**

Vibration transmitters for vibration monitoring of machines and plants to ISO 10816 type VT

Type	Description	Drawing no.	Order no.
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 0...25 mm/s · Analogue output 4...20 mA · stainless steel 316L / 1.4404	2	**VTV122**

Compact vibration sensors type VN

Type	Description	Drawing no.	Order no.
	Vibration sensor, Parameter setting via pushbuttons, 2 switching outputs or 1 switching output and 1 current output 4...20 mA (can be set via pushbuttons) 1 current input 4...20 mA, Analogue input 4...20 mA, v peak or v rms (can be set via pushbuttons), Measuring range 0..500 mm/s, Frequency 2 / 10...1000 Hz, History memory with realtime clock ring memory, sampling rate 5 min., recording duration approx. 3 years, Data interface USB, Display 4-digit alphanumeric display, Connection via M12 x 1 and M8 x 1 connectors	3	**VNB001**

Accessories VN

Type	Description	Order no.
	USB adapter cable · straight / straight · 5 m	**E30136**
	Adapter · UNF-M5 · Housing materials: stainless steel	**E30137**
	Power supply · 2 m · Housing materials: PPE	**E30080**

You can find scale drawings from page 640

Diagnostic electronics – control cabinet modules for vibration diagnosis type VSE

Type	Description	Drawing no.	Order no.
	Diagnostic electronics for vibration sensors, 4 sensor inputs 0...10 mA or IEPE, TCP/IP Ethernet interface, Frequency-selective machine monitoring of up to 4 measuring points, Integrated history memory with real-time clock, Counter function, 4 inputs dynamic, can be configured individually: 0...10 mA or IEPE 2 inputs static: 0/4...20 mA or HTL pulse (electrically isolated) 2 digital alarm outputs (PNP 100 mA) or 1 digital output and 1 analogue output 0/4...20/22 mA, Analogue input 0...10 mA / IEPE, Combicon connection	4	**VSE002**
	Diagnostic electronics for vibration sensors, 4 sensor inputs 0...10 mA or IEPE, TCP/IP Ethernet interface, Frequency-selective machine monitoring of up to 4 measuring points, Integrated history memory with real-time clock, Counter function, 4 inputs dynamic (can be configured individually) or 0...10 mA or IEPE 2 inputs static 0/4...20 mA or 0...10 V or HTL pulse (electrically isolated) 8 digital inputs/outputs (freely configurable) (PNP 100 mA) 2 digital alarm outputs (PNP 100 mA) or 1 digital alarm output and 1 analogue output 0/4...20/22 mA or 0...10 V, Analogue input, Combicon connection	5	**VSE100**

Accessories VSE

Type	Description	Number of connections	Order no.
	Parameter setting software for VSExxx	–	**VES003**
	octavis OPC server · Software · German/English	25	**VOS001**
	octavis OPC server · Software · German/English	50	**VOS002**
	octavis OPC server · Software · German/English	75	**VOS003**
	octavis OPC server · Software · German/English	100	**VOS004**
	octavis OPC server · Software · German/English	1000	**VOS005**

Connection cables VSE

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 5 m · Housing materials: PUR	**E30112**
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR	**EC2080**

Vibration sensors for connection to external diagnostic electronics VSE – type VSA / VSP

Type	Description	Drawing no.	Order no.
	Vibration sensor · For connection to external diagnostic electronics type VSExxx · Connector · housing: stainless steel 316L / 1.4404, Vibration detection up to ±25 g, Frequency range 0...6000 Hz, Ambient temperature -30...125 °C, IP 68 / IP 69K	6	**VSA001**
	Vibration sensor · For connection to external diagnostic electronics type VSExxx · Connector · housing: stainless steel 316L / 1.4404, Vibration detection up to ±3.3 g, Frequency range 0...1000 Hz, Ambient temperature -30...125 °C, IP 68 / IP 69K	6	**VSA101**
	Vibration sensor · For connection to external diagnostic electronics type VSExxx · Connector · housing: stainless steel 316L / 1.4404, Vibration detection up to ±250 g, Frequency range 0...6000 Hz, Ambient temperature -30...125 °C, IP 68 / IP 69K	6	**VSA201**
	Vibration sensor · For connection to external diagnostic electronics type VSExxx · Cable with connector, screened, cable length 2 m· housing: stainless steel 316L / 1.4404, Vibration detection up to ±25 g, Frequency range 0...10000 Hz, Ambient temperature -30...125 °C, IP 67	7	**VSA002**
	Vibration sensor · for connection to external diagnostic electronics type VSExxx · Cable length 3 m · housing: stainless steel 316L / 1.4404, Vibration detection up to ±25 g, Frequency range 0...10000 Hz, Ambient temperature -20...80 °C / Contact temperature -30...100 °C, IP 67	8	**VSA004**
	Vibration sensor · for connection to external diagnostic electronics type VSExxx · Cable length 10 m · housing: stainless steel 316L / 1.4404, Vibration detection up to ±25 g, Frequency range 0...10000 Hz, Ambient temperature -20...80 °C / Contact temperature -30...100 °C, IP 67	8	**VSA005**
	Vibration sensor · ATEX approval · Group II, category 1D · Group II, category 1G · for connection to external diagnostic electronics type VSExxx via safety barrier · Cable, 10 m · housing: stainless steel	9	**VSP01A**
	Vibration sensor · ATEX approval · group 1, M1 · for connection to external diagnostic electronics type VSExxx via safety barrier · Cable, 10 m · housing: stainless steel	9	**VSP02A**

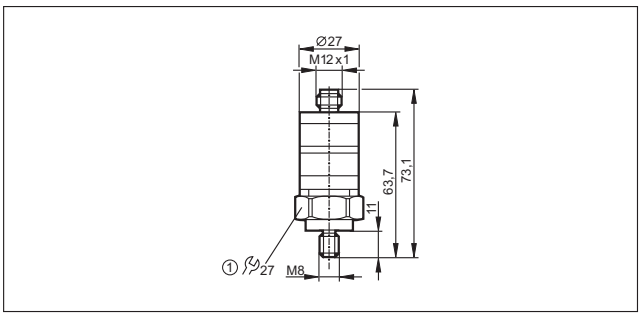
VSA / VSP accessories

Type	Description	Order no.
	conical washer · Ø 8.4 / 15 mm · for efector octavis · Housing materials: stainless steel 316Ti / 1.4571	**E30115**
	Adapter · M8-M8 · for the VSA001 vibration sensor · Electrical isolation · Housing materials: PEEK	**E30132**

You can find scale drawings from page 640

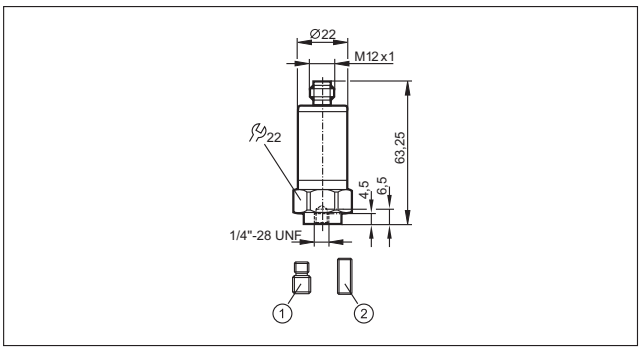
Scale drawings / drawing no. – CAD download: www.ifm.com

1



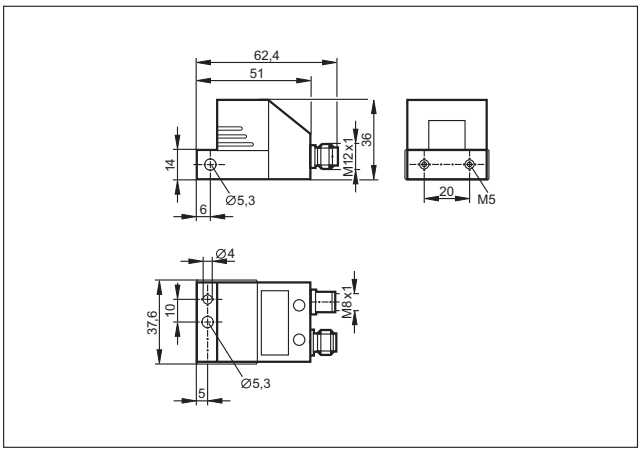
1: tightening torque 15 Nm

2



1: Threaded adapter 1/4"-28 UNF / M8 x 1.25 mm, 2: Threaded adapter 1/4"-28 UNF, tightening torque 8 Nm

3



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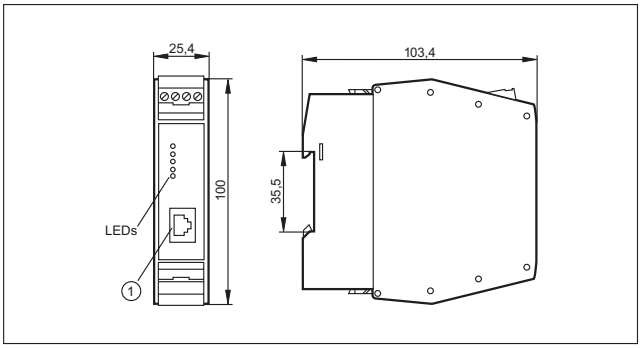
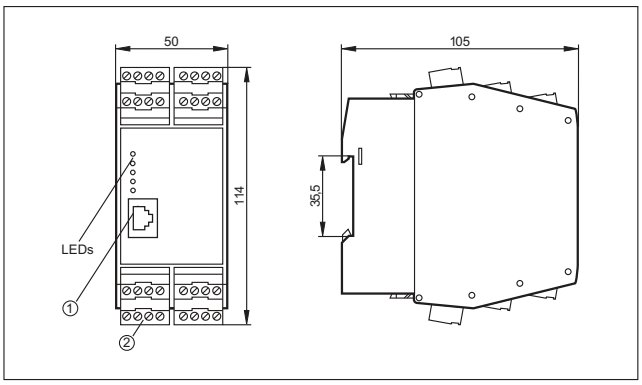


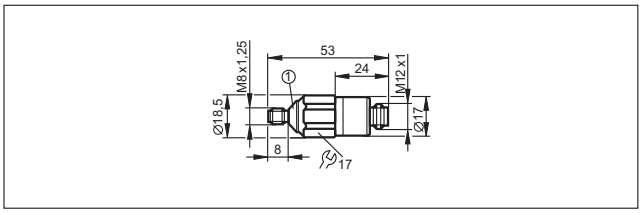
1: Ethernet interface

5



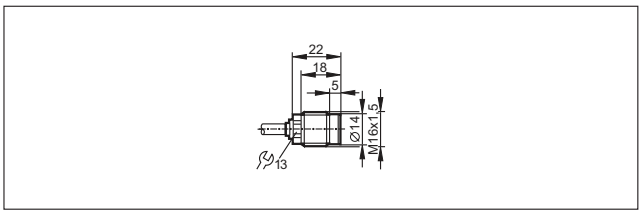
1: Ethernet interface, 2: Combicon plug with screw terminals (optional)

6



1: conical angle = 90°

7



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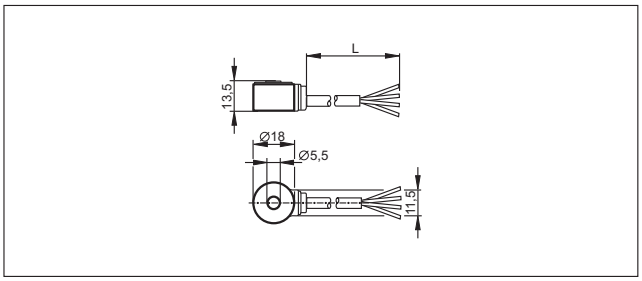

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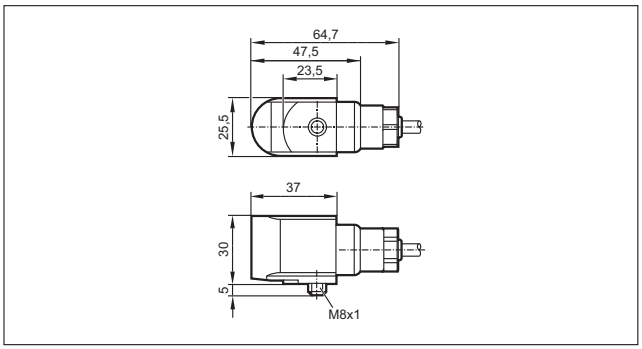


Flow meters for compressed air

efector metris is used to measure the consumption of compressed air. The high measurement dynamics in conjunction with high measurement accuracy and a fast response time result in an application range from leakage detection to operational measurement of consumption. Many possibilities of supplying the values measured for current and temperature allow almost universal coupling to process or control systems.

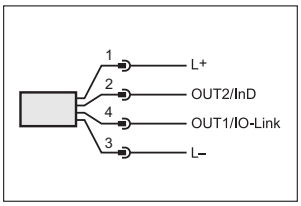
System overview	Page
Compressed air meters	642
Wiring diagrams	643
Scale drawings / drawing no. – CAD download: www.ifm.com	643

Compressed air meters

Type	Process connection	Setting range [Nm³/h]	Accuracy within measuring range	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA scaleable) · Wiring diagram no. 1 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G ¼ (DN8)	0.12...15.00	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	1	**SD5000**
	R½ (DN15)	0.6...75.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	2	**SD6000**
	G ½ (DN15)	0.6...75	± (15% MW + 1.5% MEW)	16	< 0.1	18...30	3	**SD6050**
	R1 (DN25)	1.8...225.0	A): ± (3% MW + 0,3% MEW) B): ± (6% MW + 0,6% MEW)	16	< 0.1	18...30	4	**SD8000**
	R1½ (DN40)	3.5...410.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW)	16	< 0.1	18...30	5	**SD9000**
	R2 (DN50)	5...700	A): ± (3% MW + 0,3% MEW) / B): ± (6% MW + 0,6% MEW)	16	< 0.1	18...30	6	**SD2000**

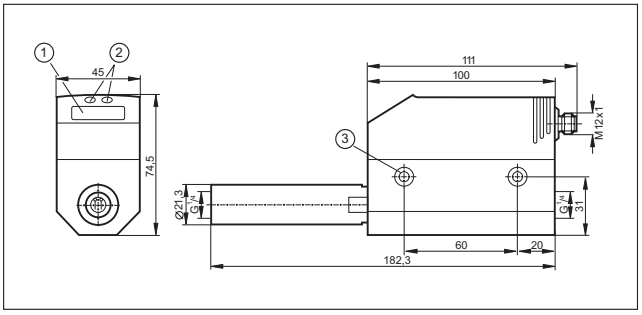
Wiring diagrams

1



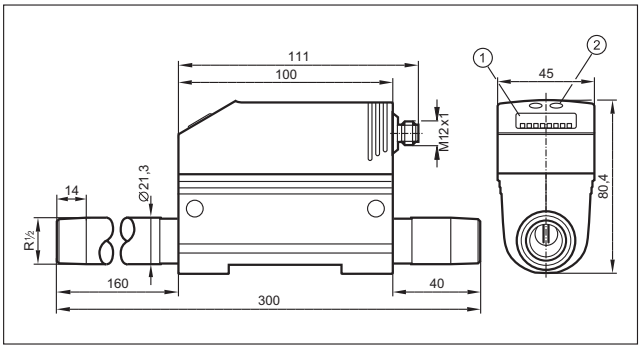
Scale drawings / drawing no. – CAD download: www.ifm.com

1



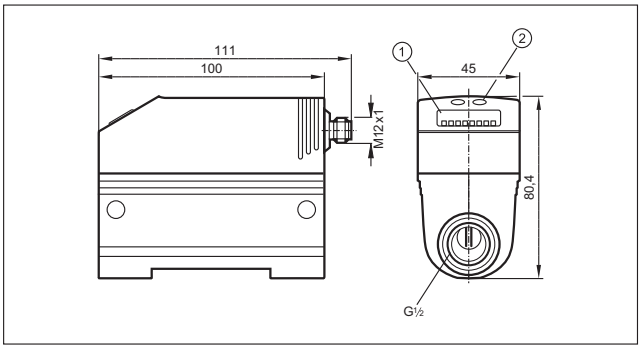
1: 4-digit alphanumeric display, 2: Programming buttons, 3: hole for M5 fixing screw

2



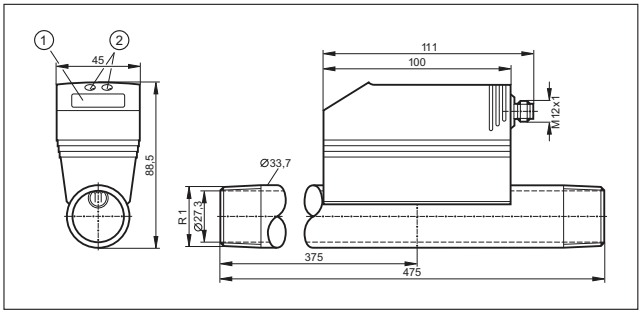
1: 4-digit alphanumeric display, 2: Programming buttons

3



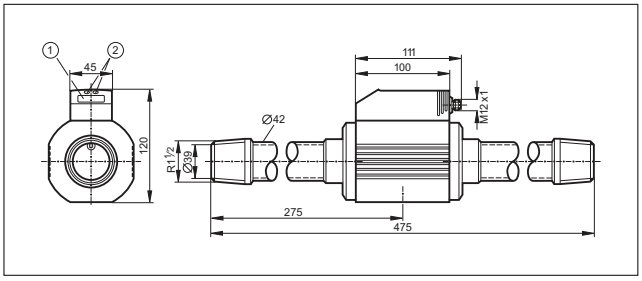
1: 4-digit alphanumeric display, 2: Programming buttons

4



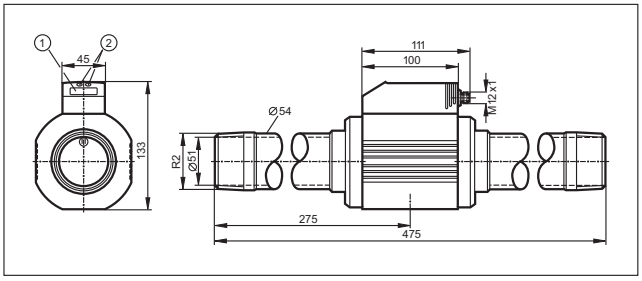
1: 4-digit alphanumeric display, 2: Programming buttons

5



1: 4-digit alphanumeric display, 2: Programming buttons

6



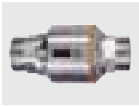
1: 4-digit alphanumeric display, 2: Programming buttons

Flow meters for water

Efforts to reduce water consumption presuppose knowledge of the current consumption. Measuring systems such as magnetic-inductive or ultrasound flow meters can also be used for applications in drinking water circuits due to their compact design. The use in drinking water supply is ensured by the use of approved materials. Many possibilities of supplying the values measured for current and temperature allow almost universal coupling to process or control systems.

System overview	Page
Magnetic-inductive flow meters with integrated temperature monitoring (sealing material EPDM) KTW / W270 approval	644
Ultrasonic flow meters for liquids (water, glycol solutions, oils)	645
Accessories for flow meters	645 - 646
Grounding clamps for magnetic-inductive flow meters	647
Wiring diagrams	647
Scale drawings / drawing no. – CAD download: www.ifm.com	647 - 648

Magnetic-inductive flow meters with integrated temperature monitoring (sealing material EPDM) KTW / W270 approval

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Drawing no.	Order no.
Output function OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection · Wiring diagram no. 1 · Connector groups 8, 9, 10, 12, 13, 18, 19, 20, 21, 123, 125, 126, 127, 128, 129, 150, 152								
	G2 flat seal	8...600	-10...70	16	< 0.3	18...32	1	**SM2100**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 2 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G½	0.25...25.00	-10...70	16	< 0.150	19...30	2	**SM6100**
	G¾	0.5...50.0	-10...70	16	< 0.150	19...30	3	**SM7100**
	G1	0.7...100.0	-10...70	16	< 0.150	19...30	4	**SM8100**
Output function OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection · Wiring diagram no. 1 · Connector groups 8, 9, 10, 12, 13, 18, 19, 20, 21, 123, 125, 126, 127, 128, 129, 150, 152								
	G2 flat seal	6.5...300	-10...70	16	< 0.3	18...32	1	**SM9100**

Product selectors and further information can be found at: www.ifm.com

Ultrasonic flow meters for liquids (water, glycol solutions, oils)

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U_b [V]	Draw-ing no.	Order no.
Output function 2 x normally open / closed programmable · Wiring diagram no. 3 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G¾	0.1...50.0	-10...80	16	< 0.250	19...30	5	**SU7200**
	G1	0.2...100.0	-10...80	16	< 0.250	19...30	6	**SU8200**
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scaleable) · Wiring diagram no. 2 · Connector groups 8, 9, 10, 18, 20, 123, 125, 127, 150								
	G¾	0.1...50.0	-10...80	16	< 0.250	19...30	5	**SU7000**
	G1	0.2...100.0	-10...80	16	< 0.250	19...30	6	**SU8000**
	G1¼	0.4...200.0	-10...80	16	< 0.250	19...30	7	**SU9000**
Output function 2 x analogue (4...20 mA scalable) · Wiring diagram no. 4 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G1¼	0.0...200.0	-10...80	16	< 0.250	19...30	7	**SU9004**

Accessories for flow meters

Type	Description	Order no.
	Adapter · G ½ - R ½ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316Ti / 1.4571	**E40199**
	Adapter · G ½ - G ¾ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316L / 1.4404	**E40189**
	Adapter · G ¾ - R ½ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	**E40178**
	Adapter · G 1 - R ½ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	**E40179**
	Adapter · G 1 - R ¾ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	**E40180**

You can find wiring diagrams and scale drawings from page 647

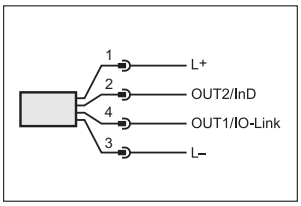
Type	Description	Order no.
	Adapter · G ¾ I - R½ · for flow monitor type SM7 / SU7 · Housing materials: Brass	E40151
	Adapter · Victaulic · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40227
	Adapter · 2" NPT · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40228
	Adapter · R 2" A · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40231
	Adapter · 1½" NPT · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40229
	Adapter · G 1½ · for flow sensors type SM2, SM9 · Housing materials: stainless steel 316Ti / 1.4571	E40230
	Adapter · G 1 - R¾ · for flow monitor type SM8 / SU8 · Housing materials: Brass	E40153
	Adapter · G 1¼ - R 1 · for flow monitor type SU9 · Housing materials: stainless steel 316L / 1.4404	E40205
	Adapter · G ½ - G ½ · for flow monitor type SM6 · Housing materials: stainless steel 316L / 1.4404	E40213
	Adapter · G ¾ - G ½ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40214
	Adapter · G 1 - G ¾ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40215
	Adapter · G ¾ - G ¾ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40216
	Adapter · G 1 - G 1 · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40217

Grounding clamps for magnetic-inductive flow meters

Type	Description	Order no.
	Grounding clamp G½ · for flow monitor type SM6 · Housing materials: stainless steel	**E40196**
	Grounding clamp G ¾ · for flow monitor type SM7 · Housing materials: stainless steel	**E40197**
	Grounding clamp G 1 · for flow monitor type SM8 · Housing materials: stainless steel	**E40198**

Wiring diagrams

1



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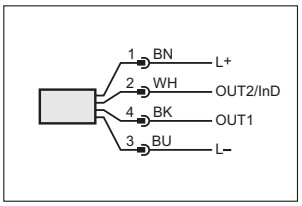

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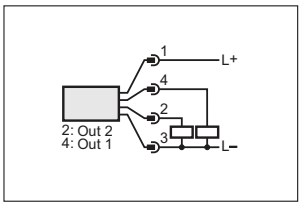

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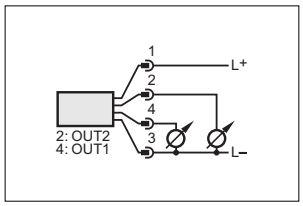
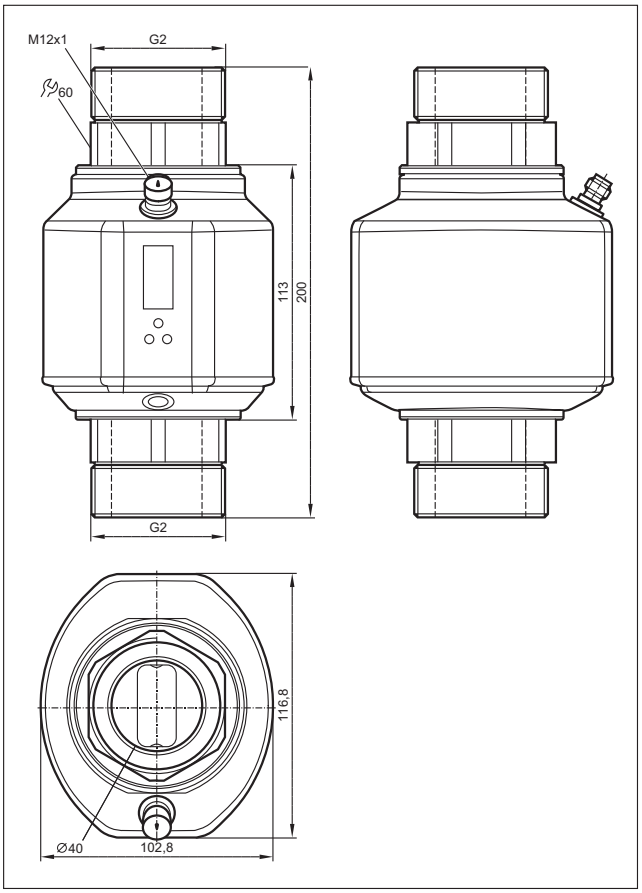


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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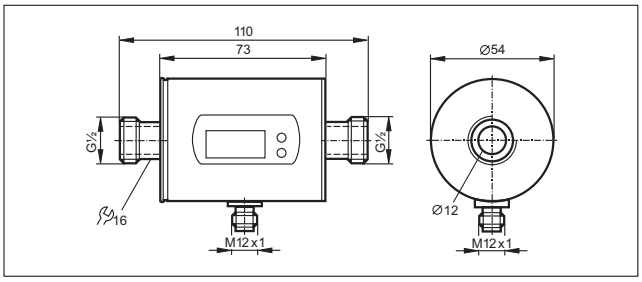

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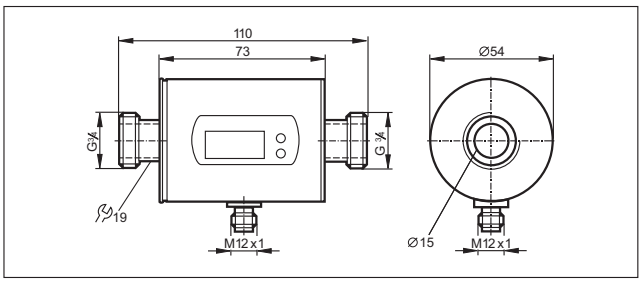

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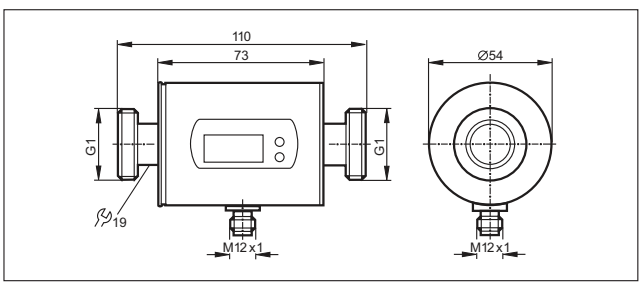

Scale drawings / drawing no. – CAD download: www.ifm.com

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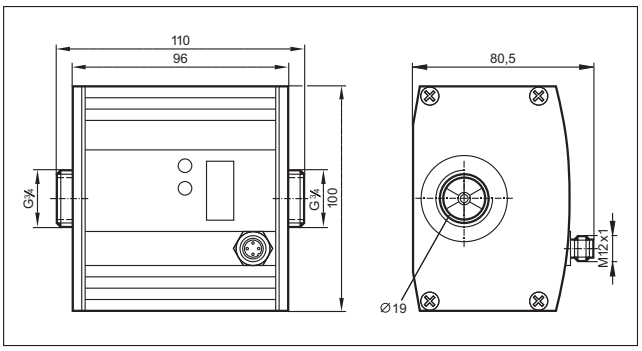
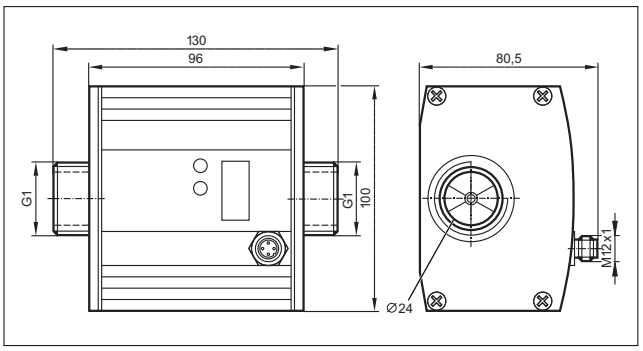


installation length with pipe adapter E40151 / E40154: 185 mm

6



installation length with pipe adapter E40152 / E40155: 205 mm,
installation length with pipe adapter E40153 / E40156: 215 mm

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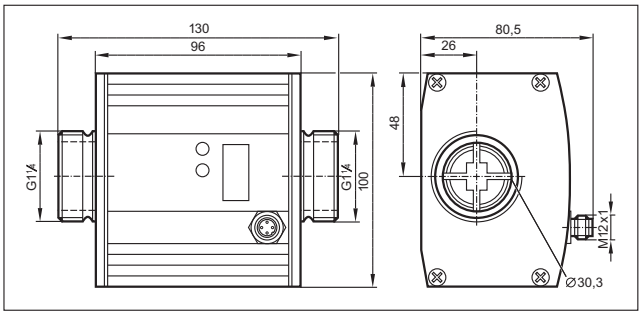

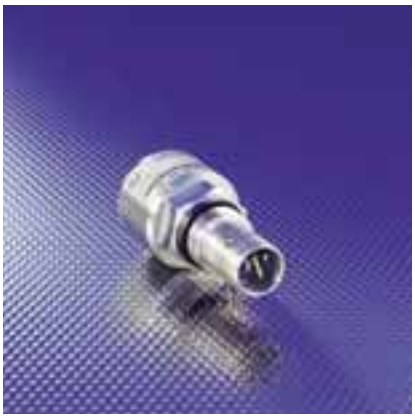

Systems for

For an early detection of too high a water content in lubricants and oils it is useful to continuously monitor the relative moisture in the media using a sensor.

The sensor measures the relative moisture in the oil in the range of 0...100 % by means of a capacitive measuring element. Besides the relative moisture the sensor also provides the medium temperature as an analogue signal.

System overview	Page
Oil humidity sensor	650
Accessories for oil humidity sensor LDH	650
Wiring diagrams	651
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Oil humidity sensor

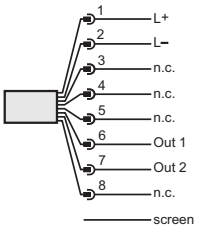
Type	Process connection	Pressure rating [bar]	Protection	Medium temperature oil [°C]	Ambient temperature [°C]	Drawing no.	Order no.
M12 connector · Output function 4...20 mA analogue · Wiring diagram no. 1 · Connector groups 15, 16, 17							
	G ¾	10	IP 67	-20...100	-20...85	1	**LDH100**

Accessories for oil humidity sensor LDH

Type	Description	Order no.
	Adapter block · D33 / G ¾ · for oil humidity sensor LDH100 · Housing materials: aluminium	**E43400**

Wiring diagrams

1



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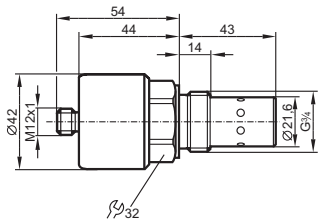

For mobile applications

Extreme shock and vibration: Reliable function of the sensitive electronics must be guaranteed under harsh operating conditions as well.

Control technology for mobile applications

Life today cannot be imagined without electronics in modern motor vehicles and mobile machines. Many necessary and convenient functions could not be implemented without electronic support. In contrast to electronics in consumer goods and "normal" industrial applications such as packaging machines and conveyors the requirements for components for mobile applications are much higher.

Electronic requirements

The components need to be carefully selected, mainly because of the extreme mechanical stress caused by impacts and shocks and the use at extreme operating temperatures. The direct influence of dirt, humidity and water often cannot be excluded in field applications. Therefore a high protection rating and a special selection of the materials are required for the devices.
In addition to mechanical and environmental influences, electrical interference affecting the whole system as well as individual devices, have to be taken into account. A wide supply voltage range and well-adapted protective measures ensure safe operation of the devices even in case of large voltage fluctuations by the battery / generator system. Strong conducted or radiated interference must not influence the function either.

For device networking the CAN bus has become the successful standard in the last few years. Whereas for the high volume production of passenger cars special, optimised and well-adapted protocols are used, the CANopen protocol has become indispensable in mobile machines. Manufacturer and industry-specific protocols, such as diagnostic engine data according to SAE J 1939, can be coupled to the machine process via gateways.

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Mobile controllers 658 - 664

I/O modules 666 - 672

Dialogue modules / displays 674 - 678

Cameras 680 - 681

Diagnostic and service units 682 - 685

Signal converters 686 - 687

Sensors 688 - 699

Basic control systems

The ecomat*mobile* Basic control system has a modular design, is easy to install and to operate and is cost-optimised.

Besides pure control functions it provides solutions for wiring and protection.

In addition, a graphical visualisation module ensures the indication of system messages and simple display instruments.

System overview	Page
BasicController	654
Starter set ecomatmobile Basic	654
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BasicDisplay	655
BasicDisplay XL	655
Accessories for the mini control system Basic	655 - 657
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BasicController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	20	12 x Digital 4 x analogue (U/I) 4 x frequency 4 x Resistor	8 x Digital 8 x PWM	2 x CAN	1	**CR0401**
	24	12 x Digital 4 x analogue (U/I) 4 x frequency 4 x Resistor	12 x Digital 2 x PWM-I 10 x PWM	2 x CAN	2	**CR0403**

Starter set ecomatmobile Basic

Type	Description	Order no.
	Starter set ecomatmobile Basic	**EC0400**

BasicRelay

Type	Inputs / outputs	Description	Drawing no.	Order no.
	–	BasicRelay · Locations for 6 automotive relays and 10 automotive fuses ((6.3 mm) · 2 supply rails and 6 power distributors · freely wirable	3	**CR0421**

BasicDisplay

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
5 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	2.8" colour display 320 x 240 pixels	5 Pushbuttons 1 Navigation key for cursor function	–	1 x CAN	4	**CR0451**

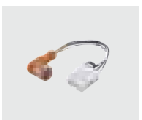
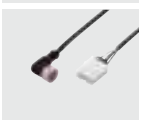
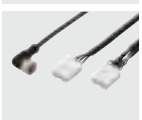
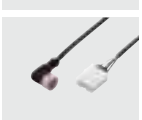
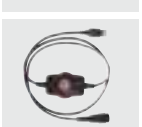
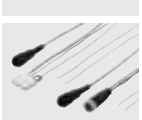
BasicDisplay XL

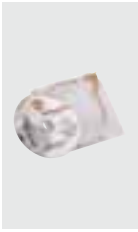
Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
6 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	4.3" colour display 480 x 272 pixels	6 Pushbuttons 1 Navigation key for cursor function	–	1 x CAN	5	**CR0452**

Accessories for the mini control system Basic

Type	Description	Order no.
	cover · for BasicController CR040x and BasicRelay CR042x · incl. cable seal	**EC0401**
	cover · for BasicController CR040x · Built-in display recess for BasicDisplay CR0451 · incl. cable seal	**EC0402**
	Mounting frame · for BasicDisplay CR0451 · panel · Housing materials: steel sheet	**EC0403**
	Mounting frame · for BasicDisplay XL CR0452 · panel · Housing materials: steel sheet	**EC0404**

You can find scale drawings from page 657

Type	Description	Order no.
	RAM mount set · Ball size 1" (B) · e.g. for BasicDisplay · for use as a desktop unit · Housing materials: Mounting arm: aluminium black anodised / Mounting plate: aluminium black anodised / ball: rubber / display carrier: plastics black	EC0405
	RAM mount set · Ball size 1" (B) · e.g. for BasicDisplay XL · for use as a desktop unit · Housing materials: Mounting arm: aluminium black anodised / Mounting plate: aluminium black anodised / ball: rubber / display carrier: plastics black	EC0406
	Jumper · wired · for 2 BasicControllers CR040x · CAN interface · Power supply · 0.5 m	EC0451
	Jumper · wired · for 1 BasicController CR040x and 1 BasicDisplay CR0451 · CAN interface · Power supply · M12 connector · 0.1 m	EC0452
	Jumper · wired · for 2 BasicControllers CR040x and 1 BasicDisplay CR0451 · CAN interface · Power supply · M12 connector · 0.5 m	EC0453
	Jumper · wired · for 1 BasicController CR040x and 1 BasicDisplay CR0451 · CAN interface · Power supply · M12 connector · 5 m	EC0454
	Jumper · wired · for 2 BasicControllers CR040x and 1 BasicDisplay CR0451 · CAN interface · Power supply · M12 connector · 5 m	EC0455
	Plug set · for BasicController CR040x · wirable · Complete set of contacts / contact housings utilising all connections to a BasicController	EC0456
	Set of contacts · for BasicRelay CR0421 · wirable · utilising all connections to a BasicRelay	EC0457
	Jumper · wired · for 1 BasicController CR040x and 1 BasicDisplay CR0451 · CAN interface · Power supply · M12 connector · 10 m	EC0458
	CANfox · CAN/RS232-USB interface · Programming and diagnosis of CAN systems · 5 V DC (via USB interface)	EC2112
	Adapter cable · for CAN interface CANfox · CAN adapter: DIN connector, 6 poles / M12 connector, 5 poles · RS-232 adapter: DIN connector, 6 poles / Sub-D plug, 9 poles · Cable length 1 m	EC2113
	Set of programming cables · for CAN interface CANfox · Cable BasicController: DIN connector, 6-pole / standard timer contact housing, 6-pole · Cable BasicDisplay: DIN connector, 6-pole / M12 socket, 5-pole · CAN interface · Voltage supply via individual wires with end ferrules · Cable length 1 m · 1 m	EC2114
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector with integrated CAN terminating resistor (120 ohm) · 5 m · Housing materials: housing: TPU black / sealing: FKM	EVC492

Type	Description	Order no.
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · German version · incl. the DVD "Software, tools and documentation"	CP9006
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · English version · incl. the DVD "Software, tools and documentation"	CP9008

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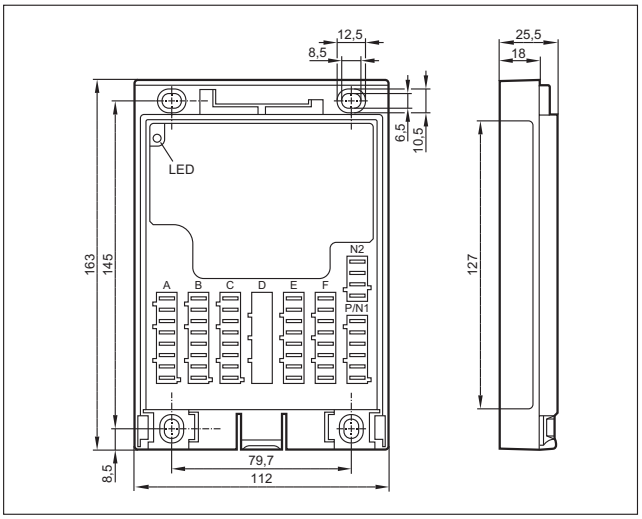

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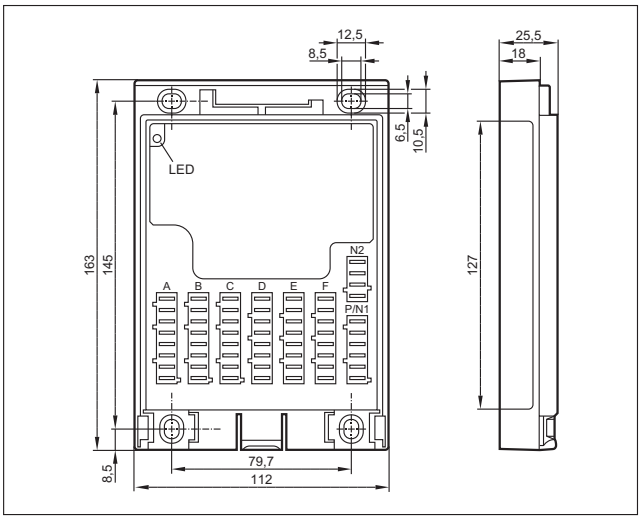

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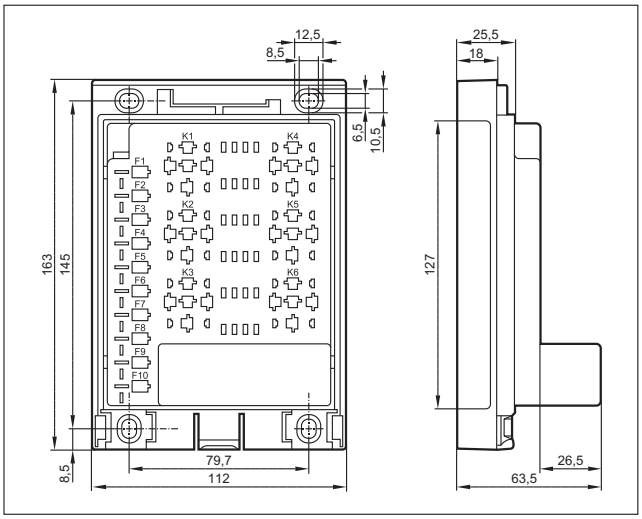

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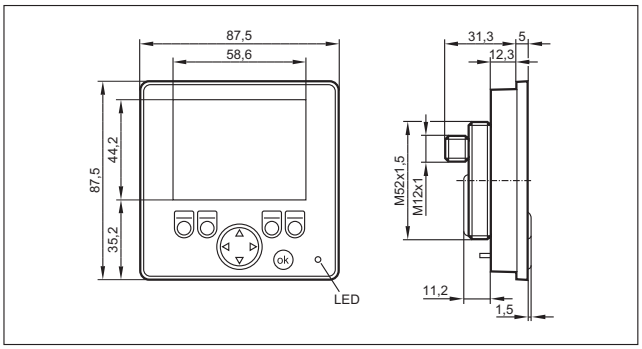

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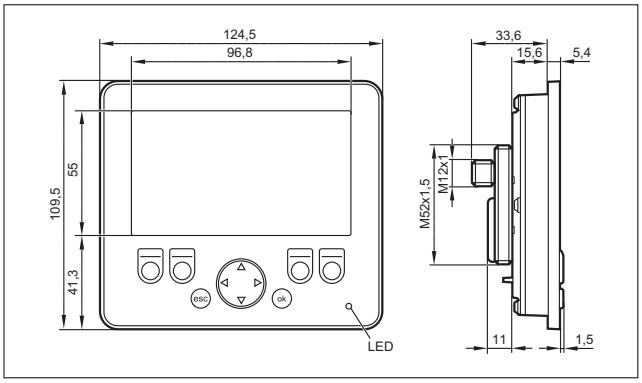

Mobile controllers

The platform of the ecomat*mobile* control system: the powerful controller family. Free programmability and the variety of configuration options enable use in a wide range of different applications.

System overview	Page
16-bit ClassicController	658
16-bit ExtendedController	659
16-bit SmartController	659
SmartController 32 bits	659
16-bit SafetyController	659
SafetyController 32 bits	660
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Connection technology for control systems	661 - 663
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16-bit ClassicController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	24	24 x Digital 8 x analogue (U/I) 8 x frequency	8 x Digital 8 x PWM-I 8 x PWM	2 x CAN 1 x RS-232	1	**CR0505**
	40	40 x Digital 8 x analogue (U/I) 8 x frequency	24 x Digital 8 x PWM-I 12 x PWM 2 x H bridge	2 x CAN 1 x RS-232	1	**CR0020**

16-bit ExtendedController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	80	80 x Digital 16 x analogue (U/I) 16 x frequency	48 x Digital 16 x PWM-I 24 x PWM 4 x H bridge	2 x 2 x CAN 2 x RS-232	2	**CR0200**

16-bit SmartController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	12	8 x Digital 4 x analogue (U/I) 2 x frequency	4 x Digital 4 x PWM-I 4 x PWM	2 x CAN 1 x RS-232	3	**CR2500**

SmartController 32 bits

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	32	16 x Digital 4 x analogue (U/I) 4 x frequency 2 x Resistor	16 x Digital 2 x analogue (0.02...10 V) 2 x PWM-I 12 x PWM	2 x CAN	3	**CR2530**

16-bit SafetyController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
SILcl 2 (IEC 62061), PL d (EN ISO 13849-1), Configurable input / output functions, Programming according to IEC 61131-3						
	24	24 x Digital 8 x analogue (U/I) 8 x frequency	8 x Digital 8 x PWM-I 8 x PWM	2 x CAN 1 x RS-232	1	**CR7506**
	40	40 x Digital 8 x analogue (U/I) 8 x frequency	24 x Digital 8 x PWM-I 12 x PWM 2 x H bridge	2 x CAN 1 x RS-232	1	**CR7021**
	80	80 x Digital 16 x analogue (U/I) 16 x frequency	48 x Digital 16 x PWM-I 24 x PWM 4 x H bridge	2 x 2 x CAN 2 x RS-232	2	**CR7201**

You can find scale drawings from page 663

SafetyController 32 bits

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
SILcl 2 (IEC 62061), PL d (EN ISO 13849-1), Configurable input / output functions, Programming according to IEC 61131-3						
	32	16 x Digital 16 x analogue (U/I) 16 x frequency	16 x Digital 16 x PWM-I 16 x PWM 2 x H bridge	4 x CAN 1 x RS-232 1 x USB	4	**CR7032**
	80	32 x Digital 32 x analogue (U/I) 32 x frequency	48 x Digital 32 x PWM-I 32 x PWM 4 x H bridge	4 x CAN 1 x RS-232 1 x USB	5	**CR7132**

32-bit ClassicController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	32	16 x Digital 16 x analogue (U/I) 16 x frequency	16 x Digital 16 x PWM-I 16 x PWM 2 x H bridge	4 x CAN 1 x RS-232 1 x USB	1	**CR0032**
	32	16 x Digital 12 x analogue (U/I) 12 x frequency 4 x Resistor	16 x Digital 16 x PWM-I 16 x PWM 2 x H bridge	4 x CAN 1 x RS-232 1 x USB	4	**CR0033**
	64	32 x Digital 16 x analogue (U/I) 16 x frequency 6 x Resistor	32 x Digital 2 x analogue (0.02...10 V) 18 x PWM-I 28 x PWM 2 x H bridge	5 x CAN 1 x RS-232 1 x USB	5	**CR0133**

32-bit ExtendedController

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	80	32 x Digital 32 x analogue (U/I) 32 x frequency	48 x Digital 32 x PWM-I 32 x PWM 4 x H bridge	2 x 2 x CAN 1 x RS-232 1 x USB	2	**CR0232**
	80	40 x Digital 36 x analogue (U/I) 36 x frequency 4 x Resistor	40 x Digital 32 x PWM-I 32 x PWM 4 x H bridge	2 x 2 x CAN 1 x RS-232 1 x USB	5	**CR0233**

CabinetController for use in control cabinets

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable input / output functions, Programming according to IEC 61131-3						
	42	24 x Digital 8 x analogue (U/I) 4 x frequency	18 x Digital 4 x PWM 10 x Relay	1 x CAN 1 x RS-232	6	**CR0301**
	36	24 x Digital 8 x analogue (U/I) 4 x frequency	12 x Digital 4 x PWM	1 x CAN 1 x RS-232	7	**CR0302**
	42	24 x Digital 8 x analogue (U/I) 4 x frequency	18 x Digital 8 x PWM 6 x PNP 10 A	2 x CAN 1 x RS-232	8	**CR0303**

Accessories and software

Type	Description	Order no.
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · German version · incl. the DVD "Software, tools and documentation"	**CP9006**
	Programming software CoDeSys · for configuration, programming and diagnosis of ifm controller systems · English version · incl. the DVD "Software, tools and documentation"	**CP9008**
	Starter set ecomat R 360 Smart Controller · consisting of: · controller CR2500 · I/O simulator box incl. connection cable and connectors · plug-in power supply · DVD with programming software CoDeSys · project examples and manuals	**EC2074**

Connection technology for control systems

Type	Description	Order no.
	Connector AMP 55-pole · wirable · with contacts (Junior Power Timer)	**EC2013**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Cores sealed individually · Core cross-section 1 mm²	**EC2084**
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Cores sealed individually · Core cross-section 1 mm²	**EC2097**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC2086**

You can find scale drawings from page 663

Type	Description	Order no.
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Core cross-section 1 mm²	EC2046
	Cable with connector · AMP 6-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	EC1520
	Cable with connector · AMP 10-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	EC1521
	Cable with connector · AMP 14-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	EC1522
	Cable with connector · AMP 18-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	EC1523
	Cable with connector · AMP 18-pole · wired · partially wired · for input signals · Cable length 1.2 m · Core cross-section 1 mm²	EC1524
	Cable with connector · AMP 18-pole · wired · fully wired · Cable length 2.5 m · Core cross-section 1 mm²	EC1533
	Plug set for CabinetModule CR2012 / CR2014 · wirable · consisting of: · AMP Crimp housing 1 x 6 pins, 2 x 18 pins incl. Crimp contacts (Junior Power Timer)	EC2053
	Plug set for CabinetController CR0301 / CR0302 · wirable · consisting of: · AMP Crimp housing 1 x 6 pins, 2 x 10 pins, 3 x 18 pins incl. Crimp contacts (Junior Power Timer)	EC2075
	Plug set for CabinetModule CR201x · wirable · consisting of: · AMP Crimp housing 1 x 6 pins, 2 x 14 pins, 2 x 18 pins incl. Crimp contacts (Junior Power Timer)	EC2089
	Plug set · wirable · consisting of: · AMP Crimp housing 2 x 6 pins, 2 x 10 pins, 3 x 18 pins incl. Crimp contacts (Junior Power Timer)	EC2090
	RS-232 Programming adapter · with gender changer for pin-socket conversion	EC2076
	programming cable · cable length 2 m interface 9-pole D-SUB (female) · AMP 6-pole · Test input (AMP connector, pin 5) connected to VBB via link	EC2091
	programming cable · e.g. for ClassicController CR0032 or ExtendedController CR0232 · wired	EC2096

Type	Description	Order no.
	Load-Dump-Module · 12 V DC	**EC2015**
	Load-Dump-Module · 24 V DC	**EC2016**
	Spring terminal box · e.g. for starter set	**EC2032**
	Serial interface cable · 2 x 9-pole D-SUB (female) · 1:1 · e.g. for PC communication, configuration or uploads of firmware updates · Cable length 2 m · e.g. for process and dialogue monitors PDM360	**EC2063**

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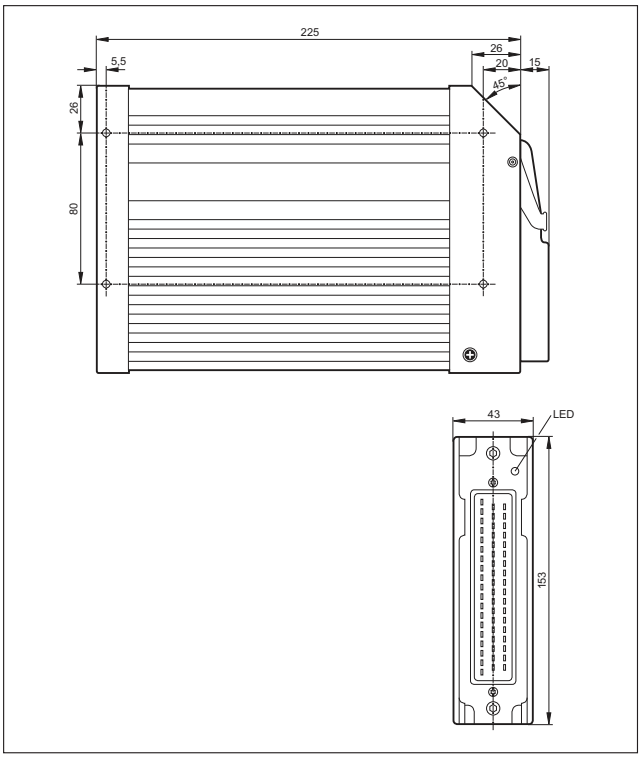

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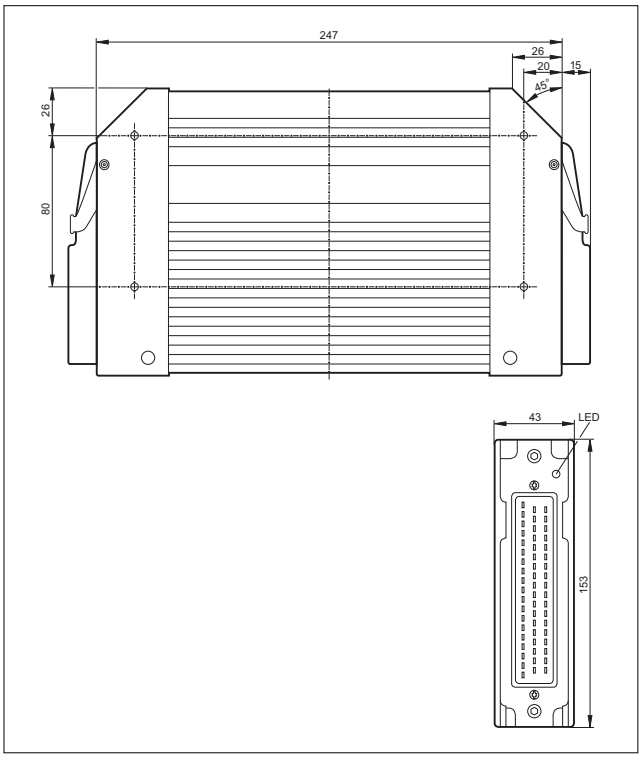

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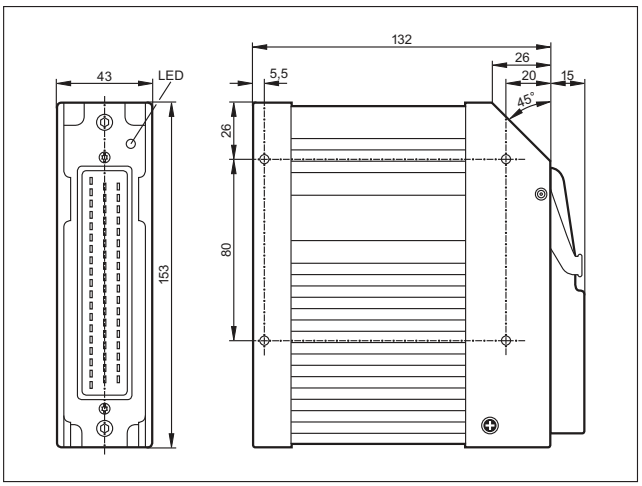

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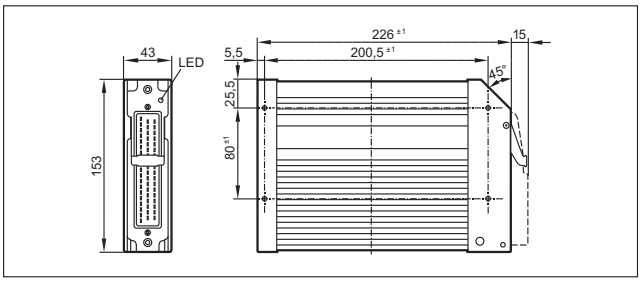

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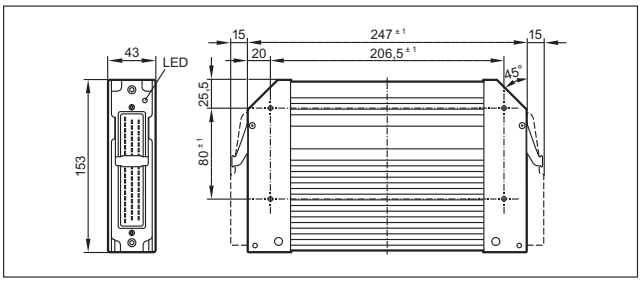

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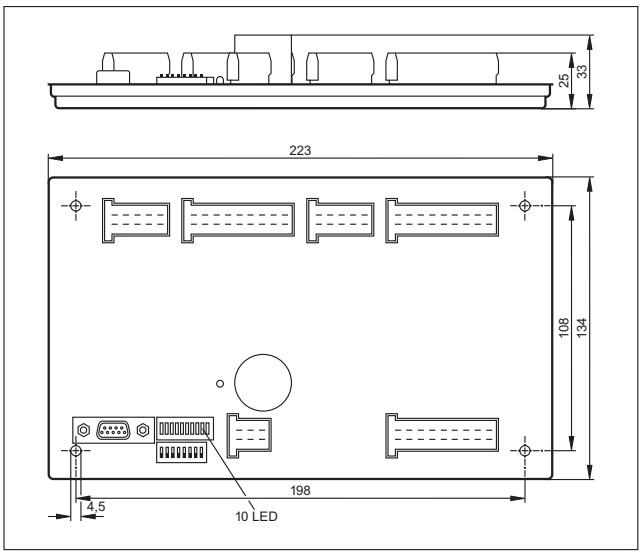

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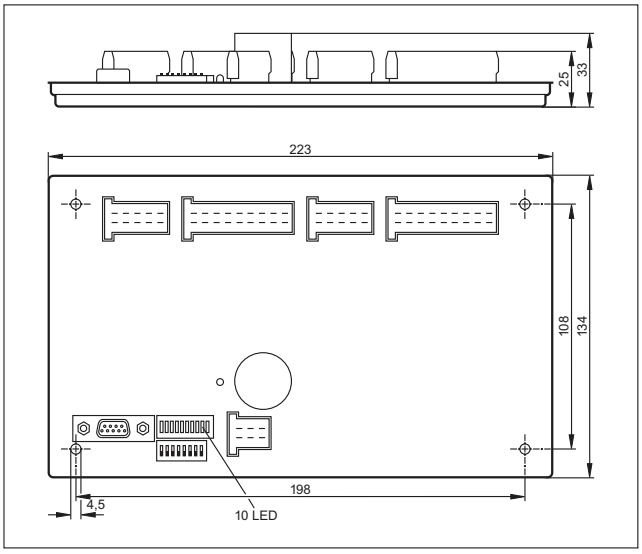

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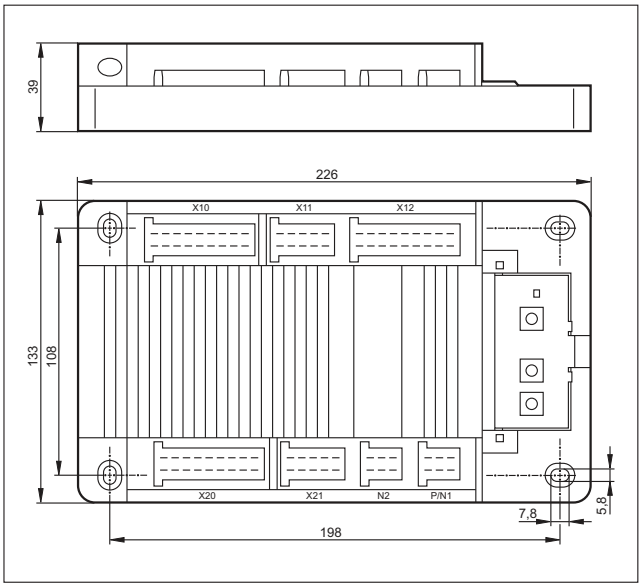
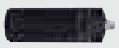


I/O modules

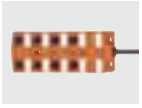
Decentralised I/O modules for use in CANopen bus systems. Considerably reduced wiring, they are mounted where the signals are generated.
The flexible configuration of the inputs and outputs enables universal use and reduces the costs for stockholding.

System overview	Page
CompactModules metal	666
CompactModules	667
SmartModules	667
CabinetModules	667 - 668
KeypadModules	668
Accessories for I/O modules	668 - 670
Scale drawings / drawing no. – CAD download: www.ifm.com	671 - 672

CompactModules metal

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
CAN parameters adjustable via coding switch, Configurable input / output functions · M12 connector						
	8	–	8 x Digital 8 x PWM-I 8 x PWM	1 x CAN	1	**CR2031**
	16	8 x Digital 4 x analogue (U/I)	8 x Digital 8 x PWM	1 x CAN	2	**CR2032**
	12	8 x Digital 4 x analogue (U/I)	4 x Digital 4 x PWM	1 x CAN	3	**CR2033**

CompactModules

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable output functions · M12 connector						
	8	–	8 x Digital 8 x PWM	1 x CAN	4	**CR2011**
Configurable input / output functions · M12 connector						
	8	4 x Digital 4 x analogue (0...10 V)	4 x Digital 4 x PWM	1 x CAN	4	**CR2013**

SmartModules

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
Configurable output functions · 55-pole connec.						
	8	–	8 x Digital 8 x PWM-I 8 x PWM	1 x CAN	5	**CR2511**
Configurable input / output functions · 55-pole connec.						
	12	4 x Digital	8 x Digital 8 x PWM-I 8 x PWM	1 x CAN	5	**CR2512**
	12	8 x Digital 4 x analogue (U/I)	4 x Digital 4 x PWM	1 x CAN	5	**CR2513**
	30	15 x Digital 4 x analogue (U/I)	15 x Digital 3 x PWM 4 x PNP 10 A 4 x H bridge	1 x CAN	6	**CR2520**

CabinetModules

Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Draw-ing no.	Order no.
CAN parameters adjustable via coding switch, Configurable input / output functions · Connector						
	16	16 x Digital 4 x analogue (0...10 V)	4 x Digital 2 x PWM	1 x CAN	7	**CR2012**
	16	16 x Digital 4 x analogue (0...5 V)	4 x Digital 2 x PWM	1 x CAN	7	**CR2014**

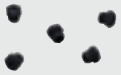
You can find scale drawings from page 671

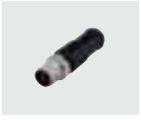
Type	Inputs / outputs total	Inputs	Outputs	Interfaces	Drawing no.	Order no.
CAN parameters adjustable via coding switch, Configurable input / output functions · Connector						
	32	16 x Digital 4 x analogue (U/I) 4 x frequency	16 x Digital 4 x PWM	1 x CAN	8	**CR2016**

KeypadModules

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
Programming according to IEC 61131-3 · cage clamps						
	2 x LED bar graph (10-digit) 12 x LEDs	12 Pushbuttons 4 arrow keys	–	1 x CAN	9	**CR1500**

Accessories for I/O modules

Type	Description	Order no.
	label tag · 20 x 9 mm · Housing materials: plastics white	**E70424**
	Protective cap · M12 · for M12 sockets of ClassicLine modules, CompactLine modules and AirBoxes · Housing materials: PA black	**E73004**
	Protective cap · M12 · for M12 sockets of CompactModule Metal · Housing materials: PA black	**EC2098**
	Connector AMP 55-pole · wirable · with contacts (Junior Power Timer)	**EC2013**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Cores sealed individually · Core cross-section 1 mm²	**EC2084**
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Cores sealed individually · Core cross-section 1 mm²	**EC2097**
	Cable with connector · AMP 55-pole · wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC2086**
	Cable with connector · AMP 55-pole · wired · Cable length 2.5 m · Core cross-section 1 mm²	**EC2046**

Type	Description	Order no.
	Plug set for CabinetModule CR2012 / CR2014 · wirable · consisting of: · AMP Crimp housing 1 x 6 pins, 2 x 18 pins incl. Crimp contacts (Junior Power Timer)	**EC2053**
	Plug set for CabinetModule CR201x · wirable · consisting of: · AMP Crimp housing 1 x 6 pins, 2 x 14 pins, 2 x 18 pins incl. Crimp contacts (Junior Power Timer)	**EC2089**
	Plug set · wirable · consisting of: · AMP Crimp housing 2 x 6 pins, 2 x 10 pins, 3 x 18 pins incl. Crimp contacts (Junior Power Timer)	**EC2090**
	Cable with connector · AMP 6-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC1520**
	Cable with connector · AMP 10-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC1521**
	Cable with connector · AMP 14-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC1522**
	Cable with connector · AMP 18-pole · wired · fully wired · Cable length 1.2 m · Core cross-section 1 mm²	**EC1523**
	Cable with connector · AMP 18-pole · wired · partially wired · for input signals · Cable length 1.2 m · Core cross-section 1 mm²	**EC1524**
	Cable with connector · AMP 18-pole · wired · fully wired · Cable length 2.5 m · Core cross-section 1 mm²	**EC1533**
	Socket · straight · Free from halogen · Gold-plated contacts · M12 connector · 2 m · 5-pole · Housing materials: PUR	**E11596**
	Socket · straight · Free from halogen · Gold-plated contacts · M12 connector · 5 m · 5-pole · Housing materials: PUR	**E11597**
	Terminating resistor socket · straight · Gold-plated contacts · M12 connector · 5-pole · Housing materials: TPU	**E11589**
	Terminating resistor plug · straight · Gold-plated contacts · M12 connector · 5-pole · Housing materials: TPU	**E11590**
	Cable plug · straight · Free from halogen · Gold-plated contacts · M12 connector · 2 m · 5-pole · Housing materials: PUR	**E11598**
	Cable plug · straight · Free from halogen · Gold-plated contacts · M12 connector · 5 m · 5-pole · Housing materials: PUR	**E11599**

You can find scale drawings from page 671

Type	Description	Order no.
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 0.3 m · 5-pole · Housing materials: PUR	**E11591**
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 1 m · 5-pole · Housing materials: PUR	**E11592**
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 2 m · 5-pole · Housing materials: PUR	**E11593**
	Jumper · straight / straight · Free from halogen · Gold-plated contacts · 5 m · 5-pole · Housing materials: PUR	**E11594**
	Wirable plug · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · 5-pole · Housing materials: PA	**E11506**
	Wirable socket · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · 5-pole · Housing materials: PA	**E11511**
	Wirable plug · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · 4-pole · Housing materials: PA	**E11504**
	Wirable plug · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · 4-pole · Housing materials: PA	**E11505**
	Load-Dump-Module · 12 V DC	**EC2015**
	Load-Dump-Module · 24 V DC	**EC2016**
	Plug for Danfoss PWM valves · wirable · terminals	**EC2056**
	Plug for Danfoss PWM valves · M12 connector	**EC2088**
	Adapter cable for CAN devices with M12 connector (5 pole) · e.g. CANmem, CANremote or inclination sensors	**EC2062**

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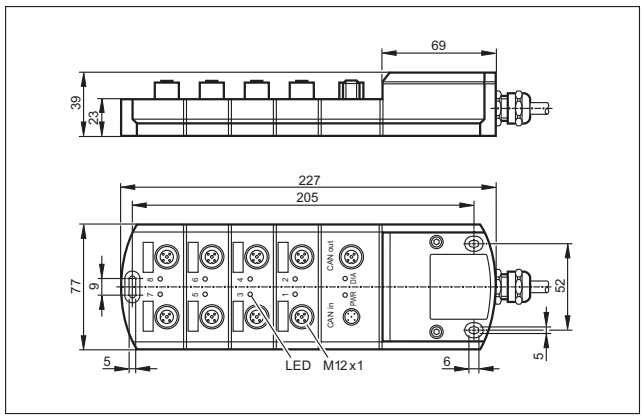

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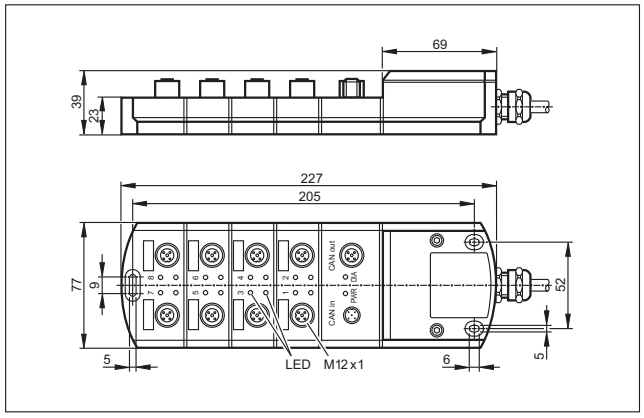

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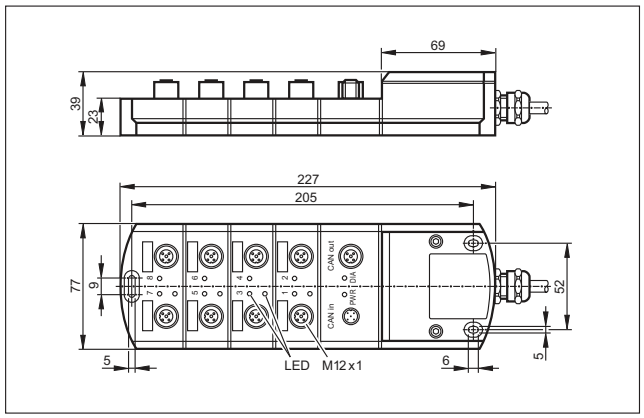

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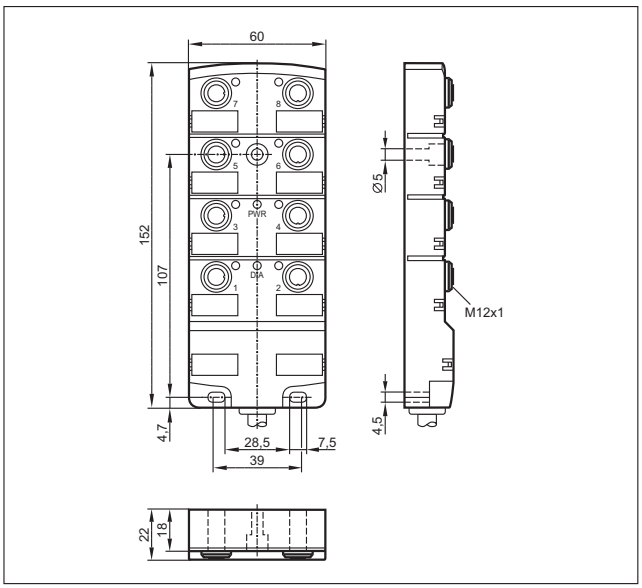

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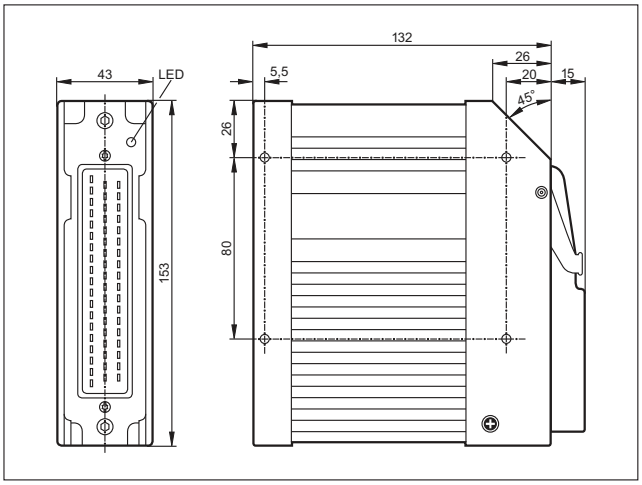

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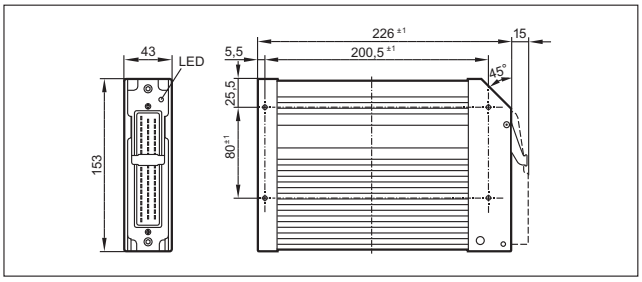

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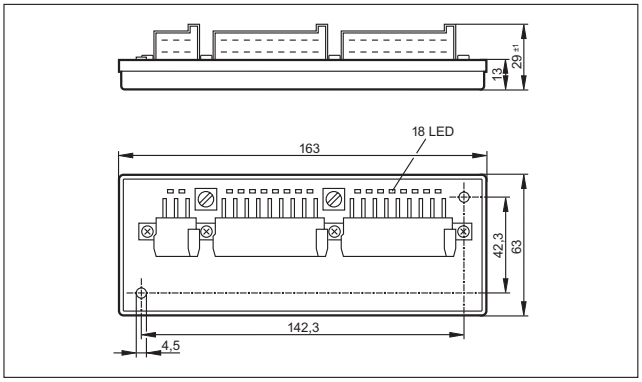

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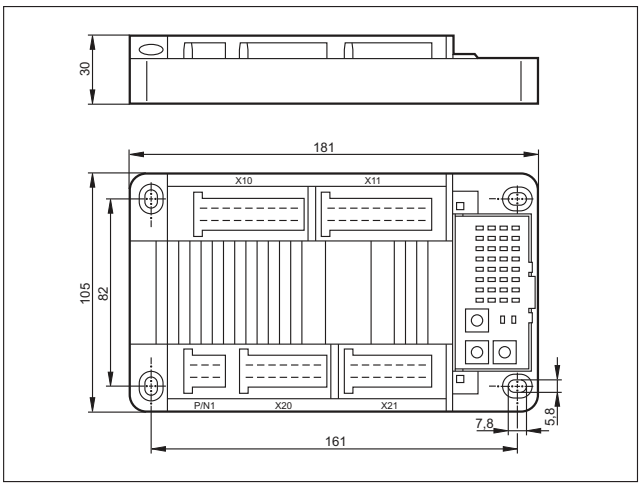

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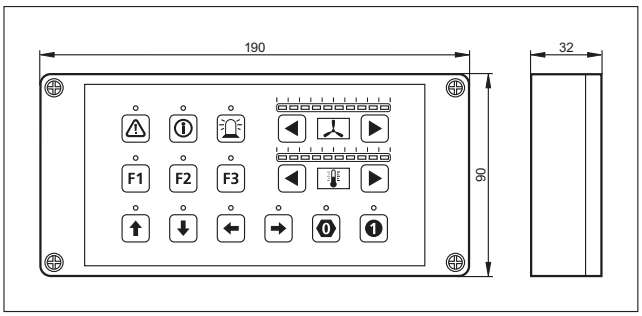

Dialogue modules / displays

Displays with graphics capabilities, free programming to IEC 61131 and various interfaces are features of the dialogue modules.
The convenient user interface for service and machine handling – the dialogue modules of the ecomat*mobile* control system.

System overview	Page
PDM360 smart with 2.5" monochrome display	674
PDM360 compact with 3.8" monochrome display	674 - 675
PDM360 with 5.7" display	675
PDM360 NG with 7" display	675 - 676
Accessories for displays	676 - 677
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Scale drawings / drawing no. – CAD download: www.ifm.com	678

PDM360 smart with 2.5" monochrome display

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
12 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	2.5" monochrome display 128 x 64 pixels	12 Pushbuttons	–	1 x CAN 1 x RS-232	1	**CR1070**
	2.5" monochrome display 128 x 64 pixels	12 Pushbuttons	4 x digital in 4 x digital out	1 x CAN 1 x RS-232	1	**CR1071**

PDM360 compact with 3.8" monochrome display

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
3 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	3.8" monochrome display 240 x 320 pixels	3 Pushbuttons 1 Encoder with pushbutton	–	1 x CAN 1 x Ethernet 1 x RS-232	2	**CR1052**

Product selectors and further information can be found at: www.ifm.com

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
Real-time clock, 3 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	3.8" monochrome display 240 x 320 pixels	3 Pushbuttons 1 Encoder with pushbutton	2 x digital in 2 x digital out Real-time clock	1 x CAN 1 x Ethernet 1 x RS-232	2	**CR1053**
3 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	3.8" monochrome display 320 x 240 pixels	3 Pushbuttons 1 Encoder with pushbutton	–	1 x CAN 1 x Ethernet 1 x RS-232	3	**CR1055**
Real-time clock, 3 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	3.8" monochrome display 320 x 240 pixels	3 Pushbuttons 1 Encoder with pushbutton	2 x digital in 2 x digital out Real-time clock	1 x CAN 1 x Ethernet 1 x RS-232	3	**CR1056**

PDM360 with 5.7" display

Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
Real-time clock, 6 freely programmable backlit function keys, Programming according to IEC 61131-3 · M23 connector						
	5.7" monochrome display 320 x 240 pixels	6 Pushbuttons 1 Encoder with pushbutton	1 x Buzzer Real-time clock	2 x CAN 1 x Ethernet 2 x RS-232	4	**CR1050**
	5.7" colour display 320 x 240 pixels	6 Pushbuttons 1 Encoder with pushbutton	1 x Buzzer Real-time clock	2 x CAN 1 x Ethernet 2 x RS-232	4	**CR1051**

PDM360 NG with 7" display

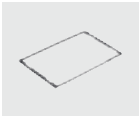
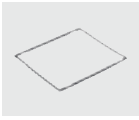
Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
Real-time clock, 9 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	7" colour display 800 x 480 pixels	9 Pushbuttons 1 Encoder with pushbutton	1 x digital in 1 x analogue in 1 x digital out 1 x Buzzer Real-time clock	4 x CAN 1 x Ethernet 2 x USB	5	**CR1080**
	7" colour display 800 x 480 pixels	9 Pushbuttons 1 Navigation key with pushbutton	1 x digital in 1 x analogue in 1 x digital out 1 x Buzzer Real-time clock	4 x CAN 1 x Ethernet 2 x USB	6	**CR1081**
	7" colour display 800 x 480 pixels	9 Pushbuttons 1 Navigation key with pushbutton 1 Touch screen	1 x digital in 1 x analogue in 1 x digital out 2 x Video (CVBS) 1 x Buzzer	4 x CAN 1 x Ethernet 2 x USB	6	**CR1082**

You can find scale drawings from page 678

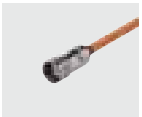
Type	Display	Operating elements	Inputs / outputs	Interfaces	Drawing no.	Order no.
Real-time clock, 8 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	7" colour display 800 x 480 pixels	8 Pushbuttons	1 x digital in 1 x analogue in 1 x digital out 2 x Video (CVBS) 1 x Buzzer	4 x CAN 1 x Ethernet 2 x USB	7	**CR1083**
Real-time clock, 9 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	7" colour display 800 x 480 pixels	9 Pushbuttons 1 Encoder with pushbutton	1 x digital in 1 x analogue in 1 x digital out 2 x Video (CVBS) 1 x Buzzer	4 x CAN 1 x Ethernet 2 x USB	5	**CR1084**
	7" colour display 800 x 480 pixels	9 Pushbuttons 1 Navigation key with pushbutton	1 x digital in 1 x analogue in 1 x digital out 2 x Video (CVBS) 1 x Buzzer	4 x CAN 1 x Ethernet 2 x USB	6	**CR1085**
Real-time clock, 8 freely programmable backlit function keys, Programming according to IEC 61131-3 · M12 connector						
	7" colour display 800 x 480 pixels	8 Pushbuttons	1 x digital in 1 x analogue in 1 x digital out 1 x Buzzer Real-time clock	4 x CAN 1 x Ethernet 2 x USB	7	**CR1087**

Accessories for displays

Type	Description	Order no.
	Snap in set · e.g. for process and dialogue monitors PDM360, PDM360 compact or PDM360 smart · for panel mounting · consisting of: · 4 plastic springs	**EC1452**
	Fixing set · e.g. for process and dialogue monitors PDM360, PDM360 compact or PDM360 smart · for control cabinet mounting · consisting of: · 4 mounting brackets, 4 cylinder screws	**EC1453**
	Mounting base · for process and dialogue modules PDM360 · for use as a desktop unit	**EC2083**
	Mounting plate · RAM mount system · Ball size 1.5" (C) · e.g. for process and dialogue monitors PDM360 NG, PDM360, PDM360 compact or PDM360 smart · for use as a desktop unit	**EC1410**
	Mounting arm short · 90 mm · RAM mount system · Ball size 1.5" (C) · e.g. for process and dialogue monitors PDM360 NG, PDM360, PDM360 compact or PDM360 smart · for use as a desktop unit	**EC1411**
	Mounting arm standard · 144 mm · RAM mount system · Ball size 1.5" (C) · e.g. for process and dialogue monitors PDM360 NG, PDM360, PDM360 compact or PDM360 smart · for use as a desktop unit	**EC1412**
	Mounting arm long · 231 mm · RAM mount system · Ball size 1.5" (C) · e.g. for process and dialogue monitors PDM360 NG, PDM360, PDM360 compact or PDM360 smart · for use as a desktop unit	**EC1413**

Type	Description	Order no.
	Seal and vibration absorber · for process and dialogue modules PDM360 smart, PDM360 compact	**EC1450**
	Seal and vibration absorber · for process and dialogue modules PDM360	**EC1451**
	Mounting frame and vibration absorber · for process and dialogue modules PDM360 NG · panel · Housing materials: steel sheet	**EC2110**
	Seal and vibration absorber · for process and dialogue modules PDM360 NG · panel · Housing materials: TPE black	**EC2115**
	Load-Dump-Module · 12 V DC	**EC2015**
	Load-Dump-Module · 24 V DC	**EC2016**
	plug-in power supply · with interchangeable mains plugs (EU/UK/USA/AUS) · Output 24 V DC / 1000 mA	**EC2059**

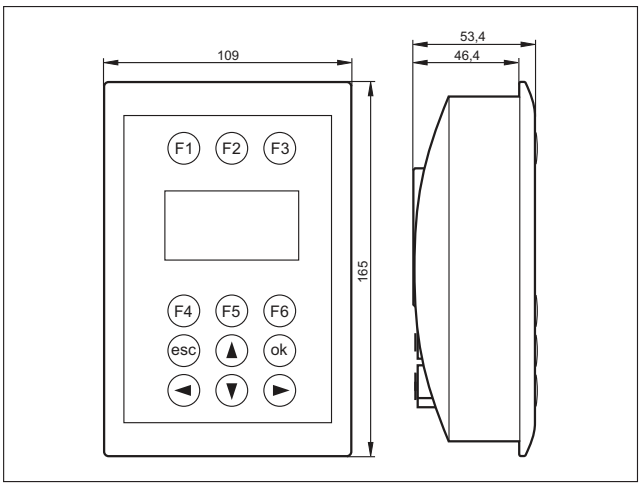
Connection technology for displays

Type	Description	Order no.
	Jumper · for process and dialogue modules PDM360 NG · USB socket for installation in control panel or dashboard · 1.5 m	**EC2099**
	Cable with connector · for process and dialogue modules PDM360 · 19-pole · push-pull locking · Cable length 2 m · suitable for panel mounting or control cabinet mounting	**EC2077**
	Cable with connector · for process and dialogue modules PDM360 · 19-pole · Cable length 2 m · suitable for panel mounting, control cabinet mounting and mounting base	**EC2081**
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR	**EC2080**
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	**E11898**
	Serial interface cable · 2 x 9-pole D-SUB (female) · 1:1 · e.g. for PC communication, configuration or uploads of firmware updates · Cable length 2 m · e.g. for process and dialogue monitors PDM360	**EC2063**

You can find scale drawings from page 678

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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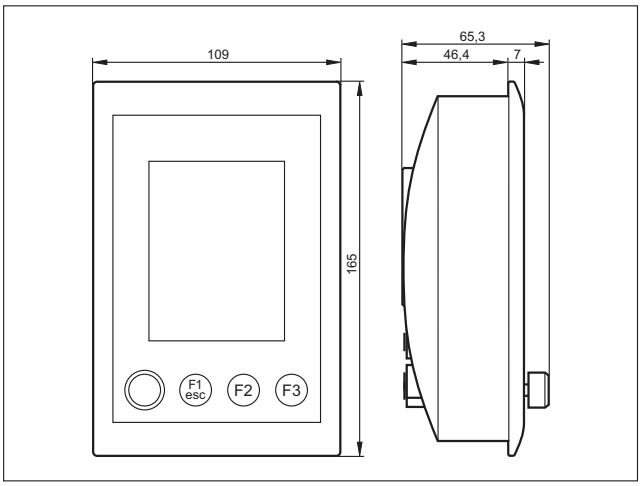

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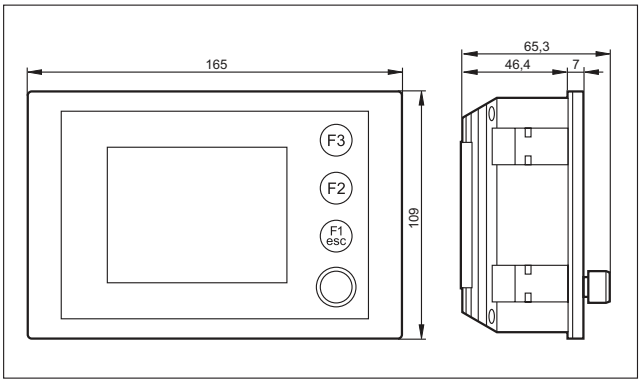

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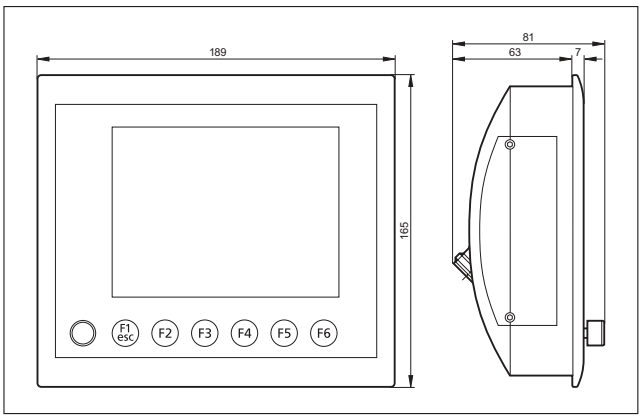

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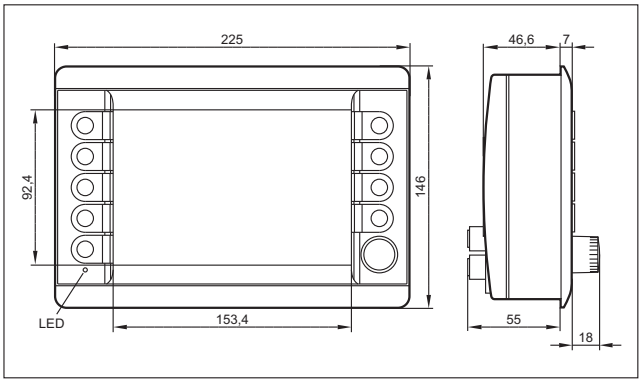

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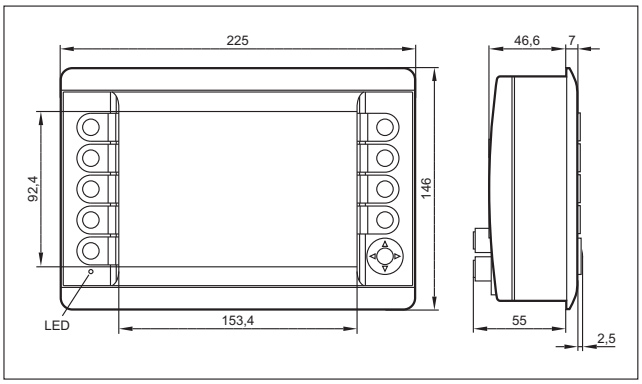

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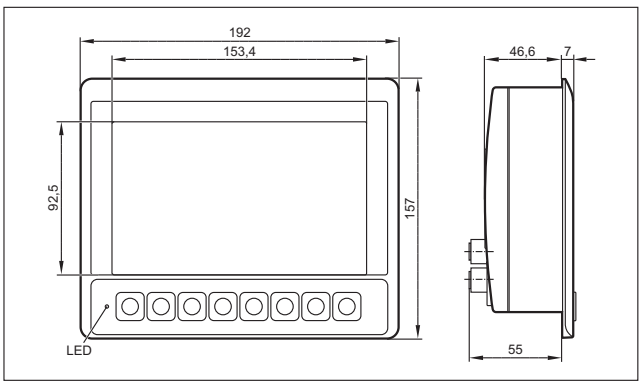


Product selectors and further information can be found at: www.ifm.com

Cameras

In almost all mobile machines, users today use displays for indicating machine information. At the same time camera systems monitor the operating areas. Here, the new camera system O2M is used. Designed for extreme operating conditions.

System overview	Page
Camera systems for PDM360 color	680
Connection technology for displays	680 - 681
Scale drawings / drawing no. – CAD download: www.ifm.com	681

Camera systems for PDM360 color

Type	Image resolution	Angle of aperture [°]	Additional functions	Interfaces	Drawing no.	Order no.
M12 connector						
	320 x 240 pixels	75	image mirroring lens heating	1 x Ethernet	1	**O2M110**
	320 x 240 pixels	115	image mirroring lens heating	1 x Ethernet	1	**O2M113**

Connection technology for displays

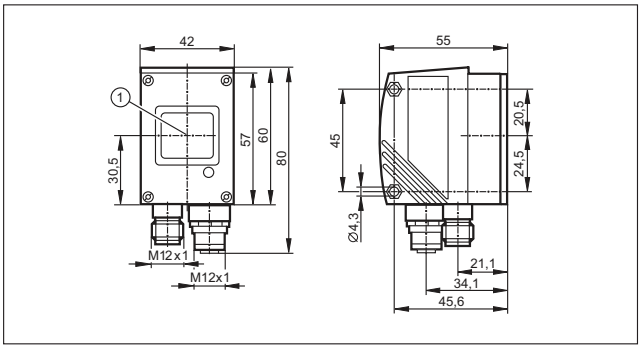
Type	Description	Order no.
	Ethernet switch · 5 ports · Autosensing · Autocrossing · 10/100Base-TX · Redundant voltage supply · 10...30 V DC	**EC2095**
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	**E11898**
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 10 m · Housing materials: TPU	**E21137**
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 2 m · Housing materials: TPU	**E21138**

Product selectors and further information can be found at: www.ifm.com

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Gold-plated contacts · 5 m · Housing materials: TPU	E21139

Scale drawings / drawing no. – CAD download: www.ifm.com

1



Diagnostic and

Detection of diagnostic data – the basis for a powerful and low-cost remote maintenance and monitoring concept.
Reduced service costs and standstill times in cases of failure are essential advantages of this modern technology.

System overview	Page
Remote maintenance	682
Data memory	683
CAN interface and diagnosis	683
Accessories for remote maintenance	683
Accessories for data memory	683
CAN cables	684
Scale drawings / drawing no. – CAD download: www.ifm.com	684 - 685

Remote maintenance

Type	Description	Drawing no.	Order no.
M12 connector, 5-pole · FME connector, GSM antenna · SMA socket, GPS antenna			
	CAN GPRS/GPS radio modem · GSM/GPRS (850/900/1800/1900 MHz) · for the transfer of SMS messages and data packets · with GPS receiver for location tracking · aluminium powder coated	1	**CR3108**
	CAN 3G/GPS radio modem (European version) · GSM/GPRS/EDGE (850/900/1800 MHz) · UMTS/HSDPA (900/2100 MHz) · for the transfer of SMS messages and data packets · with GPS receiver for location tracking · aluminium powder coated	1	**CR3110**
	CAN 3G/GPS radio modem (USA version) · GSM/GPRS/EDGE (850/900/1800/1900 MHz) · UMTS/HSDPA (850/1900 MHz) · for the transfer of SMS messages and data packets · with GPS receiver for location tracking · aluminium powder coated	1	**CR3112**

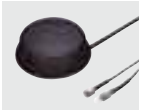
Data memory

Type	Display	Memory type	Storage functions	Interfaces	Drawing no.	Order no.
Data memory and logger for CANopen systems · M12 connector						
	5 LEDs	SD memory card (max. 2 Gbytes)	linear ring on address	1 x CAN 1 x USB	2	**CR3101**

CAN interface and diagnosis

Type	Description	Drawing no.	Order no.
	CANfox · CAN/RS232-USB interface · Programming and diagnosis of CAN systems · 5 V DC (via USB interface)	3	**EC2112**
	Adapter cable · for CAN interface CANfox · CAN adapter: DIN connector, 6 poles / M12 connector, 5 poles · RS-232 adapter: DIN connector, 6 poles / Sub-D plug, 9 poles · Cable length 1 m	–	**EC2113**
	CAN Bus tester · mobile device for the analysis of CAN networks · Touch screen · 11/29-bit identifier · plastics: ABS	4	**EC2100**

Accessories for remote maintenance

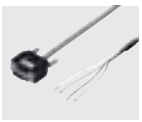
Type	Description	Order no.
	CANremote GSM planar aerial · GSM 850/900/1800/1900 · UMTS 1920...2170 MHz · Cable length 3 m · FME socket (GSM) · flat design for mounting on all plain surfaces	**EC2092**
	CANremote GPS planar aerial · with integrated amplifier · Cable length 3 m · SMA aerial connector · flat design for mounting on all plain surfaces	**EC2093**
	GSM/GPS combined antenna · GSM 850/900/1800/1900 · UMTS 1920...2170 MHz · with integrated amplifier · Cable length 3 m · FME socket (GSM) · SMA plug (GPS) · flat design for mounting on all plain surfaces · e.g. for CANremote CR3108, CR3110 or CR3112 · thread M16 x 1.5	**EC2116**

Accessories for data memory

Type	Description	Order no.
	SD memory card · 2 GByte · for mobile applications	**EC1021**

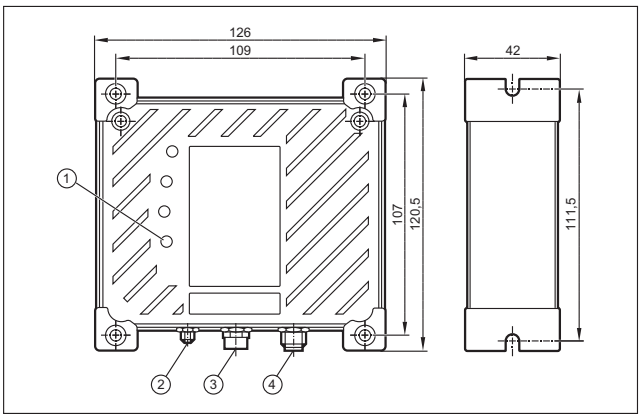
You can find scale drawings from page 684

CAN cables

Type	Description	Order no.
	Adapter cable · 9-pole D-SUB (female) · 5-pole socket; M12 · 2-pole cable for power supply with bare ends · integrated CAN terminal resistor (120 Ω) switchable	**EC2050**
	Adapter cable for CAN devices with M12 connector (5 pole) · e.g. CANmem, CANremote or inclination sensors	**EC2062**
	CAN communication cable · cable length 2 m interface 9-pole D-SUB (female) · cable ends with lugs	**EC2034**
	Serial interface cable · 2 x 9-pole D-SUB (female) · 1:1 · e.g. for PC communication, configuration or uploads of firmware updates · Cable length 2 m · e.g. for process and dialogue monitors PDM360	**EC2063**
	USB connection cable · type A to type Mini B · for PC communication, configuration and uploads of firmware updates · cable length 1.8 m · e.g. for CANmem	**EC2058**
	Wirable socket · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · 5-pole · Housing materials: PA	**E11511**

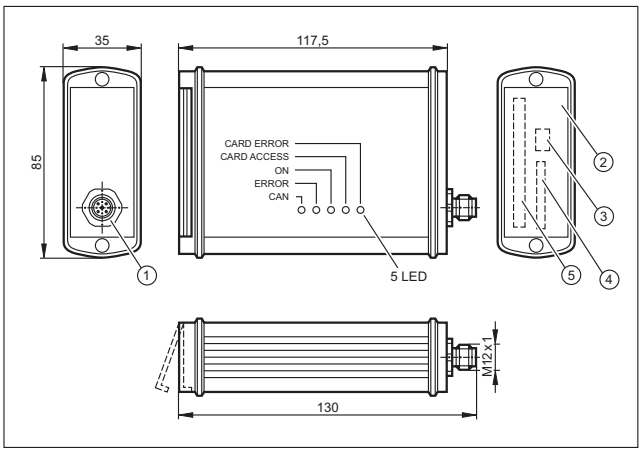
Scale drawings / drawing no. – CAD download: www.ifm.com

1



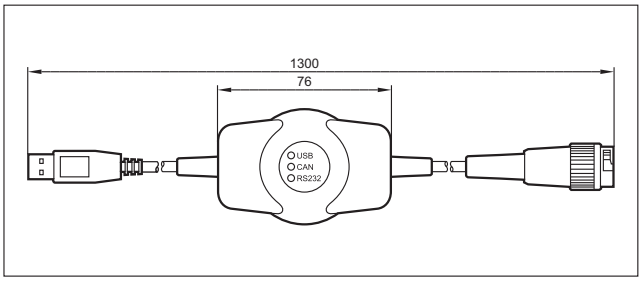
1: LEDs, 2: SMA socket, GPS antenna, 3: FME connector, GSM antenna, 4: M12 connector, 5-pole

2



1: CANopen interface, 2: protective cover, 3: USB, type Mini-B (socket), 4: SD/MMC slot, 5: PCMCIA slot

3



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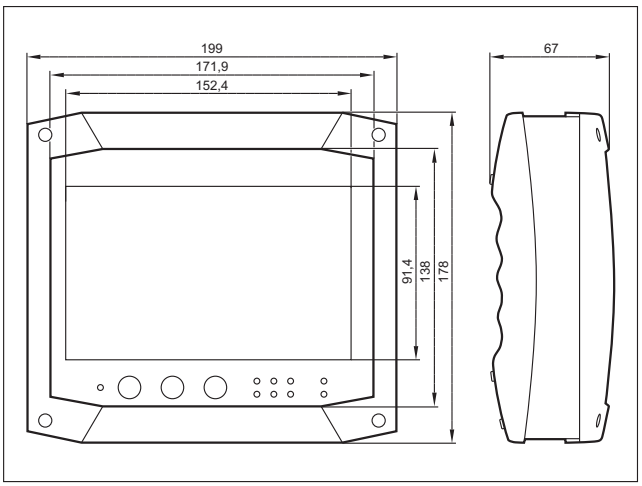
4



Signal converters

The solution provider for special applications. Signal converter to adapt sensor and actuator signals to the inputs and outputs of the controller or CANopen modules.

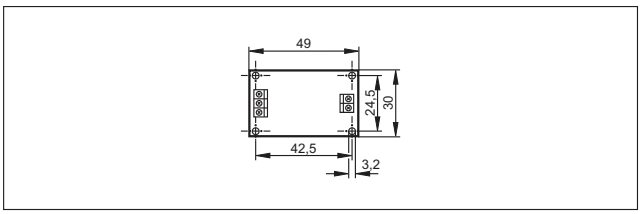
System overview	Page
Converters and PWM modules	686
Scale drawings / drawing no. – CAD download: www.ifm.com	686 - 687

Converters and PWM modules

Type	Description	Drawing no.	Order no.
	PWM / analogue module · PCB · Input 24 V DC PWM signal · Output 0...5 V DC	1	CR3001
	PWM / analogue module · PCB · Input 24 V DC PWM signal · Output 0...10 V DC	1	CR3002
	PWM / analogue module · Housing · Input 24 V DC PWM signal · Output 0...5 V DC	2	CR3003
	PWM / analogue module · Housing · Input 24 V DC PWM signal · Output 0...10 V DC	2	CR3004
	DC/DC converter · Input 18...36 V DC · Output 10 V DC	3	EC2025
	Module for current measurement with ecomat R 360 controller	4	EC2049

Scale drawings / drawing no. – CAD download: www.ifm.com

1



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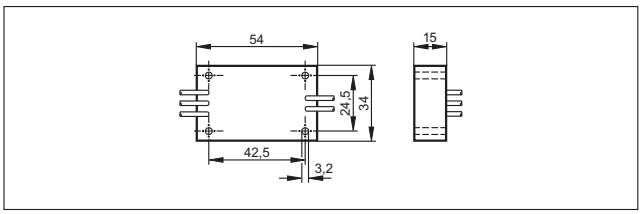

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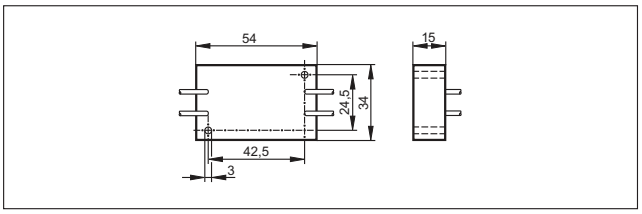

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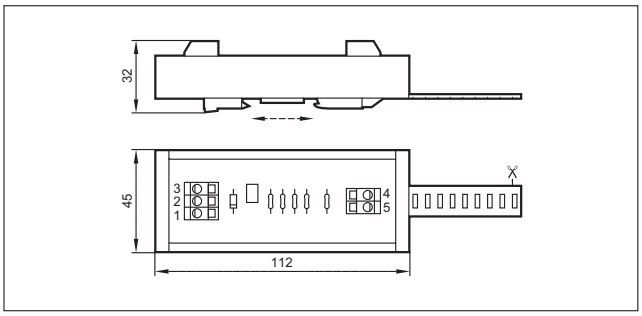
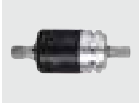


Sensors

From CAN-bus compatible or analogue inclination sensors to inductive proximity switches and pressure sensors for mobile applications.
The sensors of the ecomat*mobile* system are reliable even under the extreme conditions of use in a mobile machine.

System overview	Page
Absolute multiturn-encoders (CANopen) for mobile applications	688
CAN inclination sensors	689
Inclination sensors	689
Tilt sensors	690
Inductive sensors for mobile applications	690 - 692
Electronic pressure sensors for mobile applications	693 - 695
Accessories for sensors for mobile applications	695
Connection technology for sensors for mobile use	695 - 696
Wiring diagrams	696 - 697
Scale drawings / drawing no. – CAD download: www.ifm.com	697 - 699

Absolute multiturn-encoders (CANopen) for mobile applications

Type	Resolution	U_b [V]	f [kHz]	I_{load} [mA]	Shaft [mm]	Ambient temperature [°C]	Cable entry	Drawing no.	Order no.
M12 connector · Output function CANopen interface · Connector group 152									
	24 bits	10...30	–	–	10	-40...85	axial	1	**RM9000**

CAN inclination sensors

Type	Angular range [°]	Number of axes	Resolution / accuracy [°]	Interfaces	Drawing no.	Order no.
Configurable output functions · M12 connector						
	±15°	2	0.001° / 0.025°	1 x CAN	2	**CR2101**
	±45°	2	0.1° / 0.5°	1 x CAN 2 x analogue	3	**CR2102**
2 x M12 connector						
	0...360° / ± 180°	2	/ ± 0.5°	–	4	**JN2100**
	± 45°	2	/ ± 0.1°	–	4	**JN2101**

Inclination sensors

Type	Angular range [°]	Supply voltage	Output signal	Repeatability [°]	Drawing no.	Order no.
Cable						
	±90°	15...30 V DC	1 x analogue (0...10 V)	0.1°	5	**EC2019**
	±90°	8...30 V DC	1 x analogue (0.5...4.5 V)	0.1°	5	**EC2045**
M12 connector						
	±20°	11...15 V DC	1 x analogue (4...20 mA)	0.1°	5	**EC2060**
	±90°	20...30 V DC	1 x analogue (4...20 mA)	0.1°	5	**EC2082**

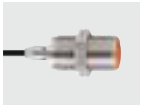
You can find wiring diagrams and scale drawings from page 696

Tilt sensors

Type	Angular range [°]	Supply voltage	Output signal	Repeatability [°]	Draw-ing no.	Order no.
Cable						
	2.5...5.5°	10...30 V DC	1 x Digital	0.2°	6	**EC2061**

Inductive sensors for mobile applications

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Draw-ing no.	Order no.
Cable 6 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	M12 / L = 79	4 f	stainless steel	10...60	IP 67 / IP 69K	400	200	7	**IFM209**
Cable 6 m · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M12 / L = 79	4 f	stainless steel	10...36	IP 67 / IP 69K	400	100	7	**IFM207**
Cable 6 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	M12 / L = 79	7 nf	High-grade st. steel	10...60	IP 67 / IP 69K	300	200	8	**IFM210**
Cable 6 m · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M12 / L = 79	7 nf	stainless steel	10...36	IP 67 / IP 69K	300	100	8	**IFM208**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M12 / L = 70	4 f	High-grade st. steel	10...60	IP 67 / IP 69K	400	200	9	**IFM205**
M12 connector · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M12 / L = 70	4 f	High-grade st. steel	10...36	IP 67 / IP 69K	400	100	9	**IFM203**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M12 / L = 70	7 nf	stainless steel	10...60	IP 67 / IP 69K	300	200	10	**IFM206**

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
M12 connector · Output function ⎍⎽ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M12 / L = 70	7 nf	High-grade st. steel	10...36	IP 67 / IP 69K	300	100	10	**IFM204**
Cable 6 m · Output function ⎍⎽ · DC PNP · Wiring diagram no. 1									
	M18 / L = 81	8 f	stainless steel	10...60	IP 67 / IP 69K	200	200	11	**IGM206**
Cable 6 m · Output function ⎍⎽ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M18 / L = 81	8 f	stainless steel	10...36	IP 67 / IP 69K	200	100	11	**IGM202**
Cable 6 m · Output function ⎍⎽ · DC PNP · Wiring diagram no. 1									
	M18 / L = 81	12 nf	stainless steel	10...60	IP 67 / IP 69K	200	200	12	**IGM207**
Cable 6 m · Output function ⎍⎽ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M18 / L = 81	12 nf	stainless steel	10...36	IP 67 / IP 69K	200	100	12	**IGM203**
M12 connector · Output function ⎍⎽ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M18 / L = 70	8 f	stainless steel	10...60	IP 67 / IP 69K	200	200	13	**IGM204**
M12 connector · Output function ⎍⎽ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M18 / L = 70	8 f	stainless steel	10...36	IP 67 / IP 69K	200	100	13	**IGM200**
M12 connector · Output function ⎍⎽ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M18 / L = 70	12 nf	stainless steel	10...60	IP 67 / IP 69K	200	200	14	**IGM205**
M12 connector · Output function ⎍⎽ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M18 / L = 70	12 nf	stainless steel	10...36	IP 67 / IP 69K	200	100	14	**IGM201**
Cable 6 m · Output function ⎍⎽ · DC PNP · Wiring diagram no. 1									
	M30 / L = 81	12 f	stainless steel	10...60	IP 67 / IP 69K	100	200	15	**IIM210**

You can find wiring diagrams and scale drawings from page 696

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Drawing no.	Order no.
Cable 6 m · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M30 / L = 81	12 f	stainless steel	10...36	IP 67 / IP 69K	100	100	15	**IIM202**
Cable 6 m · Output function ⎍ · DC PNP · Wiring diagram no. 1									
	M30 / L = 81	22 nf	stainless steel	10...60	IP 67 / IP 69K	100	200	16	**IIM211**
Cable 6 m · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 8									
	M30 / L = 81	22 nf	stainless steel	10...36	IP 67 / IP 69K	100	100	16	**IIM203**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M30 / L = 70	12 f	stainless steel	10...60	IP 67 / IP 69K	100	200	17	**IIM208**
M12 connector · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M30 / L = 70	12 f	stainless steel	10...36	IP 67 / IP 69K	100	100	17	**IIM200**
M12 connector · Output function ⎍ · DC PNP · Wiring diagram no. 2 · Connector groups 150, 151									
	M30 / L = 70	22 nf	stainless steel	10...60	IP 67 / IP 69K	100	200	18	**IIM209**
M12 connector · Output function ⎍ · 3-wire DC PNP; 2-wire DC PNP/NPN · Wiring diagram no. 9 · Connector groups 150, 151									
	M30 / L = 70	22 nf	stainless steel	10...36	IP 67 / IP 69K	100	100	18	**IIM201**
Cable 3 m · Output function ⎍ · DC PNP · Wiring diagram no. 3									
	40 x 12 x 26	4 nf	PBT	10...36	IP 67	70	–	19	**IN5281**
Cable 3 m · Output function ⎍ · DC PNP · Wiring diagram no. 4									
	40 x 12 x 26	4 nf	PBT	10...36	IP 67	70	–	19	**IN5282**

f = flush / nf = non flush

Electronic pressure sensors for mobile applications

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · Wiring diagram no. 5 · Connector groups 8, 10, 11, 18, 20, 123, 125, 126, 150, 151								
	G¼ male / M5 female	Operation	0...400	600	1000	9.6...36	20	**PP7550**
	G¼ male / M5 female	Operation	0...250	400	850	9.6...36	20	**PP7551**
	G¼ male / M5 female	Operation	0...100	300	650	9.6...36	21	**PP7552**
	G¼ male / M5 female	Operation	0...25	150	350	9.6...36	22	**PP7553**
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	22	**PP7554**
M12 connector · Output function 4...20 mA · Wiring diagram no. 6 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	0...400	600	1000	9.6...32	23	**PA3020**
	G ¼ I	–	0...250	400	850	9.6...32	23	**PA3021**
	G ¼ I	–	0...100	300	650	9.6...32	24	**PA3022**
	G ¼ I	–	0...25	150	350	9.6...32	24	**PA3023**
	G ¼ I	–	0...10	75	150	9.6...32	24	**PA3024**
	G ¼ I	–	0...600	800	1200	9.6...32	25	**PA3060**
M12 connector · Output function 0...10 V · Wiring diagram no. 7 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	0...400	600	1000	16...32	23	**PA9020**
	G ¼ I	–	0...250	400	850	16...32	24	**PA9021**
	G ¼ I	–	0...100	300	650	16...32	24	**PA9022**

You can find wiring diagrams and scale drawings from page 696

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Drawing no.	Order no.
M12 connector · Output function 0...10 V · Wiring diagram no. 7 · Connector groups 8, 10, 18, 20, 123, 125, 150								
	G ¼ I	–	0...25	150	350	16...32	24	**PA9023**
	G ¼ I	–	0...10	75	150	16...32	24	**PA9024**
M12 connector · Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x normally closed (diagnostic function) · Wiring diagram no. 5 · Connector groups 150, 151								
	G¼ male / M5 female	Operation	0...400	600	1000	9.6...36	20	**PP000E**
	G¼ male / M5 female	Operation	0...250	400	850	9.6...36	20	**PP001E**
	G¼ male / M5 female	Operation	0...100	300	650	9.6...36	21	**PP002E**
	G¼ male / M5 female	Operation	0...25	150	350	9.6...36	22	**PP003E**
	G¼ male / M5 female	Operation	-1...10	75	150	9.6...36	22	**PP004E**
M12 connector · Output function 4...20 mA analogue · Wiring diagram no. 6 · Connector group 150								
	G ¼ A	–	0...400	600	1600	8.5...36	26	**PT3550**
	G ¼ A	–	0...250	400	1000	8.5...36	26	**PT3551**
	G ¼ A	–	0...100	200	1000	8.5...36	26	**PT3552**
	G ¼ A	–	0...25	60	600	8.5...36	26	**PT3553**
	G ¼ A	–	0...10	25	300	8.5...36	26	**PT3554**
M12 connector · Output function 0...10 V analogue · Wiring diagram no. 7 · Connector group 150								
	G ¼ A	–	0...400	600	1600	16...36	26	**PT9550**
	G ¼ A	–	0...250	400	1000	16...36	26	**PT9551**

Type	Process connection	Display LED	Measuring range [bar]	$P_{overload}$ max. [bar]	$P_{bursting}$ min. [bar]	U_b DC [V]	Draw-ing no.	Order no.
M12 connector · Output function 0...10 V analogue · Wiring diagram no. 7 · Connector group 150								
	G ¼ A	–	0...100	200	1000	16...36	26	**PT9552**
	G ¼ A	–	0...25	60	600	16...36	26	**PT9553**
	G ¼ A	–	0...10	25	300	16...36	26	**PT9554**

Accessories for sensors for mobile applications

Type	Description	Order no.
	Programming/ display unit · for EPS and IO-Link sensors · Connector · Housing materials: stainless steel 316L / 1.4404 / PC copolymer / PBT / FPM	**PP2001**
	Mounting clamp · Ø 12 mm · with end stop · for type M12 · Housing materials: PC	**E11047**
	Mounting clamp · Ø 18 mm · with end stop · for type M18 · Housing materials: PC	**E11048**
	Mounting clamp · Ø 30 mm · with end stop · for type M30 · Housing materials: PC	**E11049**
	Angle bracket · for type M12 · Housing materials: stainless steel	**E10735**
	Angle bracket · for type M18 · Housing materials: stainless steel	**E10736**
	Angle bracket · for type M30 · Housing materials: stainless steel	**E10737**

Connection technology for sensors for mobile use

Type	Description	Order no.
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	**EVC004**

You can find wiring diagrams and scale drawings from page 696

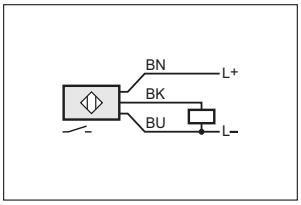
Type	Description	Order no.
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC005
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC006
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC012
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC010
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC001
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC003

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue

1



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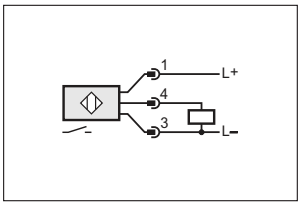

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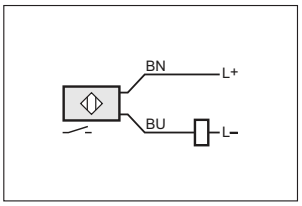

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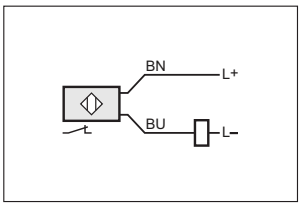

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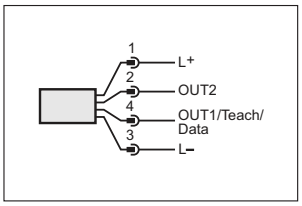

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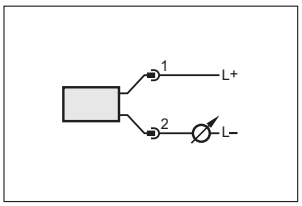

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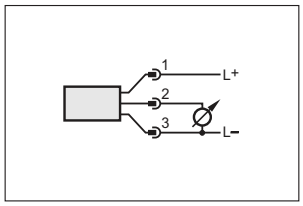
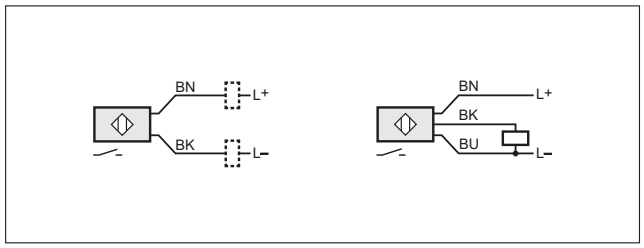


Wiring diagrams

8



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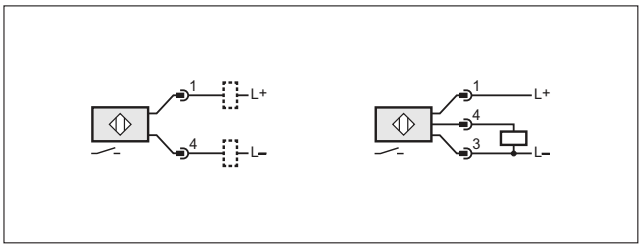

Scale drawings / drawing no. – CAD download: www.ifm.com

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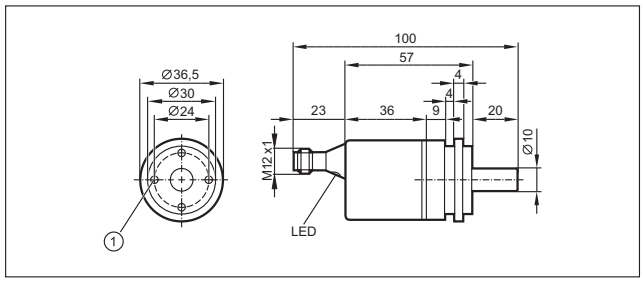

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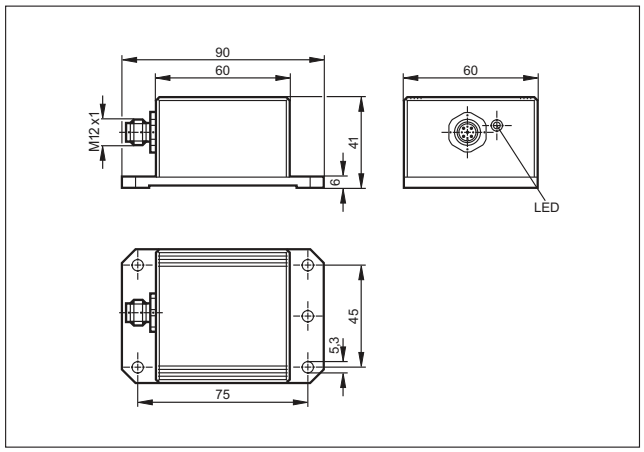

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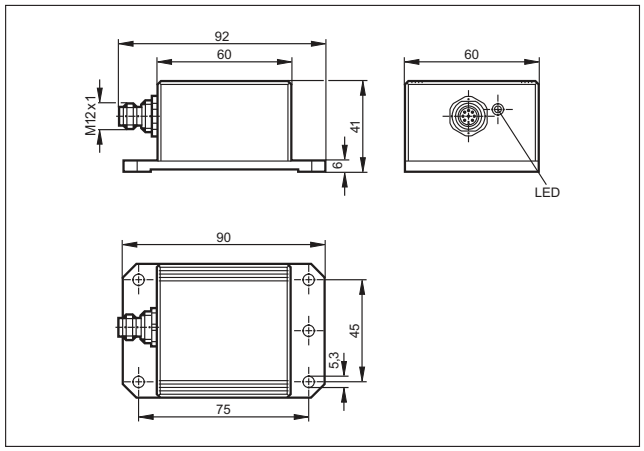

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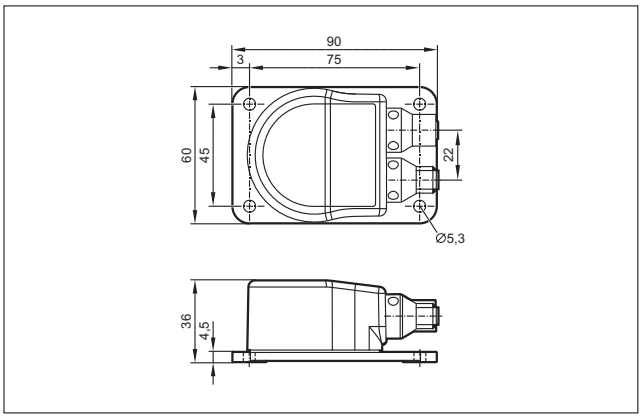

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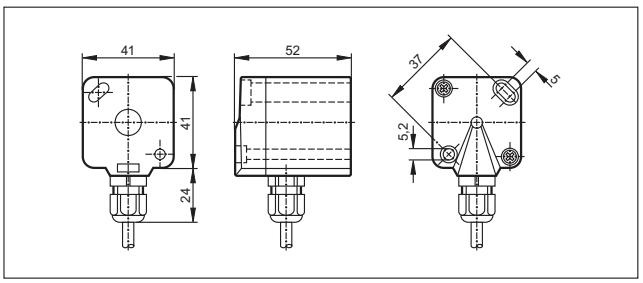

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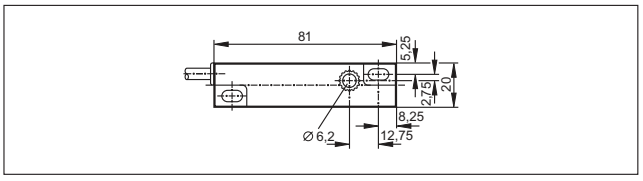

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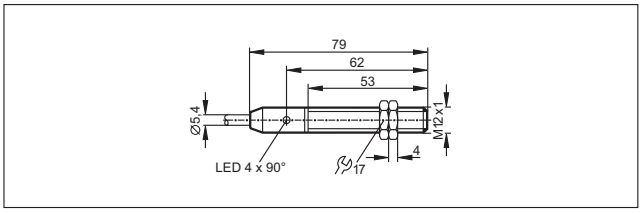

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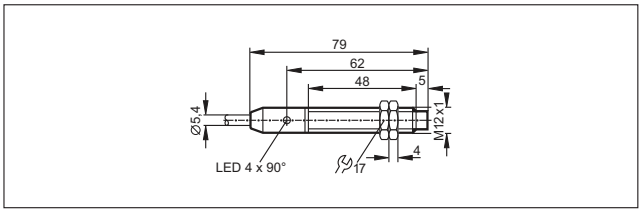

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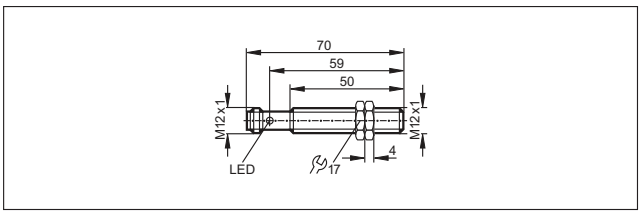

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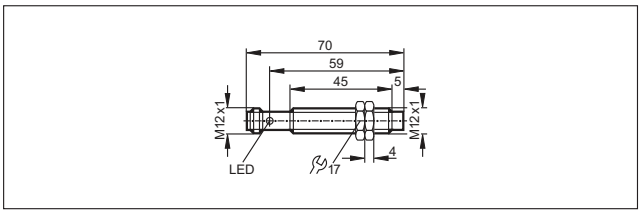

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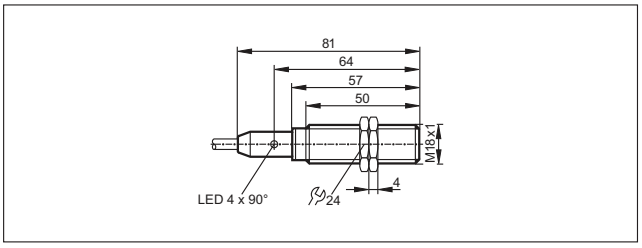

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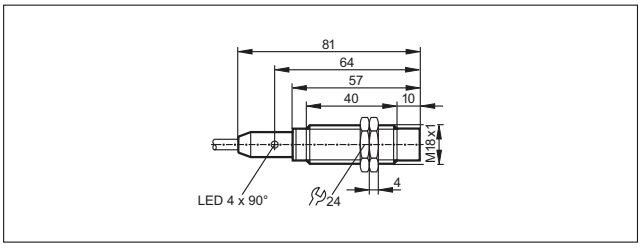

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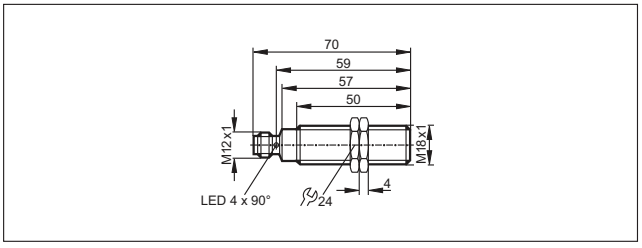

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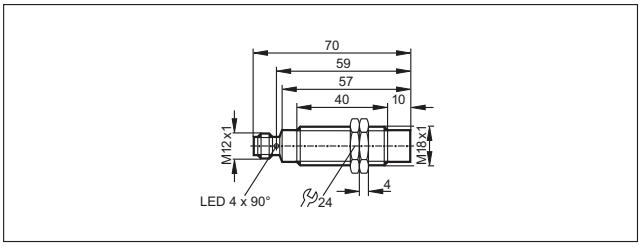

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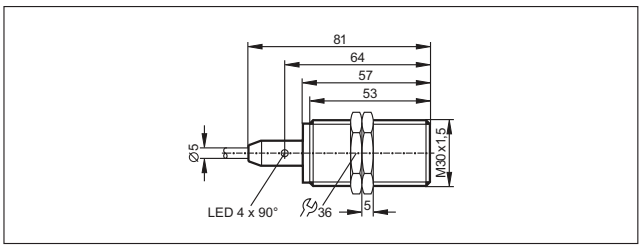

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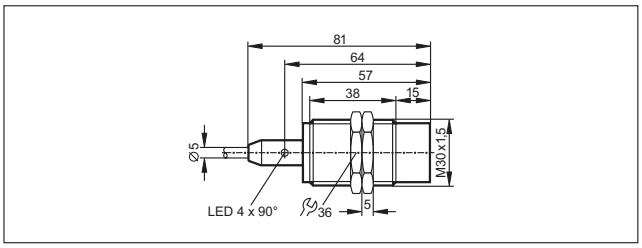

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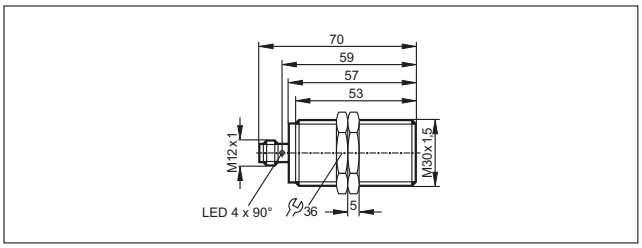

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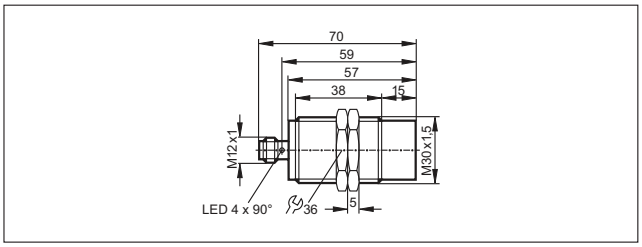

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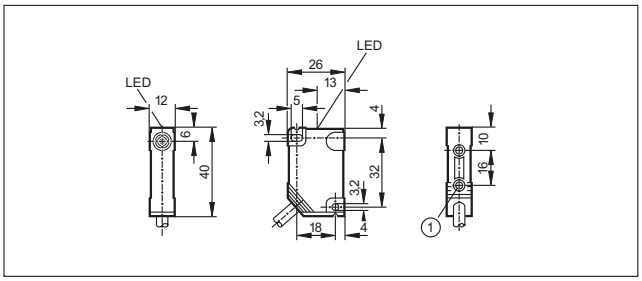
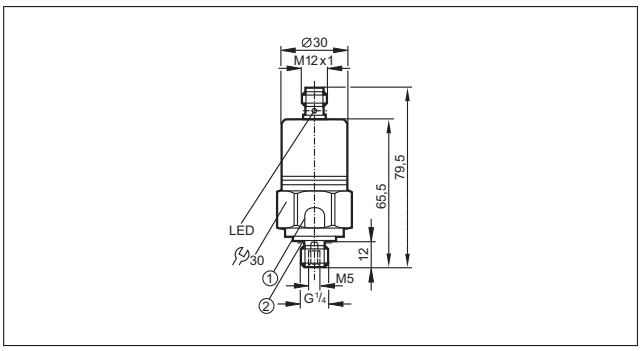


1: threaded insert M3, depth 5.8 mm, max. tightening torque 1.2 Nm (screw fixing class 8.8) when brass insert in contact with counterpart.

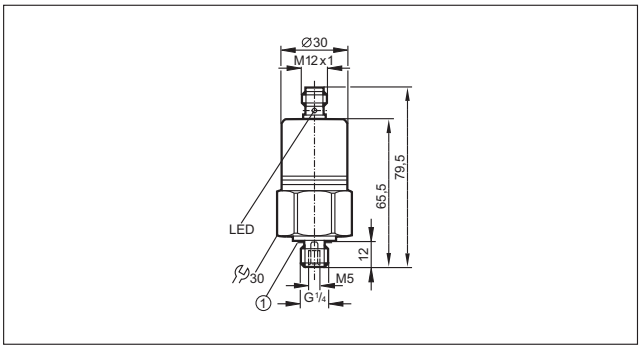
Scale drawings / drawing no. – CAD download: www.ifm.com

20



1: Pressure relief mechanism, No mechanical force must be exerted on the pressure relief mechanism., 2: sealing FPM / DIN 3869-14

21



1: sealing FPM / DIN 3869-14

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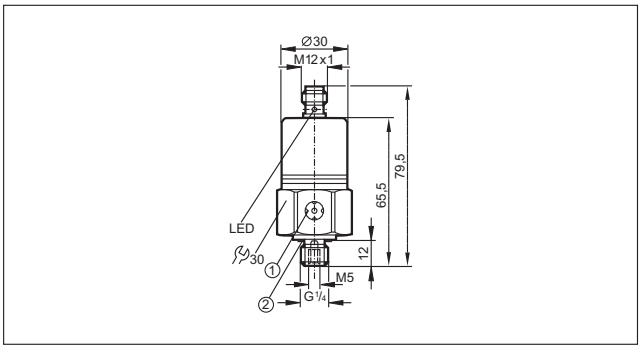

1: ventilation, 2: sealing FPM / DIN 3869-14

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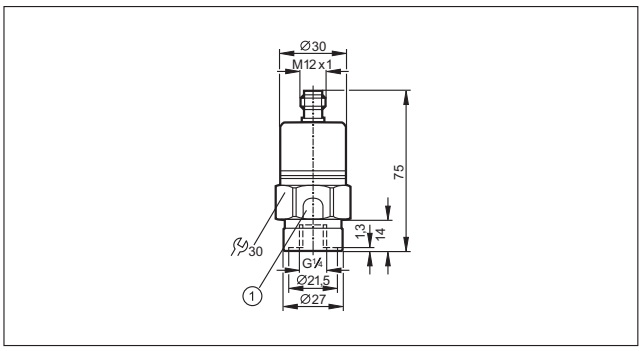

1: Pressure relief mechanism, No mechanical force must be exerted on the pressure relief mechanism.

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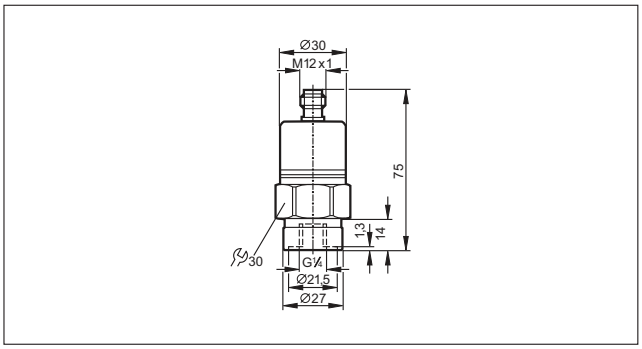

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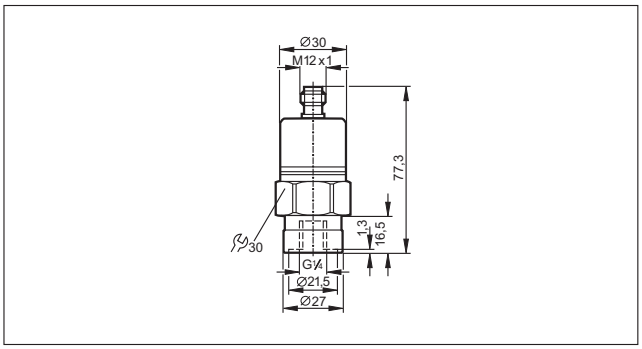

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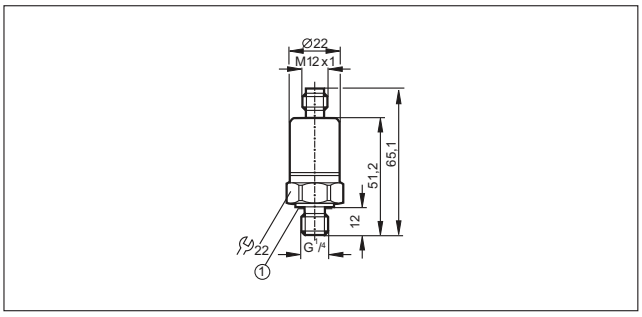
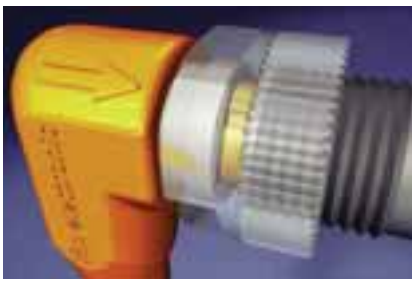


1: FKM seal / DIN 3869-14, tightening torque 25 Nm

Quickly and safely connected

Maximum operational reliability due to the new vibration protection with end stop.



Connection technology

With a wide variety of different sensor designs ifm electronic offers a wide range of high quality connectors. The choice of types covers common M8, M12, M18 types through to valve plugs. The "ecolink" connectors (order no. EVxxxx) offer additional quality features.

ecolink – a new dimension in connection technology

The innovative design incorporating a mechanical end stop ensures that the O-ring is always correctly compressed and so permanently maintains its sealing function. The connector remains securely positioned on the unit even in case of extreme vibration and impacts. The use of a transparent black housing ensures that even in bright lighting conditions the LEDs are clearly visible.

For industrial applications

High-quality materials suited to the requirements in industrial environments. Largely resistant to oils, greases and coolants.

For hygienic and wet areas

PVC housing and cable, gold-plated contacts and high-grade stainless steel nuts are the optimum choice for long life.

For hazardous areas

Connection technology for ATEX categories 1D, 2D, 3D and 1G, 3G. With the EC type examination certificate for components from DEKRA EXAM the connection technology meets the strictest requirements.

For welding applications

Halogen-free PUR cables prevent burning-in of weld spatter; teflon-coated coupling nuts prevent weld spatter sticking. The cables are also suited for drag chains and torsional movements.

For sensors in robust applications

The saw tooth contoured vibration protection secures against strong shocks and vibrations. The high protection rating, wide temperature range and high-quality housing materials (high-grade stainless steel, TPU) ensure permanent safe connection in harsh environments.

	Sockets	702 - 727
	Plugs	728 - 732
	Jumper cables	734 - 768
	Splitter boxes	770 - 787
	Y-splitters	788 - 790

Sockets

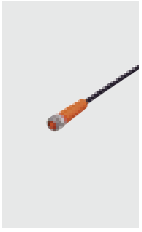
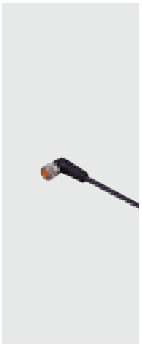
Sockets are mainly used for the connection of sensors. High-quality socket contacts and materials ensure reliable electrical connections.

In addition to a wide range of standard products ifm also offers versions without silicone and halogen, versions for hygienic areas, for applications in contact with coolants and lubricants, as well as for welding applications.

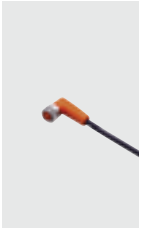
System overview	Page
M8 sockets for industrial applications	702 - 704
M12 sockets for industrial applications	704 - 707
M12 sockets for industrial applications with screen	708 - 709
M16 sockets for industrial applications	709 - 710
M18 sockets for industrial applications	710
M23 sockets for industrial applications	710 - 711
1/2" sockets for industrial applications	712
7/8" sockets for industrial applications	712 - 713
DIN sockets for industrial applications	713
RD24 sockets for industrial applications	713
Connectors weld slag resistant	713 - 714
Connectors for hygienic and wet areas	715 - 718
Connectors for hazardous areas	718 - 719
Connectors for robust applications	719 - 721
Wiring diagrams	721 - 723
Scale drawings / drawing no. – CAD download: www.ifm.com	723 - 727

M8 sockets for industrial applications

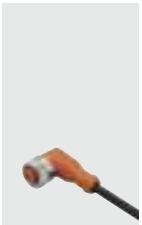
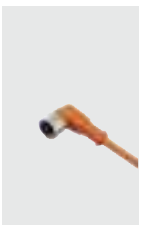
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 1 · Socket M8, 3-pole, 3-wire · Wiring diagram no. 1									
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC141**

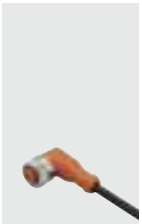
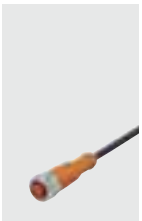
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 1 · Socket M8, 3-pole, 3-wire · Wiring diagram no. 1									
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC142**
	10 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC143**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC144**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC145**
	10 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC146**
Group 2 · Socket M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC147**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC148**
	10 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC149**
Group 3 · Wirable socket M8, 3-pole · Wiring diagram no. 3									
	wirable	–	PA / Brass	60 AC 75 DC	-25...90	IP 68	–	–	**E11552**
Group 4 · Socket M8, 4-pole, 4-wire · Wiring diagram no. 4									
	2 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC150**
	5 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC151**
	10 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC152**
	2 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC153**

You can find wiring diagrams and scale drawings from page 721

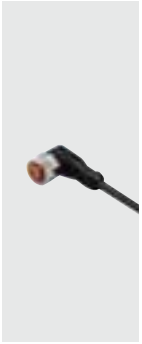
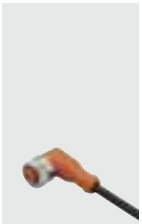
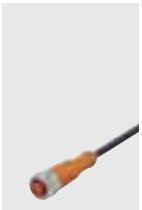
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 4 · Socket M8, 4-pole, 4-wire · Wiring diagram no. 4									
	5 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC154**
	10 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC155**
Group 5 · Wirable socket M8, 4-pole · Wiring diagram no. 5									
	wirable	–	PA / Brass	60 AC 75 DC	-25...90	IP 68	–	–	**E11553**

M12 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 6 · Socket M12, 5-pole, 2-wire · Wiring diagram no. 6									
	2 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC164**
	5 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC165**
	10 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC166**
	2 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC161**
	5 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC162**
	10 m black PUR cable	2 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC163**
Group 7 · socket M12, 2-pole + PE, 3-wire · Wiring diagram no. 7									
	2 m orange PVC cable	3 x AWG 22 (3 x 0.34 mm²), Ø 5 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	8	**E10865**
	5 m orange PVC cable	3 x AWG 22 (3 x 0.34 mm²), Ø 5 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	8	**E10866**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 7 · socket M12, 2-pole + PE, 3-wire · Wiring diagram no. 7									
	2 m orange PVC cable	3 x AWG 22 (3 x 0.34 mm²), Ø 5 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	9	**E10867**
	5 m orange PVC cable	3 x AWG 22 (3 x 0.34 mm²), Ø 5 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	9	**E10868**
Group 8 · Wirable socket M12, 4-pole · Wiring diagram no. 5									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	250 AC/DC	-25...85	IP 68	–	10	**E11509**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	250 AC/DC	-25...85	IP 68	–	11	**E11508**
Group 9 · Wirable socket M12, 4-pole, LED, PNP · Wiring diagram no. 8									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	10...30 DC	-25...85	IP 68	green / yellow	12	**E11510**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA	10...30 DC	-40...85	IP 67	green / yellow	11	**E10136**
Group 10 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC004**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC005**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC006**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC001**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC002**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC003**

You can find wiring diagrams and scale drawings from page 721

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 11 · Socket M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 9									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVC007**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVC008**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVC009**
Group 12 · Wirable socket M12, 5-pole · Wiring diagram no. 10									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	125 AC/DC	-25...85	IP 68	–	14	**E11512**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	125 AC/DC	-25...85	IP 68	–	15	**E11511**
Group 13 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 11									
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC073**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC074**
	10 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC075**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC070**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC071**
	10 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC072**
Group 14 · Socket M12, 8-pole, 6-wire · Wiring diagram no. 12									
	5 m black PUR cable	6 x 0.34 mm², Ø 6 mm	TPU / diecast zinc	60 AC/DC	-25...85	IP 68	–	16	**E10976**
	10 m black PUR cable	6 x 0.34 mm², Ø 6 mm	TPU / diecast zinc	60 AC/DC	-25...85	IP 68	–	16	**E10977**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 15 · socket M12, 8-pole, 7-wire + screen · Wiring diagram no. 13									
	2 m black PUR cable	7 x 0.25 mm² + screen	TPU / diecast zinc	60 AC/DC	-25...85	IP 67	–	16	**E20738**
	5 m black PUR cable	7 x 0.25 mm² + screen	TPU / diecast zinc	60 AC/DC	-25...85	IP 67	–	17	**E20838**
Group 16 · Socket M12, 8/7-pole, 8-wire · Wiring diagram no. 14									
	2 m black PUR cable	8 x 0.25 mm², Ø 6.2 mm	PUR / Brass	30 AC 36 DC	-25...80	IP 67	–	18	**E11231**
	5 m black PUR cable	8 x 0.25 mm², Ø 6.2 mm	PUR / Brass	30 AC 36 DC	-25...80	IP 67	–	18	**E11232**
	2 m black PUR cable	8 x 0.25 mm², Ø 6.2 mm	PUR / Brass	30 AC 36 DC	-25...80	IP 68	–	19	**E11950**
	5 m black PUR cable	8 x 0.25 mm², Ø 6.2 mm	PUR / Brass	30 AC 36 DC	-25...80	IP 68	–	19	**E11807**
	10 m black PUR cable	8 x 0.25 mm², Ø 6.2 mm	PUR / Brass	30 AC 36 DC	-25...80	IP 68	–	19	**E11311**
Group 17 · Socket M12, 8/7-pole, 8-wire · Wiring diagram no. 15									
	5 m black PUR cable	8 x 0.25 mm²	TPU / Brass	30 AC 36 DC	-40...80	IP 68	–	18	**E12168**
	10 m black PUR cable	8 x 0.25 mm²	TPU / Brass	30 AC 36 DC	-40...80	IP 68	–	18	**E12169**
	5 m black PUR cable	8 x 0.25 mm²	TPU / Brass	30 AC 36 DC	-40...80	IP 67	–	19	**E12166**
	10 m black PUR cable	8 x 0.25 mm²	TPU / Brass	30 AC 36 DC	-40...80	IP 67	–	19	**E12167**

You can find wiring diagrams and scale drawings from page 721

M12 sockets for industrial applications with screen

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 18 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 16									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC526**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC527**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC528**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC529**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC530**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC531**
Group 19 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 17									
	2 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC532**
	5 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC533**
	10 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC534**
	2 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC535**
	5 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC536**
	10 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC537**
Group 20 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 18									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	7	**EVC538**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 20 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 18									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	7	**EVC539**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	7	**EVC540**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	6	**EVC541**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	6	**EVC542**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67	–	6	**EVC543**
Group 21 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 19									
	2 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	7	**EVC544**
	5 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	7	**EVC545**
	10 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	7	**EVC546**
	2 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	6	**EVC547**
	5 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	6	**EVC548**
	10 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67	–	6	**EVC549**

M16 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 22 · socket M16, 14-pole, 10-wire · Wiring diagram no. 20									
	5 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 9.1 mm	PUR / Brass	30 DC	-25...90	IP 68	–	20	**E11226**

You can find wiring diagrams and scale drawings from page 721

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 22 · socket M16, 14-pole, 10-wire · Wiring diagram no. 20									
	10 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 9.1 mm	PUR / Brass	30 DC	-25...90	IP 68	–	20	**E11227**
Group 23 · Socket M16, 14-pole, 12-wire · Wiring diagram no. 21									
	2 m black PUR cable	10 x 0.25 mm² + 2 x 0.34 mm², Ø 7.5 mm	PUR / Brass	30 DC	-25...90	IP 67	–	21	**E11645**
	5 m black PUR cable	10 x 0.25 mm² + 2 x 0.34 mm², Ø 7.5 mm	PUR / Brass	30 DC	-25...90	IP 67	–	21	**E11697**

M18 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 24 · Wirable socket M18, 4-pole · Wiring diagram no. 5									
	wirable	...0.75 mm² (Ø 6...8 mm)	PA	20...250 AC/DC	-40...85	IP 65	–	22	**E10013**
	wirable	...0.75 mm² (Ø 6...8 mm)	PA / ULTRAMID	20...250 AC/DC	-40...85	IP 65	–	23	**E10137**

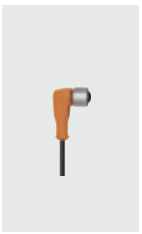
M23 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 25 · Socket M23, 12-pole, 12-wire · Wiring diagram no. 22									
	5 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	24	**E11739**
	10 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	24	**E11740**
	15 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	24	**E11741**
	5 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	25	**E11736**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 25 · Socket M23, 12-pole, 12-wire · Wiring diagram no. 22									
	10 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	25	**E11737**
	15 m black PUR cable	8 x 0.5 mm² + 3 x 1.0 mm², Ø 9.3 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	25	**E11738**
Group 26 · Wirable M23 socket, 12 poles									
	wirable	...1 mm² (Ø 10...14 mm)	Brass	10...30 DC	-25...90	IP 65	–	26	**E10448**
	wirable	...1 mm² (Ø 10...14 mm)	Brass	10...30 DC	-25...90	IP 65	–	27	**E10447**
Group 27 · Socket M23, 19-pole, 19-wire · Wiring diagram no. 28									
	5 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	28	**E11745**
	10 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	28	**E11746**
	15 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	28	**E11747**
	5 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	29	**E11742**
	10 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	29	**E11743**
	15 m black PUR cable	16 x 0.5 mm² + 3 x 1.0 mm², Ø 11.6 mm	PUR / Brass	63 AC/DC	-25...80	IP 67	–	29	**E11744**
Group 28 · Wirable socket M23, 19-pole									
	wirable	...1 mm² (Ø 10...14 mm)	Brass	10...30 DC	-25...90	IP 65	–	–	**E10887**
	wirable	...1 mm² (Ø 10...14 mm)	Brass	10...30 DC	-25...90	IP 65	–	–	**E10886**

You can find wiring diagrams and scale drawings from page 721

1/2" sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 29 · socket 1/2", 2-pole + PE, 3-wire · Wiring diagram no. 23									
	2 m yellow PVC cable	3 x AWG22, Ø 5.2 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	30	**E10190**
	5 m yellow PVC cable	3 x AWG22, Ø 5.2 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	31	**E10200**
	2 m yellow PVC cable	3 x AWG22, Ø 5.2 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	32	**E10189**
	5 m yellow PVC cable	3 x AWG22, Ø 5.2 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	33	**E10191**
	10 m yellow PVC cable	3 x AWG22, Ø 5.2 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 67	–	31	**E10261**
Group 30 · socket 1/2", 5-pole, 4-wire · Wiring diagram no. 24									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.7 mm	TPU / Brass	300 AC	-25...90	IP 67	–	34	**E11248**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.7 mm	TPU / Brass	300 AC	-25...90	IP 67	–	34	**E11249**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.7 mm	TPU / Brass	300 AC	-25...90	IP 67	–	35	**E11250**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.7 mm	TPU / Brass	300 AC	-25...90	IP 67	–	36	**E11251**

7/8" sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 31 · socket 7/8", 2-pole + PE, 3-wire									
	2 m black PVC cable	3 x 0.75 mm², Ø 5.2 mm	TPU / diecast zinc	250 AC	-40...80	IP 68	–	37	**E20428**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 32 · socket 7/8", 3-pole, 3-wire									
	2 m black PVC cable	3 x 0.5 mm², Ø 5.4 mm	TPU	10...30 DC	-40...80	IP 68	–	37	**E20430**

DIN sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 33 · socket DIN A (DIN EN 175301-803) · Wiring diagram no. 25									
	wirable	...1.5 mm² (Ø 6...8 mm)	PA	... 250 AC ...300 DC	-40...125	IP 65	–	38	**E10058**

RD24 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 34 · socket Rd24, 6-pole + PE · Wiring diagram no. 26									
	wirable	...2.5 mm² (Ø 10...12 mm)	PBT	250 AC 300 DC	-40...100	IP 67	–	39	**E70142**
	wirable	...2.5 mm² (Ø 6...8 mm)	PBT / PA	250 AC 300 DC	-40...100	IP 67	–	40	**E11043**

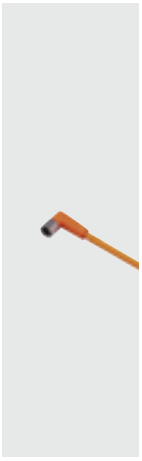
Connectors weld slag resistant

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 110 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	2 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW004**
	5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW005**
	10 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW006**

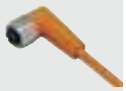
You can find wiring diagrams and scale drawings from page 721

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 110 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	2 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW001**
	5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW002**
	10 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW003**
Group 111 · Socket M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 9									
	2 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVW007**
	5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVW008**
	10 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	13	**EVW009**
Group 112 · Socket M12, 5/4-pole, 5-wire · Wiring diagram no. 11									
	2 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW013**
	5 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW014**
	10 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVW015**
Group 113 · Socket M12, 5/4-pole, 5-wire · Wiring diagram no. 11									
	2 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW010**
	5 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW011**
	10 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVW012**

Connectors for hygienic and wet areas

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 117 · Socket M8, 3-pole, 3-wire · Wiring diagram no. 1									
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT122**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT123**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT124**
	25 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT125**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT126**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT127**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT128**
	25 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT129**
Group 119 · Socket M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT130**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT131**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT132**
	25 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT133**
Group 121 · Socket M8, 4-pole, 4-wire · Wiring diagram no. 4									
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT134**

You can find wiring diagrams and scale drawings from page 721

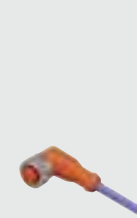
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 121 · Socket M8, 4-pole, 4-wire · Wiring diagram no. 4									
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT135**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT136**
	25 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT137**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT138**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT139**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT140**
	25 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT141**
Group 123 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT067**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT004**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT005**
	25 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT006**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT064**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT001**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT002**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 123 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	25 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT003**
Group 125 · Wirable socket M12, 4-pole · Wiring diagram no. 5									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	240 AC/DC	-25...85	IP 67	–	48	**E11862**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	240 AC/DC	-25...90	IP 67	–	49	**E11861**
Group 126 · Socket M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 9									
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	50	**EVT069**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	50	**EVT007**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	50	**EVT008**
	25 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	50	**EVT009**
Group 127 · Wirable socket M12, 5/4-pole, LED, PNP · Wiring diagram no. 27									
	wirable	...0.75 mm² (Ø 4...6 mm)	PBT / high-grade st. steel	10...30 DC	-25...85	IP 67 / IP 69K	green / yellow	51	**E11863**
Group 128 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 11									
	5 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT013**
	10 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT014**
	25 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	46	**EVT015**
	5 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT010**

You can find wiring diagrams and scale drawings from page 721

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 128 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 11									
	10 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT011**
	25 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT012**
Group 129 · Wirable socket M12, 5-pole · Wiring diagram no. 10									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	60 AC/DC	-25...85	IP 67	–	52	**E11865**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	60 AC/DC	-25...90	IP 67	–	53	**E11864**

Connectors for hazardous areas

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 146 · Socket M12, 5/4 poles, 4 wires, cat. 1D / 1G · Wiring diagram no. 4									
	2 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC04A**
	5 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC05A**
	10 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC06A**
	2 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC01A**
	5 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC02A**
	10 m blue PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC03A**
Group 147 · Socket M12, 5/4 poles, 4 wires, cat. 2D / 3G · Wiring diagram no. 4									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	54	**EVC04A**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 147 · Socket M12, 5/4 poles, 4 wires, cat. 2D / 3G · Wiring diagram no. 4									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	54	**EVC05A**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	54	**EVC06A**
	25 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	54	**EVC14A**
Group 148 · socket M12, 5 poles, 5 wires, cat. 1D / 1G · Wiring diagram no. 11									
	2 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC10A**
	5 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC11A**
	10 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC12A**
	25 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC13A**
	50 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	6	**ENC14A**
	2 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC07A**
	5 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC08A**
	10 m blue PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	...30 DC	-25...90	IP 67	–	7	**ENC09A**

Connectors for robust applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 150 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM004**

You can find wiring diagrams and scale drawings from page 721

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 150 · Socket M12, 5/4-pole, 4-wire · Wiring diagram no. 4									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM005**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM006**
	25 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM012**
	50 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM010**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM001**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM002**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM003**
	25 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	250 AC 300 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM014**
Group 151 · Socket M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 9									
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	10...36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	56	**EVM007**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	10...36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	56	**EVM008**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	10...36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	56	**EVM009**
Group 152 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 11									
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM039**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM040**

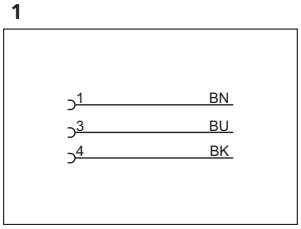
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 152 · Socket M12, 5-pole, 5-wire · Wiring diagram no. 11									
	10 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM041**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM036**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM037**
	10 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVM038**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM039**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM040**
	10 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	30 AC 36 DC	-40...90	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVM041**

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue
WH	white
GN/YE	green/yellow
GY	grey
GN	green
YE	yellow
PK	pink
screen	Screen
OG	orange
VT	lilac
RD	red
RD/BK	red/black
RD/WH	red/white

1



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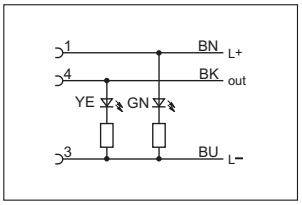

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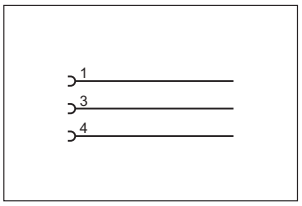

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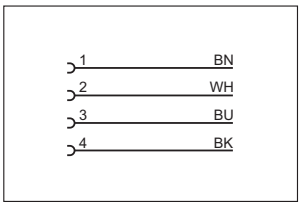

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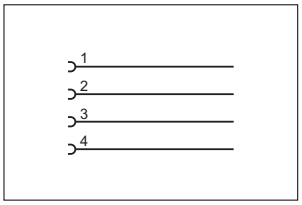

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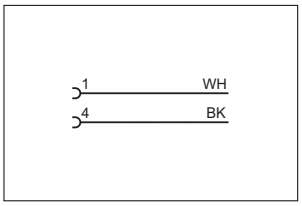

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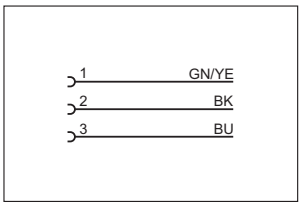

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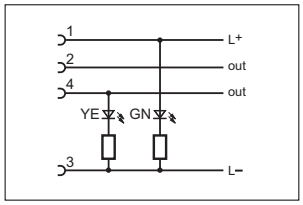

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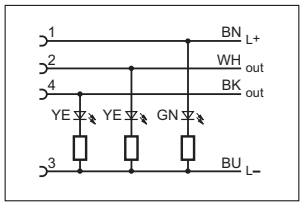

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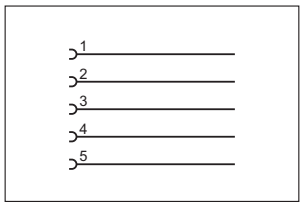

Wiring diagrams

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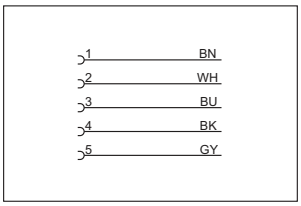

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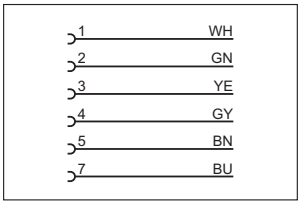

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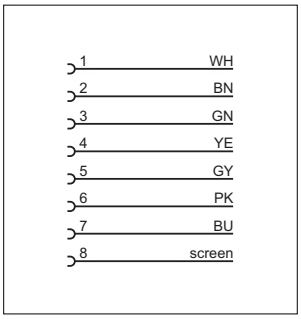

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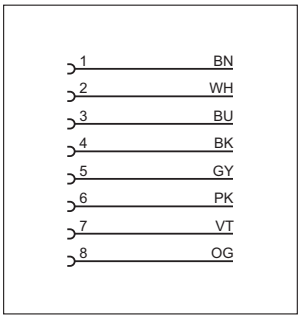

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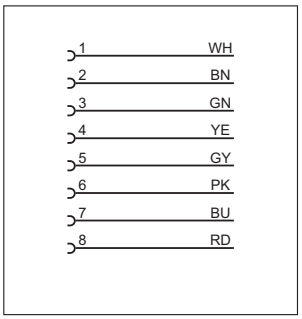

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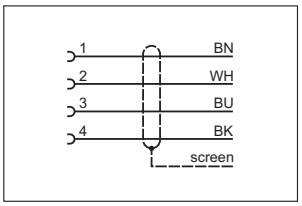

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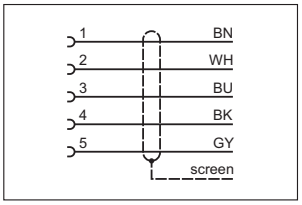

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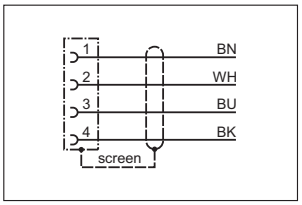

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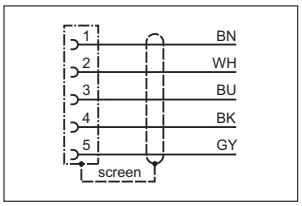

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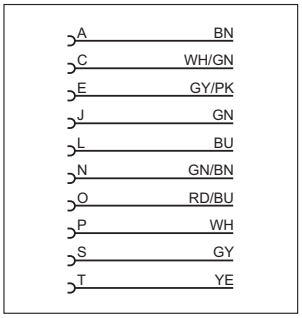

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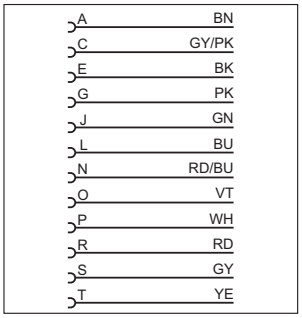

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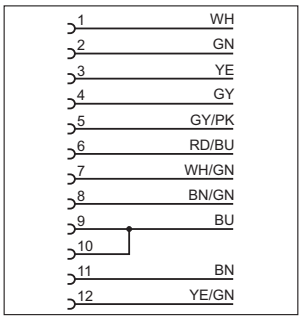

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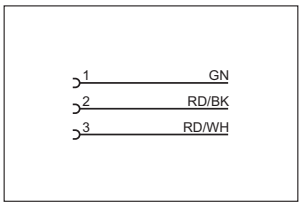

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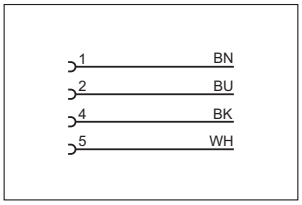

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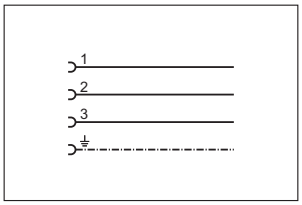

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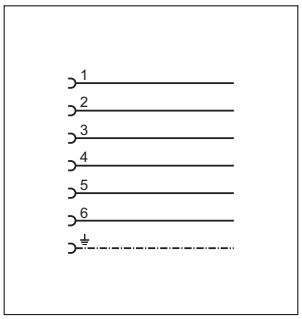

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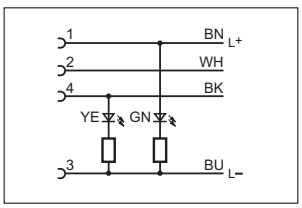

Wiring diagrams

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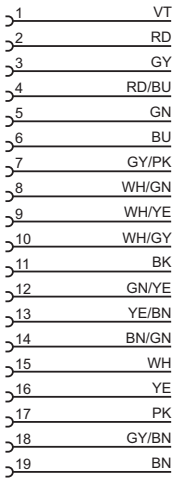

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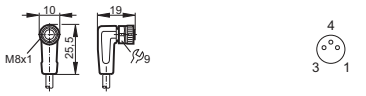

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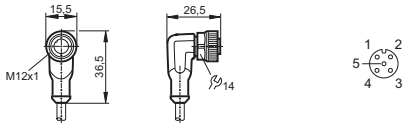

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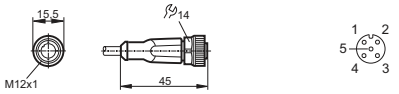

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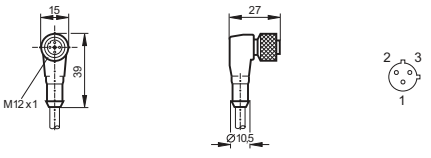

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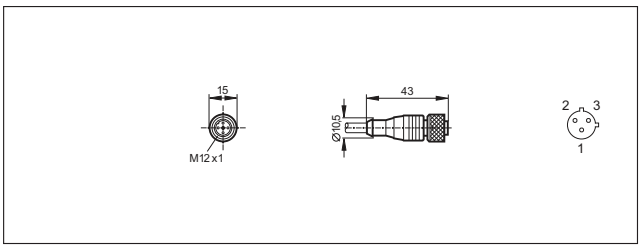

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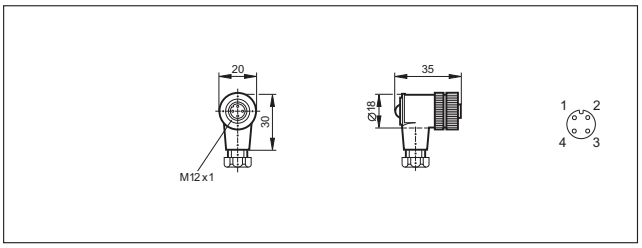

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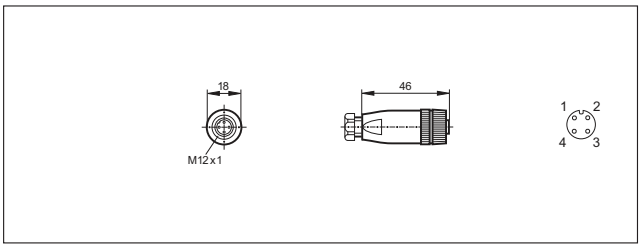

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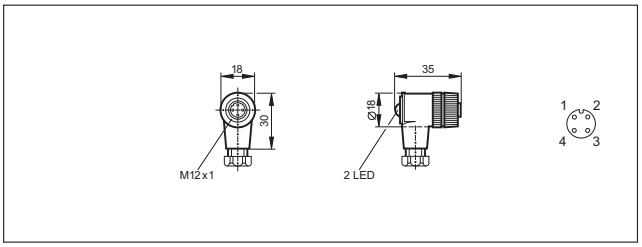

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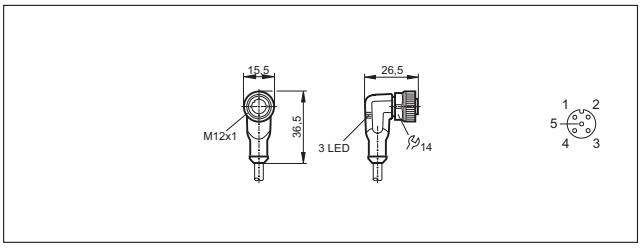

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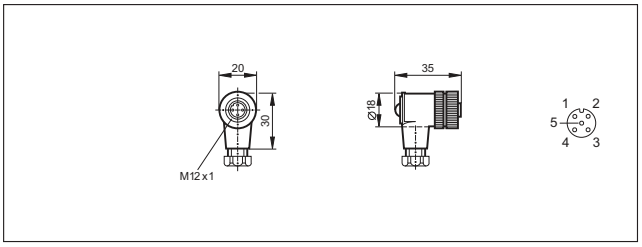

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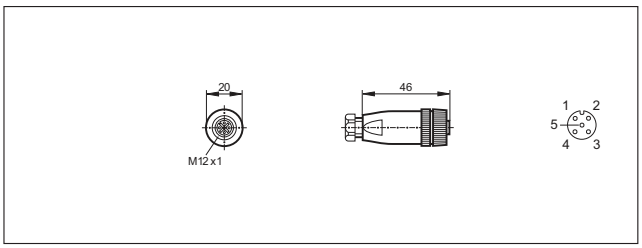

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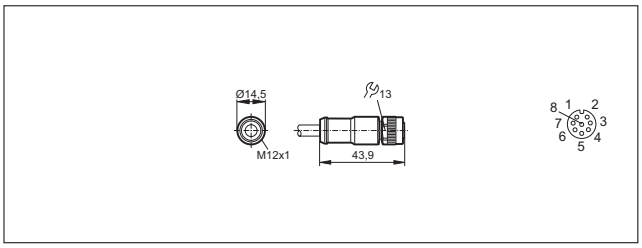

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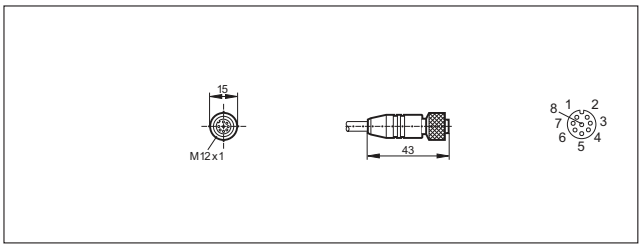

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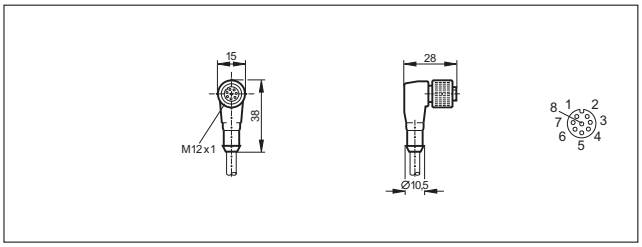

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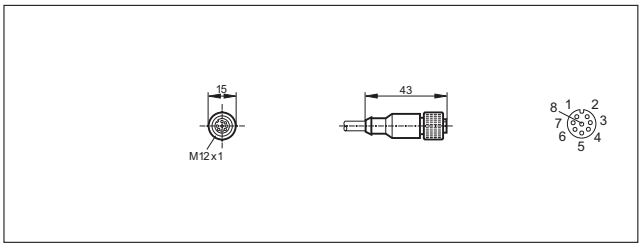

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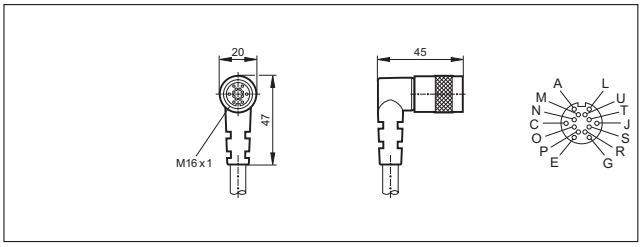

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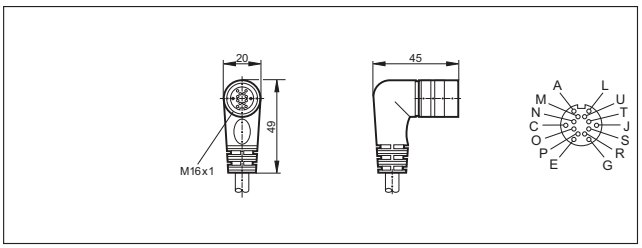

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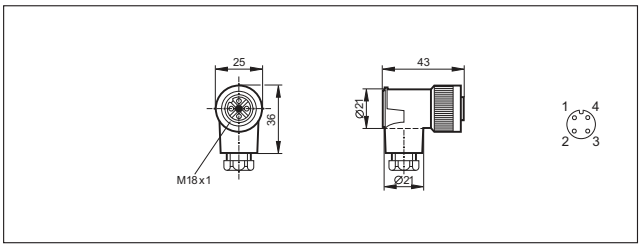

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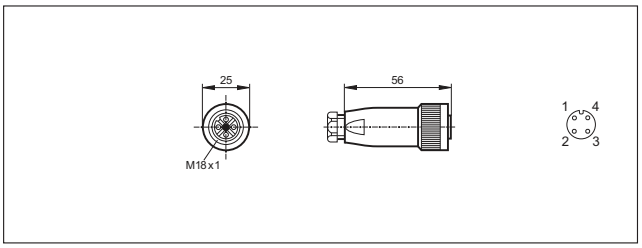

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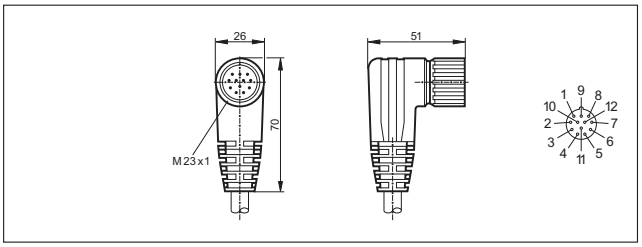

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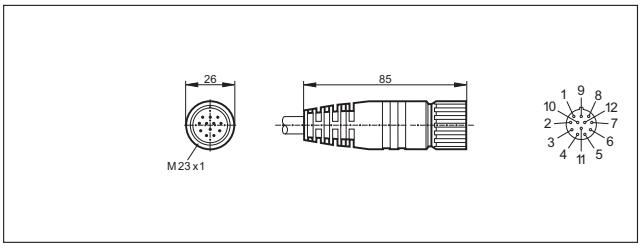

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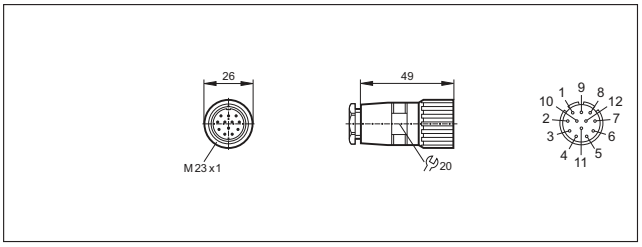

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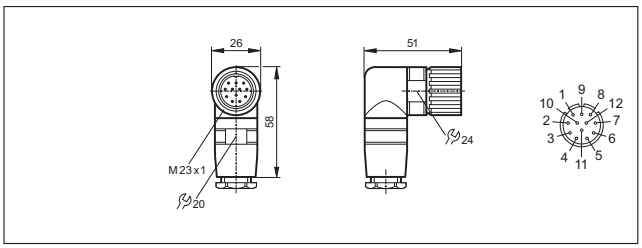

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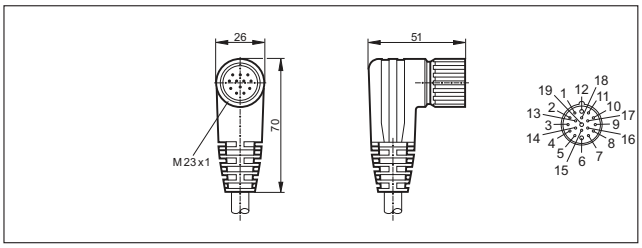

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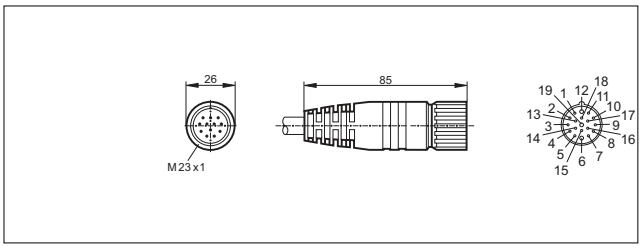

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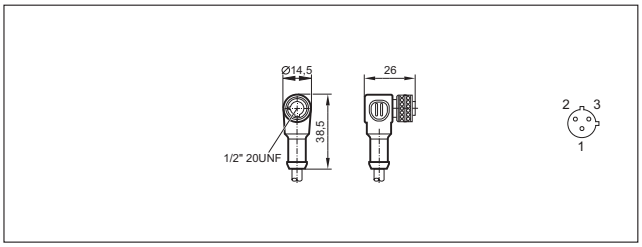

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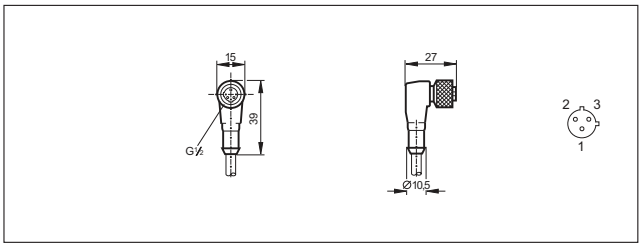

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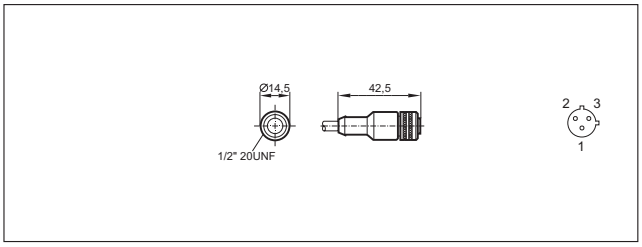

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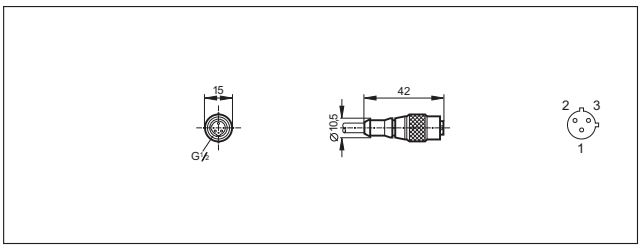

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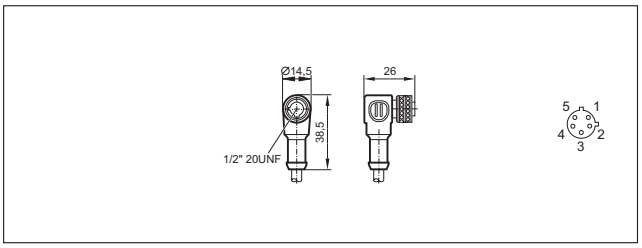

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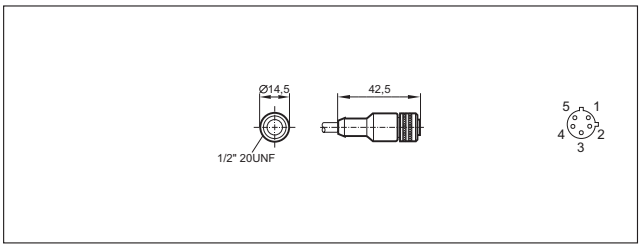

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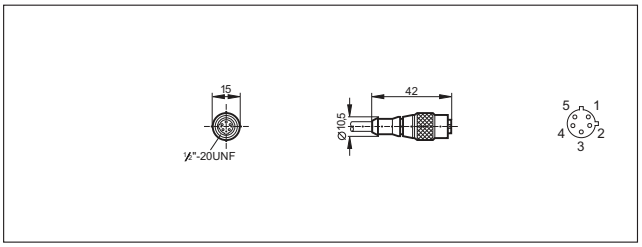

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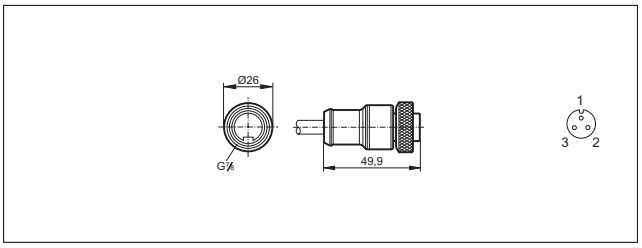

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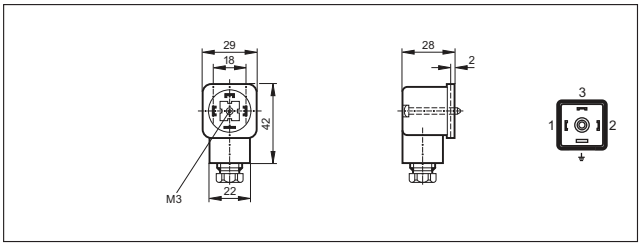

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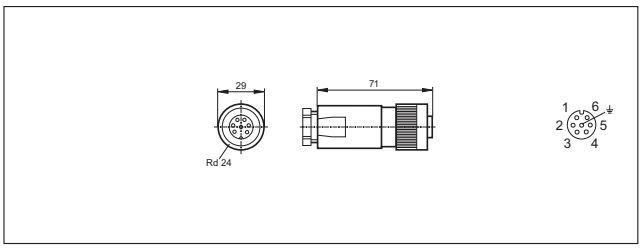

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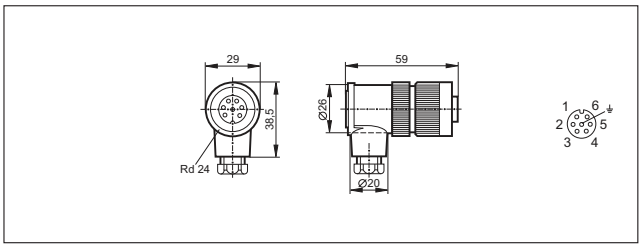

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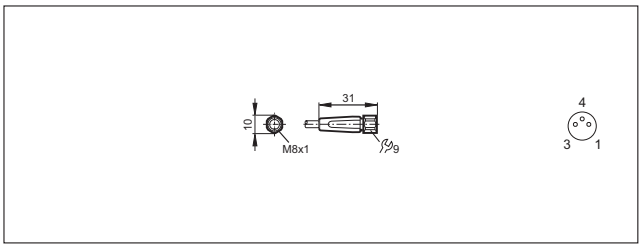

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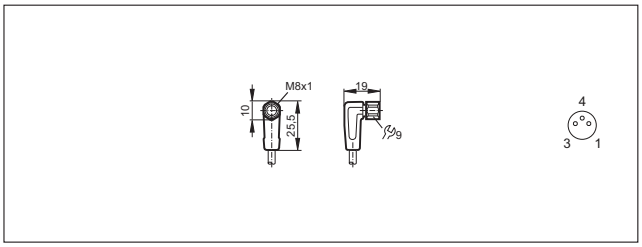

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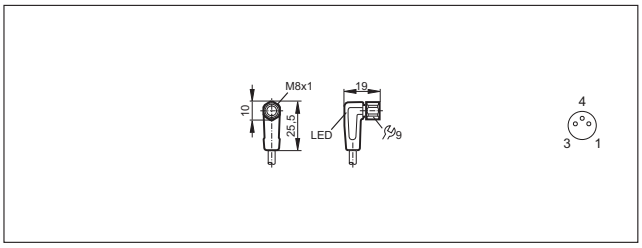

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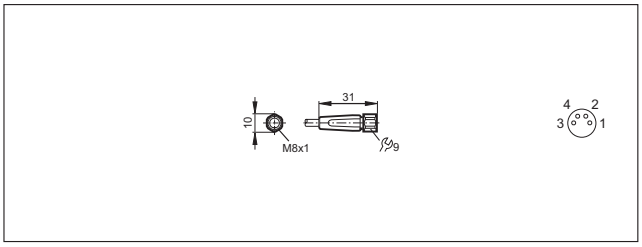

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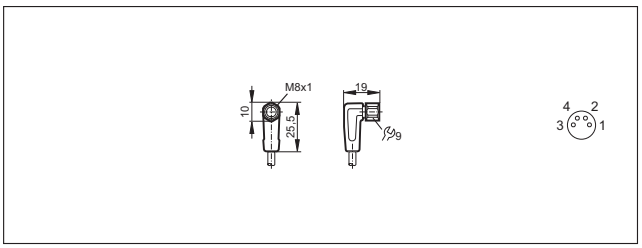

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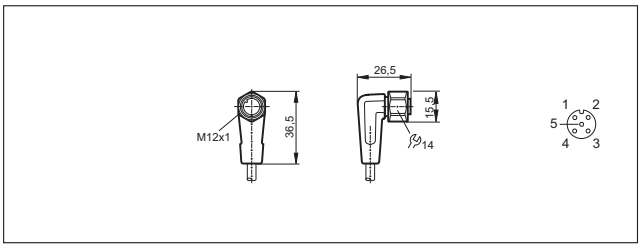

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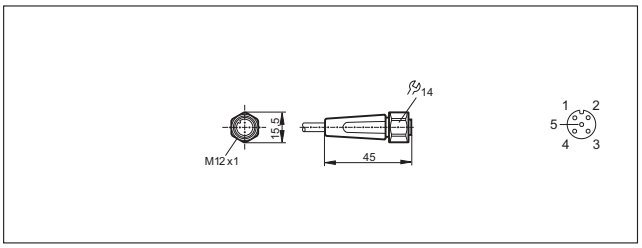

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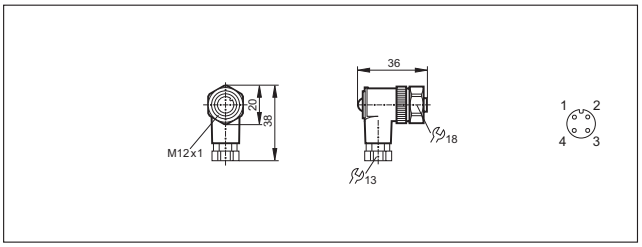

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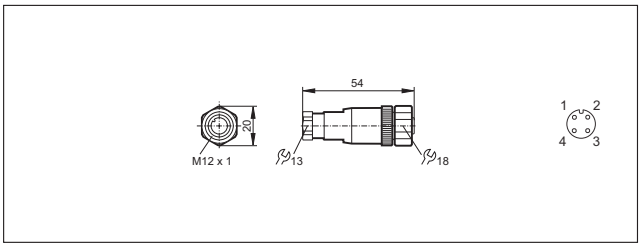

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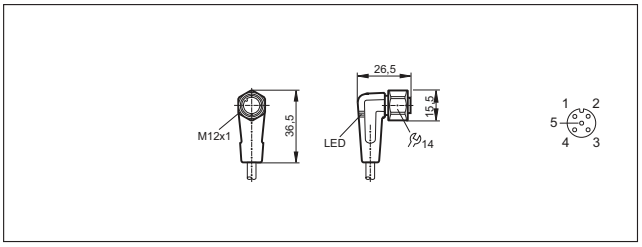

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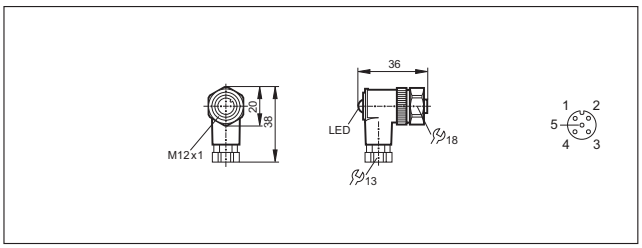

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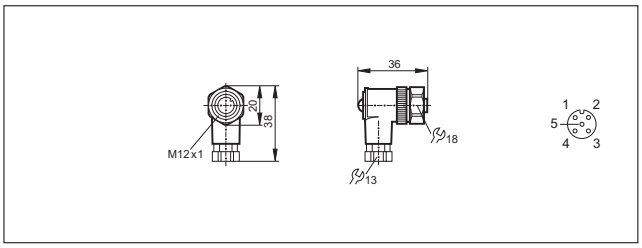

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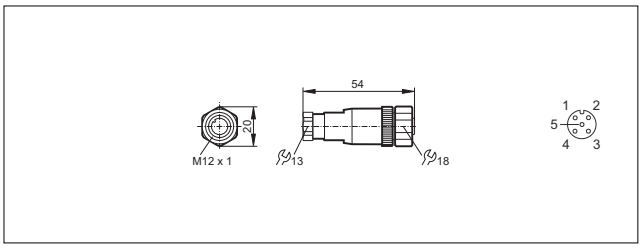

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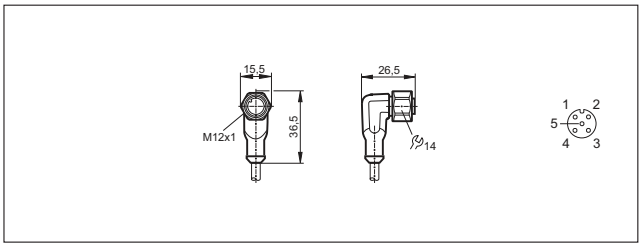

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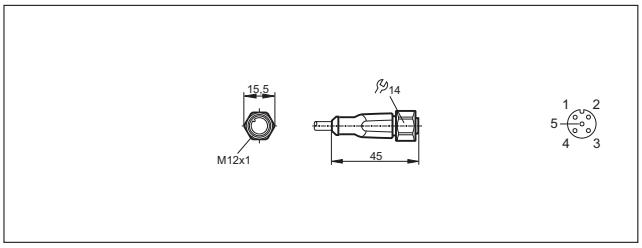

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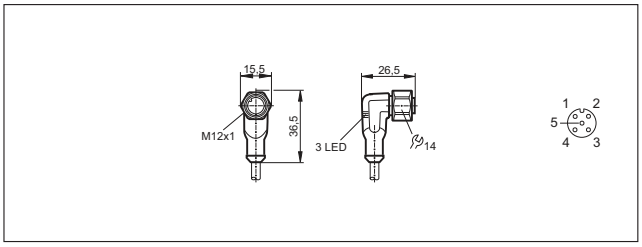


Plugs

Plugs are mainly used for the connection to splitter boxes and modules. High-quality pin contacts and materials ensure reliable electrical connections.

In addition to a wide range of standard products ifm also offers versions without silicone and halogen, versions for hygienic areas, for applications in contact with coolants and lubricants, as well as for welding applications.

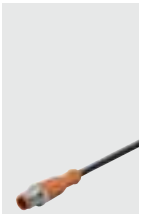
System overview	Page
M8 cable plugs for industrial applications	728
M12 cable plugs for industrial applications	728 - 729
Connectors for hygienic and wet areas	730
Wiring diagrams	730 - 731
Scale drawings / drawing no. – CAD download: www.ifm.com	731 - 732

M8 cable plugs for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 35 · Wirable plug M8, 3-pole · Wiring diagram no. 1									
	wirable	–	PA / Brass	60 AC 75 DC	-25...90	IP 68	–	–	**E11550**
Group 36 · Wirable plug M8, 4-pole · Wiring diagram no. 2									
	wirable	–	PA / Brass	60 AC 75 DC	-25...90	IP 68	–	–	**E11551**

M12 cable plugs for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 37 · Cable plug M12, 4-pole, 4-wire · Wiring diagram no. 3									
	2 m black PUR cable	4 x 0.34 mm^2, Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC079**
	5 m black PUR cable	4 x 0.34 mm^2, Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC080**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 37 · Cable plug M12, 4-pole, 4-wire · Wiring diagram no. 3									
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC081**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC076**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC077**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC078**
Group 38 · Wirable plug M12, 4-pole · Wiring diagram no. 2									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	250 AC/DC	-25...85	IP 68	–	3	**E11505**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	250 AC/DC	-25...85	IP 68	–	4	**E11504**
Group 39 · Cable plug M12, 5-pole, 5-wire · Wiring diagram no. 4									
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC095**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC094**
Group 40 · Wirable plug M12, 5-pole · Wiring diagram no. 5									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	125 AC/DC	-25...85	IP 68	–	7	**E11507**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / Brass	125 AC/DC	-25...85	IP 68	–	8	**E11506**

You can find wiring diagrams and scale drawings from page 730

Connectors for hygienic and wet areas

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 117 · Cable plug M12, 4-pole, 4-wire · Wiring diagram no. 3									
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVT071**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVT072**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVT073**
Group 119 · Wirable plug M12, 4-pole · Wiring diagram no. 2									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	240 AC/DC	-25...85	IP 67	–	10	**E11858**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	250 AC/DC	-25...85	IP 67	–	11	**E11857**
Group 121 · Cable plug M12, 5-pole, 5-wire · Wiring diagram no. 4									
	2 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVT074**
Group 123 · Wirable plug M12, 5-pole · Wiring diagram no. 5									
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	60 AC/DC	-25...85	IP 67	–	13	**E11860**
	wirable	...0.75 mm² (Ø 4...6 mm)	PA / high-grade st. steel	125 AC/DC	-25...85	IP 67	–	14	**E11859**

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue
WH	white
GY	grey

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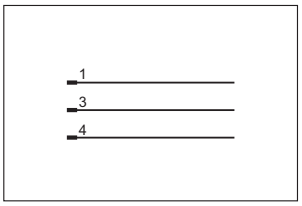

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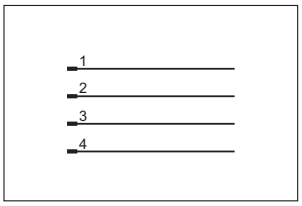

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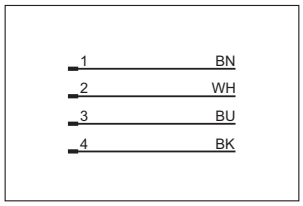
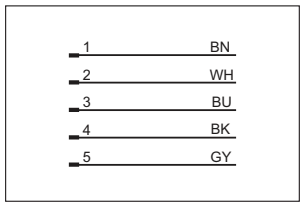


Wiring diagrams

4



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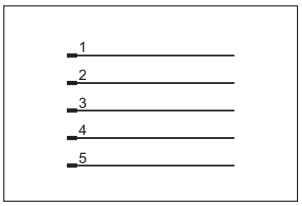

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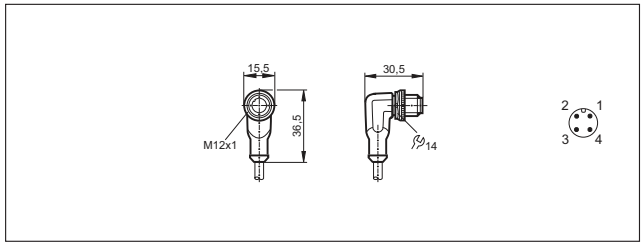

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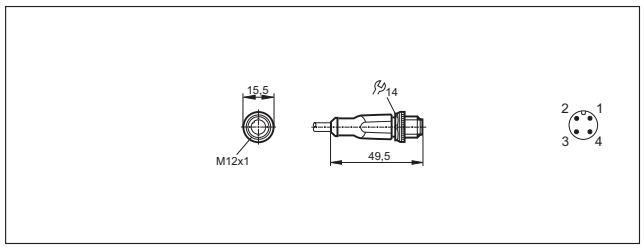

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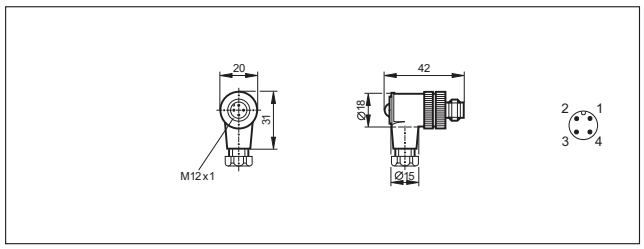

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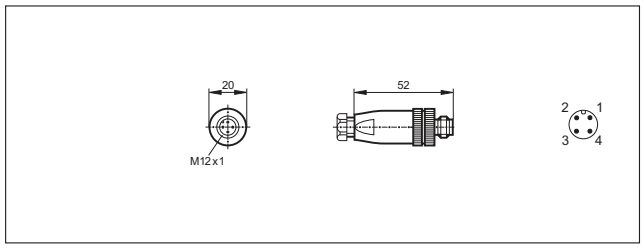

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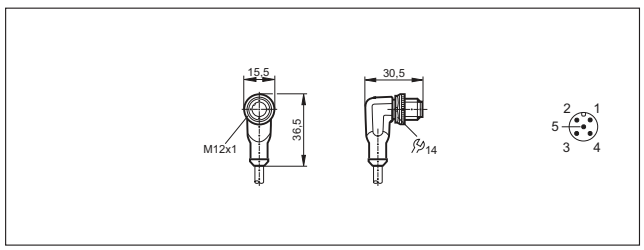

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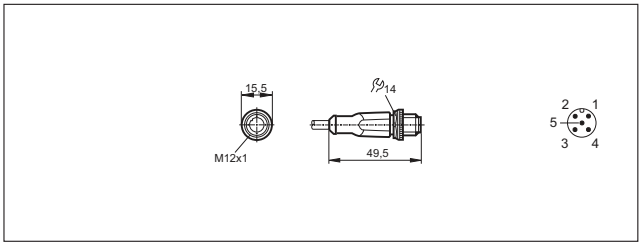

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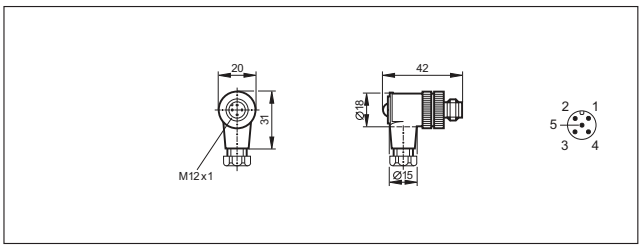

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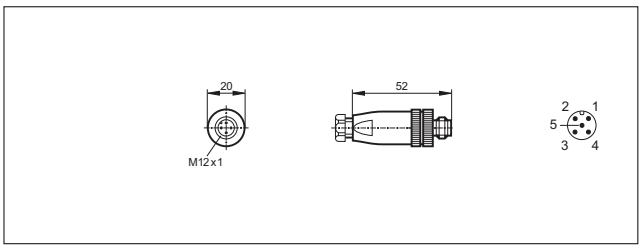

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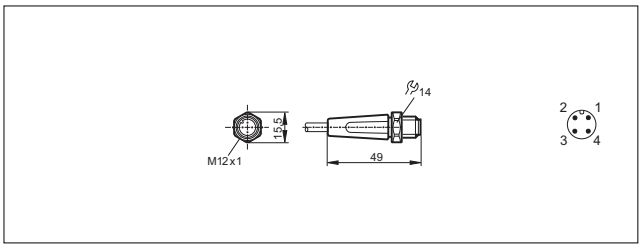

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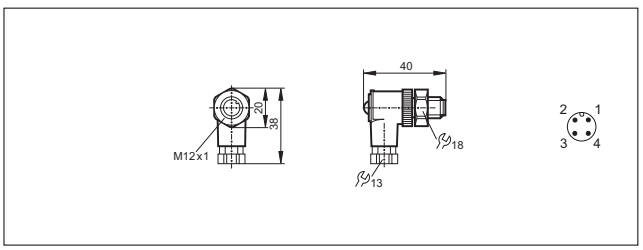
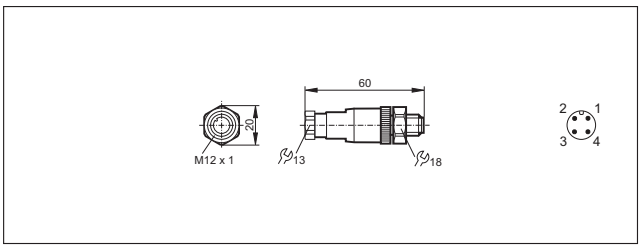


Scale drawings / drawing no. – CAD download: www.ifm.com

11



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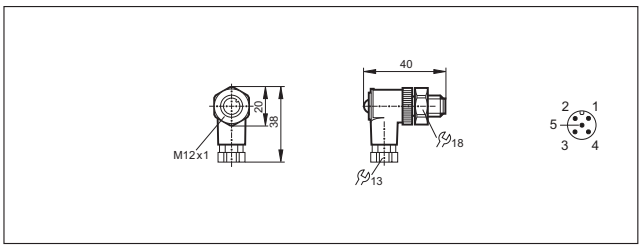

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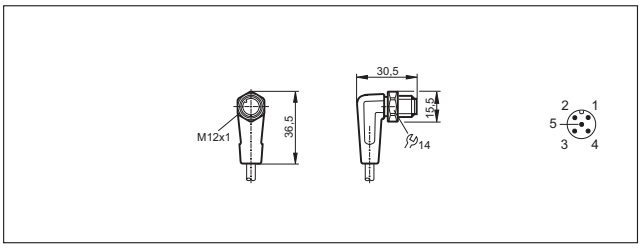

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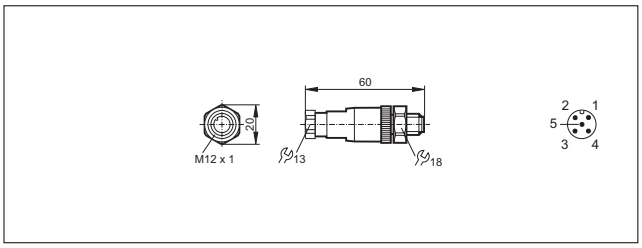

Jumper cables

Connection cables feature a plug and a socket. They are used for the connection of sensors to splitter boxes and modules.

High-quality contacts and materials ensure reliable electrical connections.

In addition to a wide range of standard products ifm also offers versions without silicone and halogen, versions for hygienic areas, for applications in contact with coolants and lubricants, as well as for welding applications.

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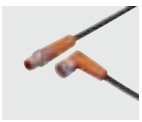
M8 – M8 jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 41 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC275**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC276**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC277**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC278**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 41 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC279**
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC265**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC266**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC267**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC268**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC269**
Group 42 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	1	**EVC280**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	1	**EVC281**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	1	**EVC282**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	1	**EVC283**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	1	**EVC284**
Group 43 · Jumper , plug: M8, 4-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	3	**EVC305**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	3	**EVC306**

You can find wiring diagrams and scale drawings from page 762

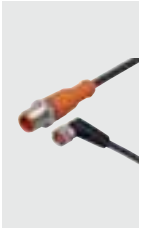
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 43 · Jumper , plug: M8, 4-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	3	**EVC307**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	3	**EVC308**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	3	**EVC309**
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC315**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC316**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC317**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC318**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVC319**
Group 44 · Jumper , plug: M8, 3-pole, socket: M8, 4-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC260**
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC261**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC262**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC263**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVC264**
	0.3 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC270**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 44 · Jumper , plug: M8, 3-pole, socket: M8, 4-pole, 3-wire · Wiring diagram no. 1									
	0.6 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC271**
	1 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC272**
	2 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC273**
	5 m black PUR cable	3 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	6	**EVC274**
Group 45 · Jumper , plug: M8, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC300**
	0.6 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC301**
	1 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC302**
	2 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC303**
	5 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	7	**EVC304**
	0.3 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	8	**EVC310**
	0.6 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	8	**EVC311**
	1 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	8	**EVC312**
	2 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	8	**EVC313**
	5 m black PUR cable	4 x 0.25 mm², Ø 3.7 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	8	**EVC314**

You can find wiring diagrams and scale drawings from page 762

M8 socket – M12 plug jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 46 · Jumper , plug: M12, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVC230**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVC231**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVC232**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVC233**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	9	**EVC234**
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	10	**EVC215**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	10	**EVC216**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	10	**EVC217**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	10	**EVC218**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	10	**EVC219**
Group 47 · Jumper , plug: M12, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	11	**EVC225**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	11	**EVC226**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	11	**EVC227**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 47 · Jumper , plug: M12, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	11	**EVC228**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	11	**EVC229**
Group 48 · Jumper , plug: M12, 3-pole, socket: M8, 4-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVC210**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVC211**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVC212**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVC213**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	12	**EVC214**
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	13	**EVC220**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	13	**EVC221**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	13	**EVC222**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	13	**EVC223**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	13	**EVC224**
Group 49 · Jumper , plug: M12, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	14	**EVC235**

You can find wiring diagrams and scale drawings from page 762

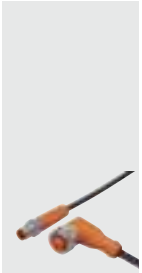
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 49 · Jumper , plug: M12, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	14	**EVC236**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	14	**EVC237**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	14	**EVC238**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	14	**EVC239**
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	15	**EVC240**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	15	**EVC241**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	15	**EVC242**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	15	**EVC243**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	15	**EVC244**

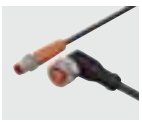
M8 plug - M12 socket jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 50 · Jumper , plug: M8, 3-pole, socket: M12, 5/4-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	16	**EVC245**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	16	**EVC246**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	16	**EVC247**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 50 · Jumper , plug: M8, 3-pole, socket: M12, 5/4-pole, 3-wire · Wiring diagram no. 1									
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	16	**EVC248**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	16	**EVC249**
Group 51 · Jumper , plug: M8, 3-pole, socket: M12, 5-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	17	**EVC255**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	17	**EVC256**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	17	**EVC257**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	17	**EVC258**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	17	**EVC259**
Group 52 · Jumper , plug: M8, 3-pole, socket: M12, 5-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	18	**EVC250**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	18	**EVC251**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	18	**EVC252**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	18	**EVC253**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	18	**EVC254**
Group 53 · Jumper , plug: M8, 4-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	19	**EVC285**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 53 · Jumper , plug: M8, 4-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 3									
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	19	**EVC286**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	19	**EVC287**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	19	**EVC288**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	19	**EVC289**
Group 54 · Jumper , plug: M8, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	20	**EVC295**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	20	**EVC296**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	20	**EVC297**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	20	**EVC298**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	50 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	20	**EVC299**
Group 55 · Jumper , plug: M8, 4-pole, socket: M12, 5-pole, 4-wire, LED, PNP · Wiring diagram no. 4									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	21	**EVC290**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	21	**EVC291**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	21	**EVC292**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	21	**EVC293**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 55 · Jumper , plug: M8, 4-pole, socket: M12, 5-pole, 4-wire, LED, PNP · Wiring diagram no. 4									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	21	**EVC294**

M12 – M12 jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 56 · Jumper , plug: M12, 3-pole, socket: M12, 5-pole, 3-wire · Wiring diagram no. 1									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	22	**EVC045**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	22	**EVC046**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	22	**EVC047**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	22	**EVC048**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	22	**EVC049**
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	23	**EVC040**
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	23	**EVC041**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	23	**EVC042**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	23	**EVC043**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	23	**EVC044**
Group 58 · Jumper , plug: M12, 3-pole, socket: M12, 5-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	24	**EVC050**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 58 · Jumper , plug: M12, 3-pole, socket: M12, 5-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.6 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	24	**EVC051**
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	24	**EVC052**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	24	**EVC053**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	24	**EVC054**
Group 60 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	25	**EVC015**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	25	**EVC016**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	25	**EVC017**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	25	**EVC018**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	25	**EVC019**
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	26	**EVC010**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	26	**EVC011**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	26	**EVC012**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	26	**EVC013**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	26	**EVC014**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 61 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 4									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	27	**EVC020**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	27	**EVC021**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	27	**EVC022**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	27	**EVC023**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	27	**EVC024**
Group 62 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	28	**EVC025**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	28	**EVC026**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	28	**EVC027**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	28	**EVC028**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	28	**EVC029**
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	29	**EVC030**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	29	**EVC031**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	29	**EVC032**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	29	**EVC033**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 62 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	29	**EVC034**
Group 63 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 4									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	30	**EVC035**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	30	**EVC036**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	30	**EVC037**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	30	**EVC038**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	30	**EVC039**
Group 64 · Jumper , plug: M12, 5-pole, socket: M12, 5-pole, 5-wire · Wiring diagram no. 5									
	0.3 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVC060**
	0.6 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVC061**
	1 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVC062**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVC063**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVC064**
	0.3 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVC055**
	0.6 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVC056**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 64 · Jumper , plug: M12, 5-pole, socket: M12, 5-pole, 5-wire · Wiring diagram no. 5									
	1 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVC057**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVC058**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVC059**
	0.3 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	33	**EVC065**
	0.6 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	33	**EVC066**
	1 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	33	**EVC067**
	2 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	33	**EVC068**
	5 m black PUR cable	5 x 0.34 mm², Ø 4.9 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	33	**EVC069**

Valve - plug jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 65 · Jumper , plug: M12, 3-pole, valve plug: Housing A, 4-pole, 3-wire, LED · Wiring diagram no. 6									
	0.3 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	34	**E11416**
	0.6 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	34	**E11417**
	1 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	34	**E11418**
	2 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	34	**E11419**

You can find wiring diagrams and scale drawings from page 762

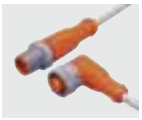
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 65 · Jumper , plug: M12, 3-pole, valve plug: Housing A, 4-pole, 3-wire, LED · Wiring diagram no. 6									
	5 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	34	**E11420**
Group 66 · Jumper , plug: M12, 3-pole, valve plug: Housing B, 3-pole, 3-wire, LED · Wiring diagram no. 7									
	0.3 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	35	**E11421**
	0.6 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	35	**E11422**
	1 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	35	**E11423**
	2 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	35	**E11424**
	5 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	35	**E11425**
Group 67 · Jumper , plug: M12, 3-pole, valve plug: Housing B (industrial standard), 3-pole, 3-wire, LED · Wiring diagram no. 7									
	0.3 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	36	**E11431**
	0.6 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	36	**E11432**
	1 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	36	**E11433**
	2 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	36	**E11434**
	5 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	36	**E11435**
Group 68 · Jumper , plug: M12, 3-pole, valve plug: Housing C, 4-pole, 3-wire, LED · Wiring diagram no. 6									
	0.3 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 65	yellow	37	**E11426**
	0.6 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 65	yellow	37	**E11427**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 68 · Jumper , plug: M12, 3-pole, valve plug: Housing C, 4-pole, 3-wire, LED · Wiring diagram no. 6									
	1 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 65	yellow	37	**E11428**
	2 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 65	yellow	37	**E11429**
	5 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 65	yellow	37	**E11430**
Group 69 · Jumper , plug: M12, 3-pole, valve plug: Housing C (industrial standard), 4-pole, 3-wire, LED · Wiring diagram no. 6									
	0.3 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	38	**E11436**
	0.6 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	38	**E11437**
	1 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	38	**E11438**
	2 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	38	**E11439**
	5 m black PUR cable	3 x 0.5 mm², Ø 5 mm	PUR / Brass	24 AC/DC	-25...80	IP 67	yellow	38	**E11440**

Jumpers weld slag resistant

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 112 · Jumper , plug: M12, 4-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 3									
	0.3 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	39	**EVW036**
	0.5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	39	**EVW022**
	1 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	39	**EVW030**
	2 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	39	**EVW031**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 112 · Jumper , plug: M12, 4-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 3									
	5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	39	**EVW034**
Group 113 · Jumper , plug: M12, 4-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 3									
	0.3 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	40	**EVW037**
	0.5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	40	**EVW023**
	1 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	40	**EVW024**
	2 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	40	**EVW025**
	5 m grey PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	40	**EVW028**
Group 114 · Jumper , plug: M12, 5-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 5									
	0.3 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW054**
	0.6 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW055**
	1 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW056**
	2 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW057**
	5 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW058**
	10 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	31	**EVW059**
	0.3 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW048**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 114 · Jumper , plug: M12, 5-pole, socket: M12, 5-pole, 4-wire · Wiring diagram no. 5									
	0.6 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW049**
	1 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW050**
	2 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW051**
	5 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW052**
	10 m grey PUR cable	5 x 0.34 mm², Ø 5.1 mm	TPU / Brass	30 AC 36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	32	**EVW053**

Jumpers for hygienic and wet areas

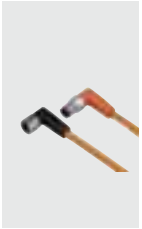
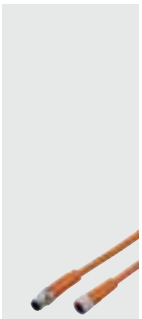
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 128 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT142**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT143**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT144**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT145**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT146**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	41	**EVT147**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT148**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 128 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT149**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT150**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT151**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT152**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	42	**EVT153**
Group 129 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT154**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT155**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT156**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT157**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT158**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	43	**EVT159**
Group 130 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT160**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT161**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 130 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT162**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT163**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT164**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	44	**EVT165**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT166**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT167**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT168**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT169**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT170**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	45	**EVT171**
Group 131 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT172**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT173**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT174**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT175**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 131 · Jumper , plug: M8, 3-pole, socket: M8, 3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT176**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	46	**EVT177**
Group 132 · Jumper , plug: M8, 3-pole, socket: M8, 4-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT279**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT280**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT281**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT203**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	47	**EVT204**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	48	**EVT283**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	48	**EVT284**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	48	**EVT285**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	48	**EVT211**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	48	**EVT286**
Group 133 · Jumper , plug: M8, 3-pole, socket: M12, 5-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	49	**EVT260**

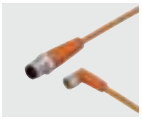
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 133 · Jumper , plug: M8, 3-pole, socket: M12, 5-pole, 3-wire · Wiring diagram no. 1									
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	49	**EVT261**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	49	**EVT262**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	49	**EVT263**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	50	**EVT265**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	50	**EVT266**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	50	**EVT267**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	50	**EVT268**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	50	**EVT269**
Group 134 · Jumper , plug: M8, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT178**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT179**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT180**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT181**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT182**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	51	**EVT183**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 134 · Jumper , plug: M8, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT184**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT185**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT186**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT187**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT188**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	52	**EVT189**
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT190**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT191**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT192**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT193**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT194**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	53	**EVT195**
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT196**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT197**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT198**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 134 · Jumper , plug: M8, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT199**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT200**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	54	**EVT201**
Group 137 · Jumper , plug: M12, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVT236**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVT237**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVT238**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVT239**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	55	**EVT240**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	56	**EVT242**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	56	**EVT243**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	56	**EVT244**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	56	**EVT245**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 137 · Jumper , plug: M12, 3-pole, socket: M8, 3-pole, 3-wire · Wiring diagram no. 1									
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	56	**EVT246**
Group 138 · Jumper , plug: M12, 3-pole, socket: M12, 5/4/3-pole, 3-wire · Wiring diagram no. 1									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT028**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT029**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT030**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT031**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT032**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	57	**EVT033**
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT022**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT023**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT024**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT025**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT026**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	58	**EVT027**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 139 · Jumper , plug: M12, 3-pole, socket: M12, 5/4/3-pole, 3-wire, LED, PNP · Wiring diagram no. 2									
	0.3 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT034**
	0.6 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT035**
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT036**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT037**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT038**
	10 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	59	**EVT039**
Group 140 · Jumper , plug: M12, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	60	**EVT248**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	60	**EVT249**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	60	**EVT250**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	60	**EVT251**
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	61	**EVT253**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	61	**EVT254**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	61	**EVT255**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	61	**EVT256**

You can find wiring diagrams and scale drawings from page 762

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 140 · Jumper , plug: M12, 4-pole, socket: M8, 4-pole, 4-wire · Wiring diagram no. 3									
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 65 / IP 67 / IP 68 / IP 69K	–	61	**EVT257**
Group 141 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT046**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT047**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT048**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT049**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT050**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	62	**EVT051**
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT040**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT041**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT042**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT043**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT044**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	63	**EVT045**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 142 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire, LED, PNP · Wiring diagram no. 4									
	0.3 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT052**
	0.6 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT053**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT054**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT055**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT056**
	10 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / 2 x yellow	64	**EVT057**
Group 143 · Jumper , plug: M12, 5-pole, socket: M12, 5-pole, 5-wire · Wiring diagram no. 5									
	0.3 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT058**
	0.6 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT059**
	1 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT060**
	2 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT061**
	5 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT062**
	10 m orange PVC cable	5 x 0.34 mm², Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	65	**EVT063**

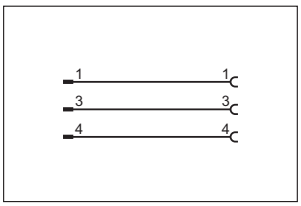
You can find wiring diagrams and scale drawings from page 762

Jumpers for hazardous areas

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 147 · Jumper , plug: M12, 4-pole, socket: M12, 5/4-pole, 4-wire · Wiring diagram no. 3									
	0.3 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC09A**
	0.6 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC10A**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC11A**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC07A**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC12A**
	10 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / stainless steel 316L / 1.4404	60 AC 60 DC	-20...60	IP 67	–	66	**EVC13A**

Wiring diagrams

1



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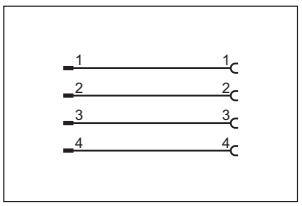

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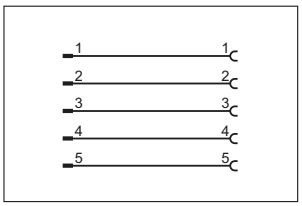

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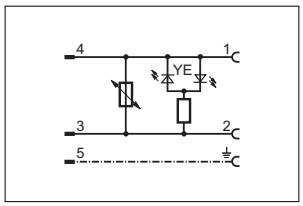

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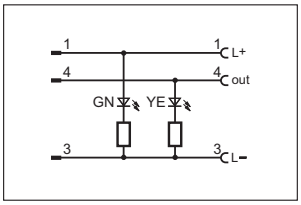

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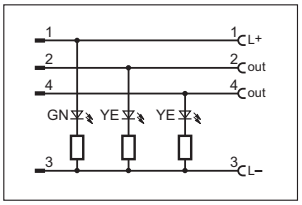

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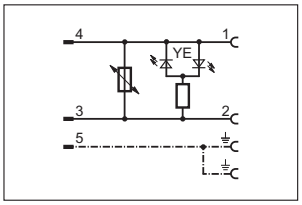
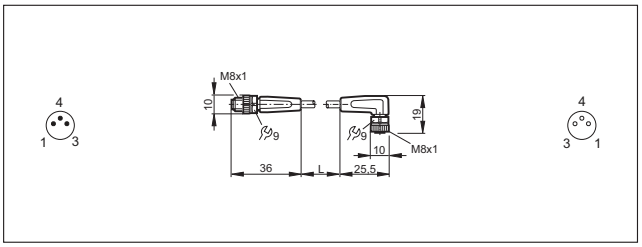


Scale drawings / drawing no. – CAD download: www.ifm.com

1



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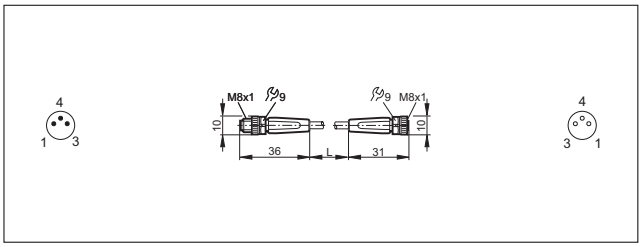

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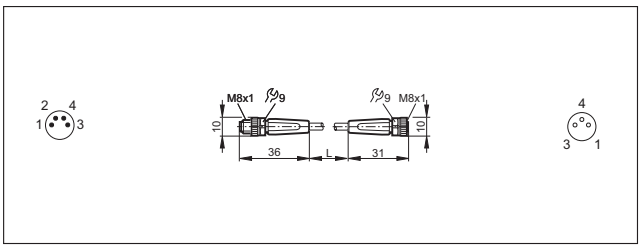

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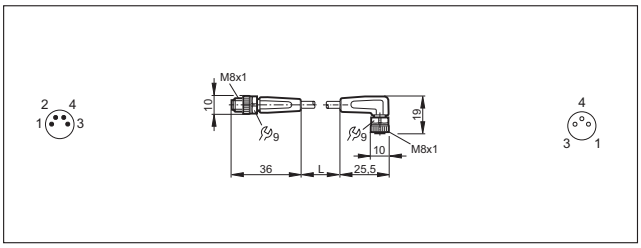

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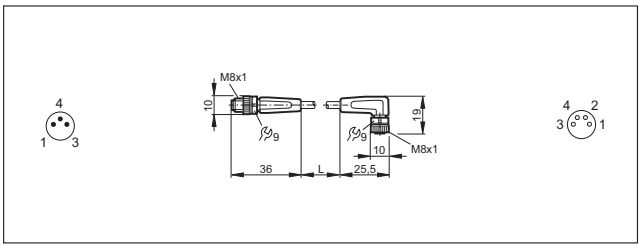

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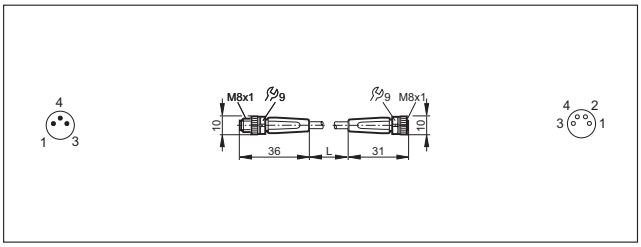

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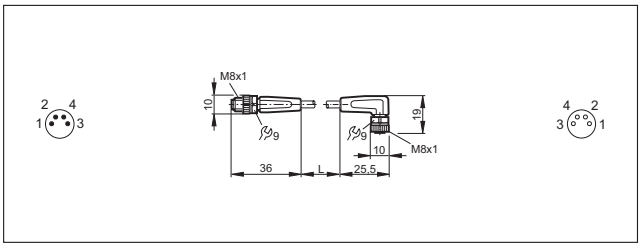

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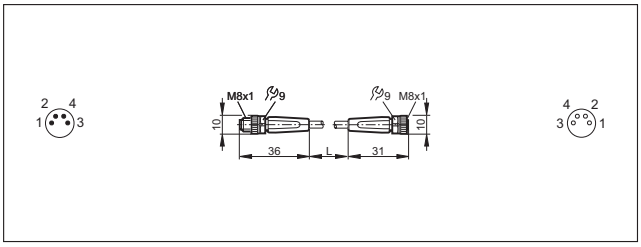

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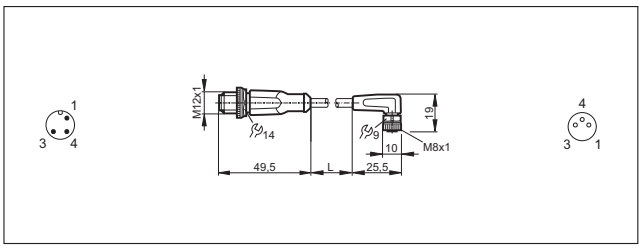

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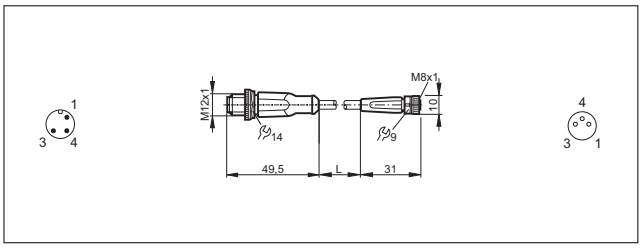

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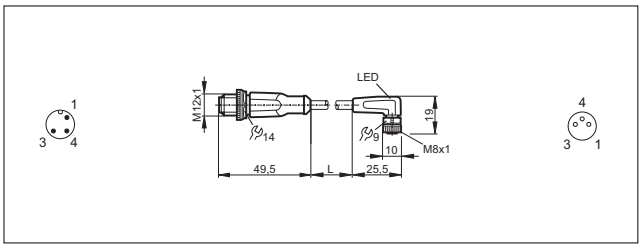

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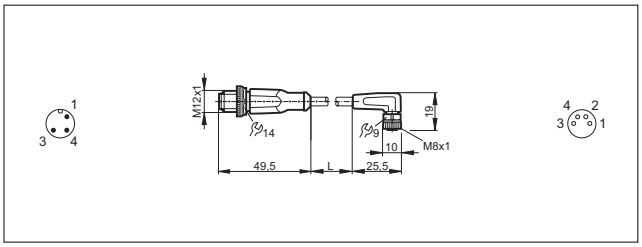

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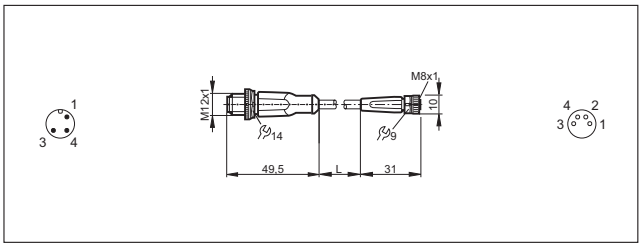

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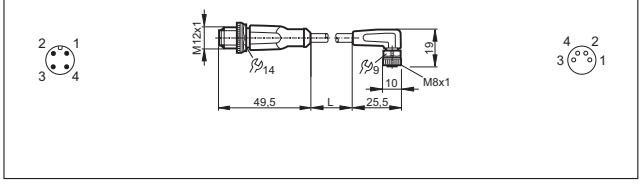

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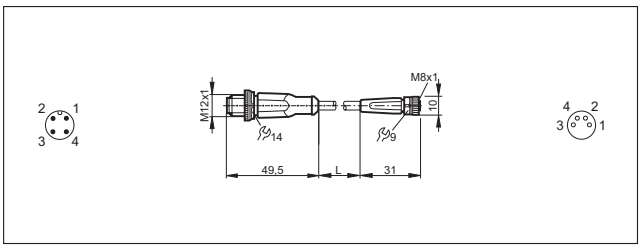

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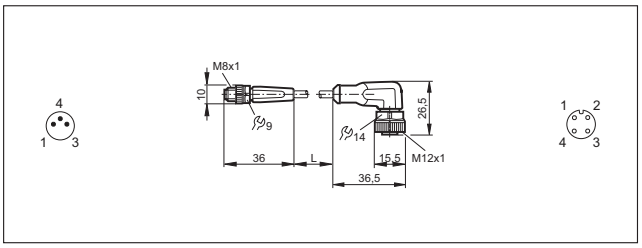

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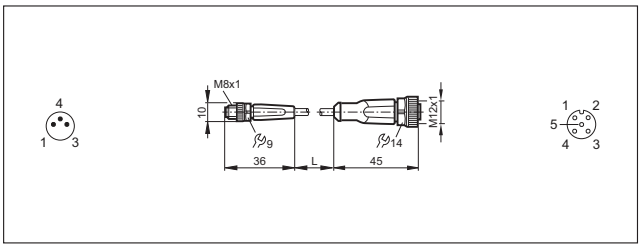

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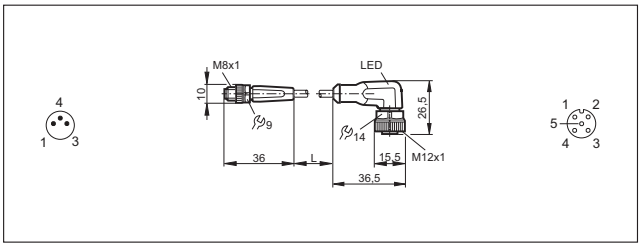

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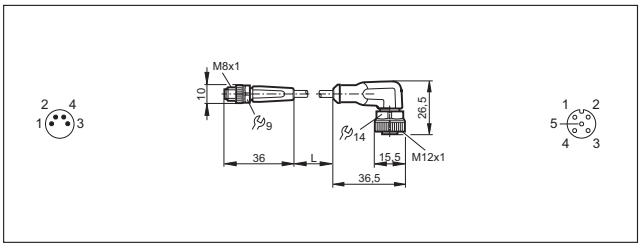

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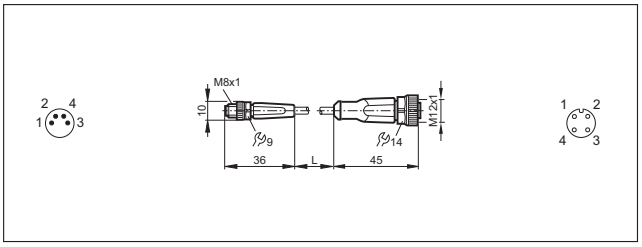

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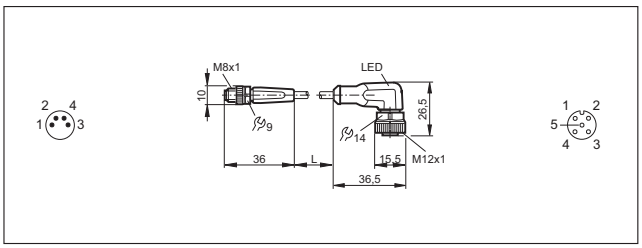

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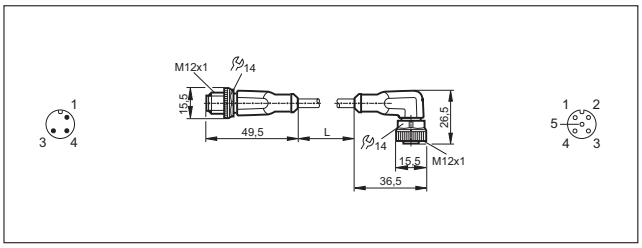

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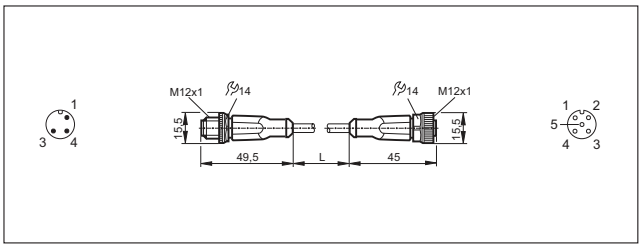

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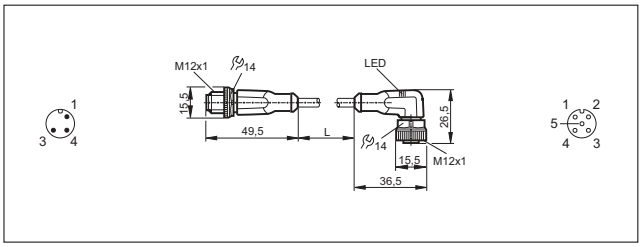

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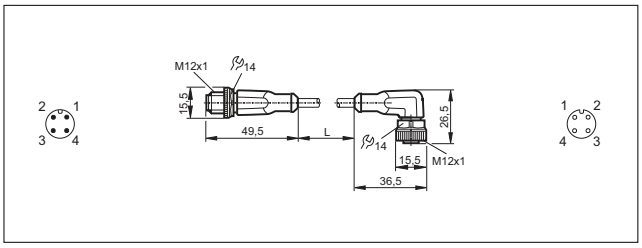

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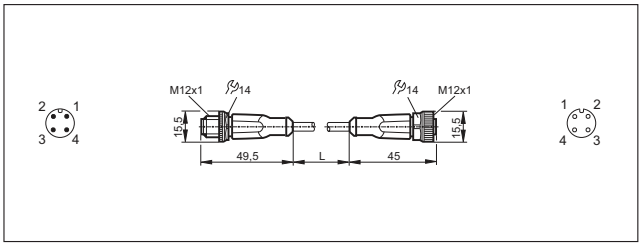

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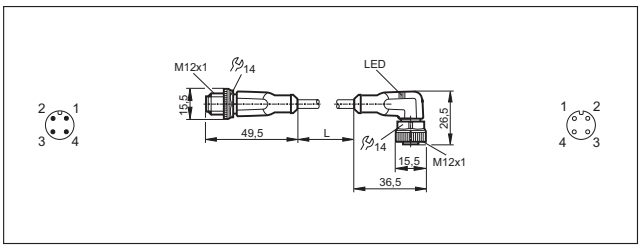

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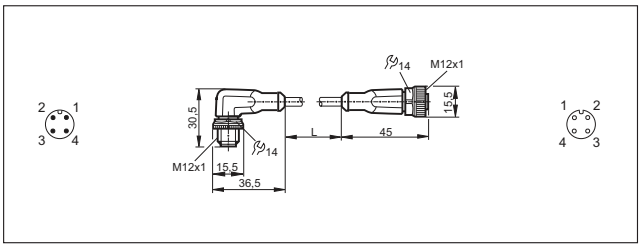

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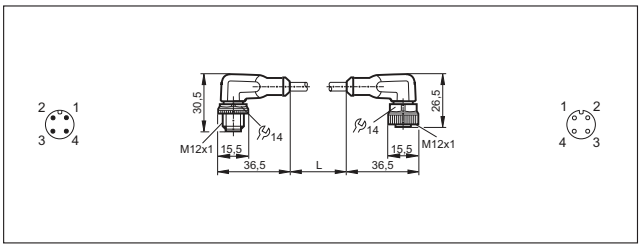

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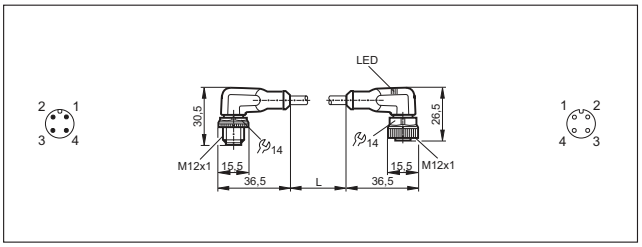

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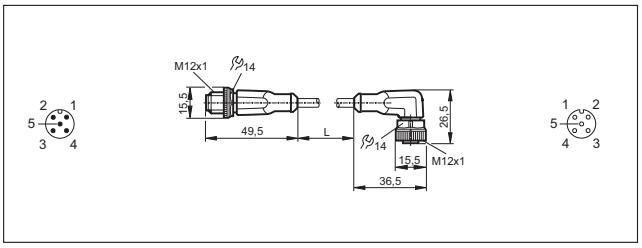

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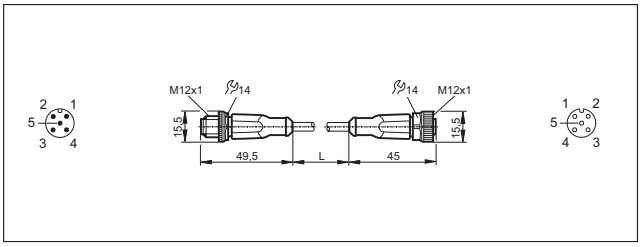

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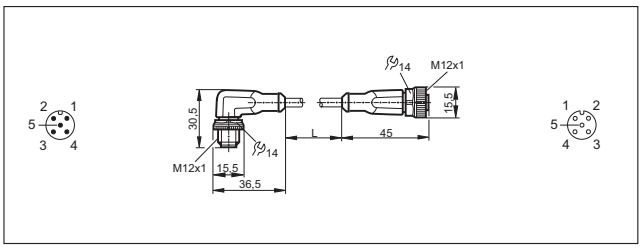

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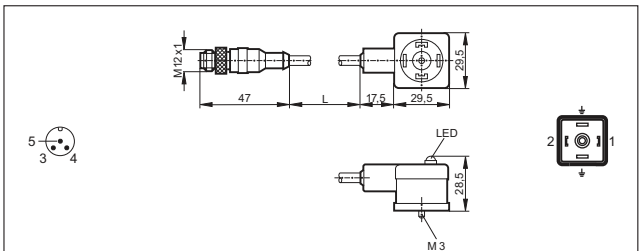

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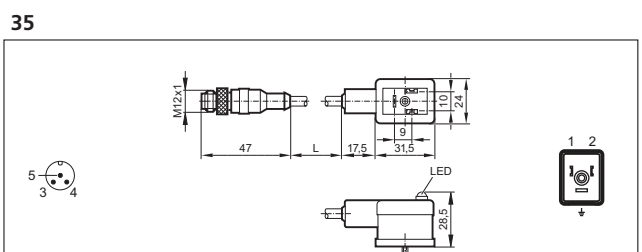

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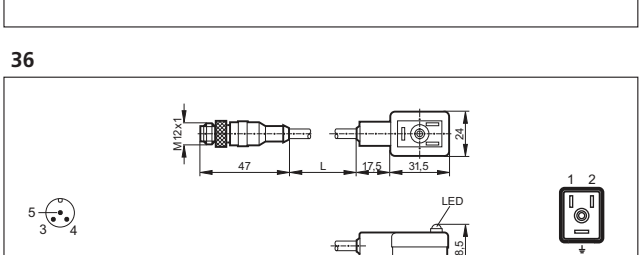

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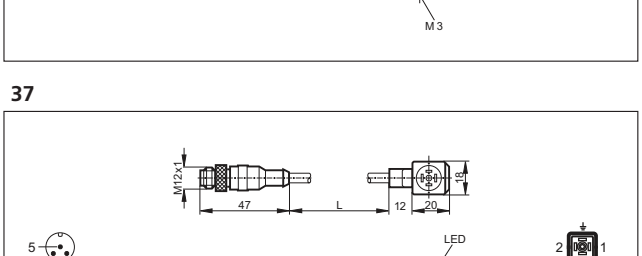

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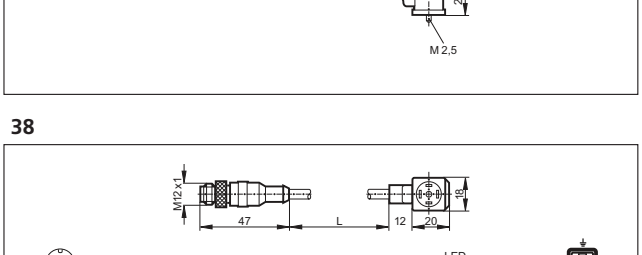

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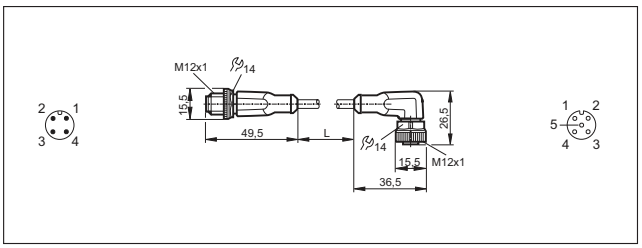

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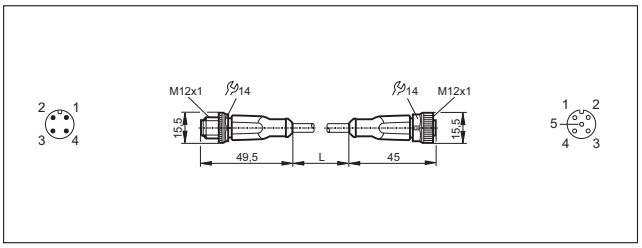

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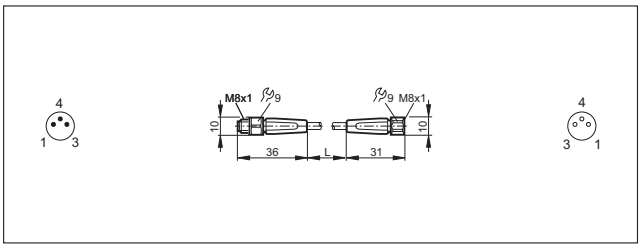

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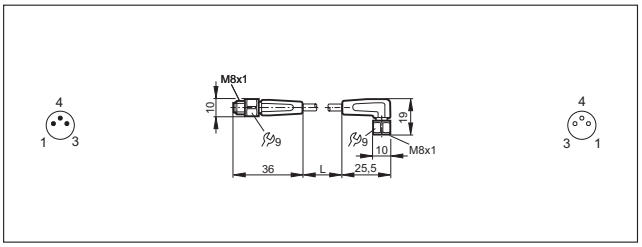

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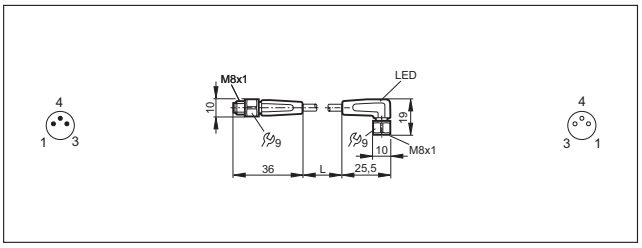

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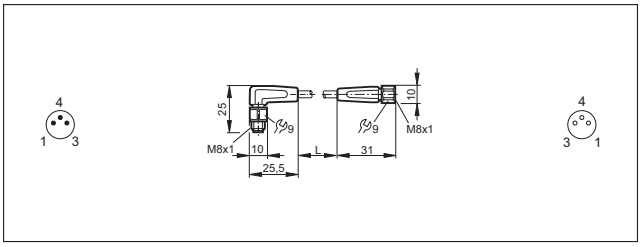

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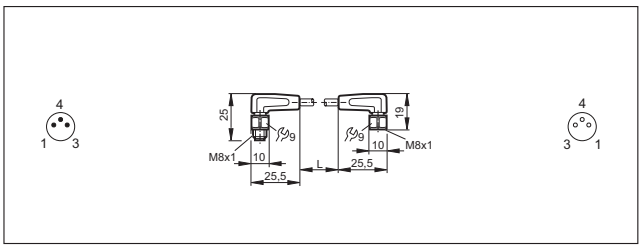

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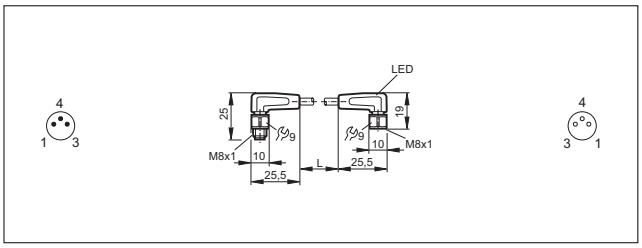

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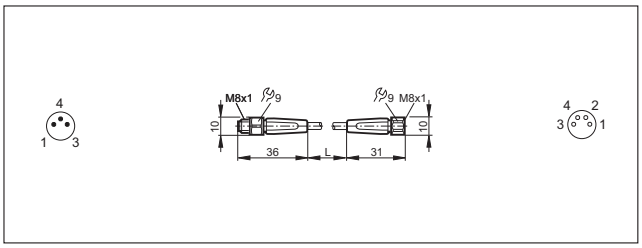

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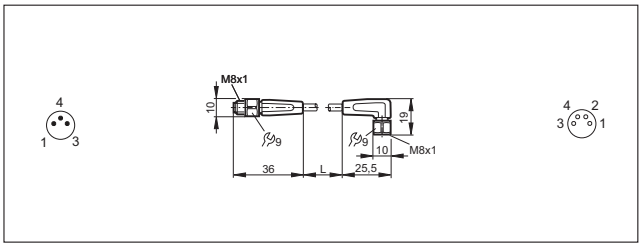

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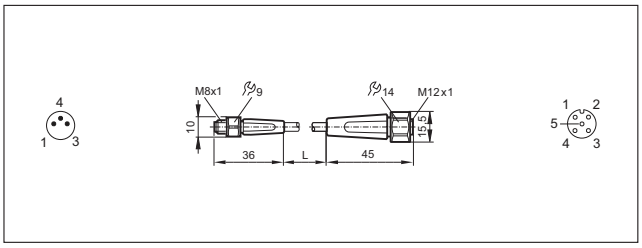

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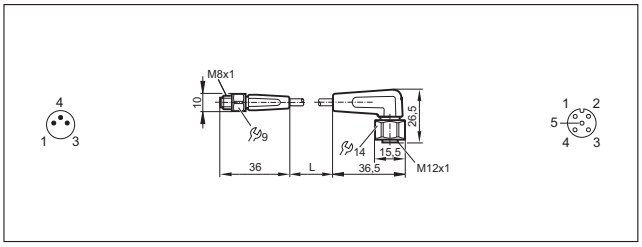

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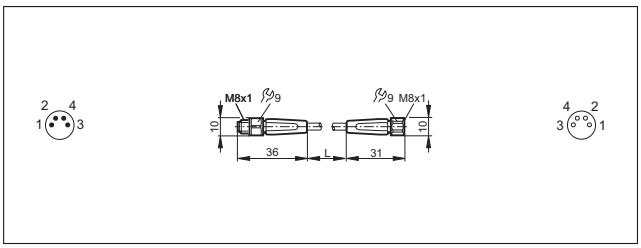

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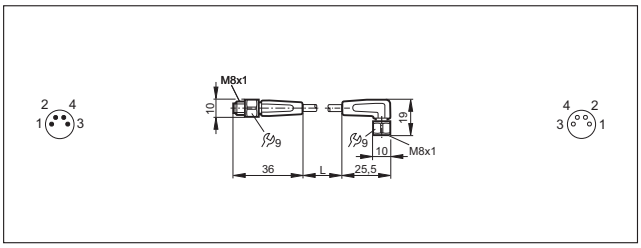

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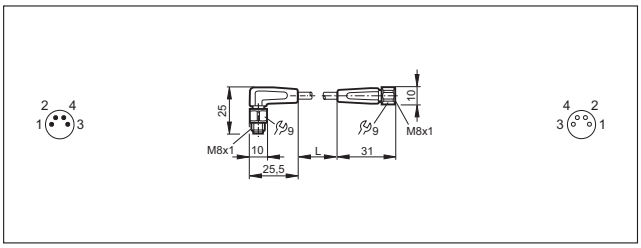

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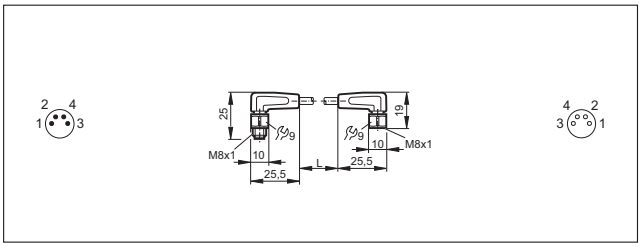

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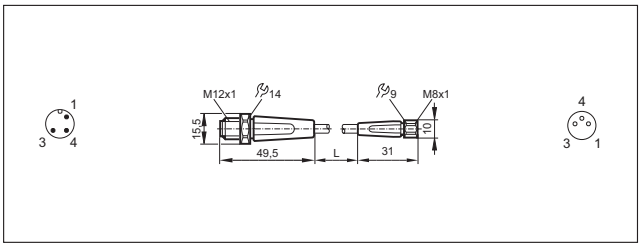

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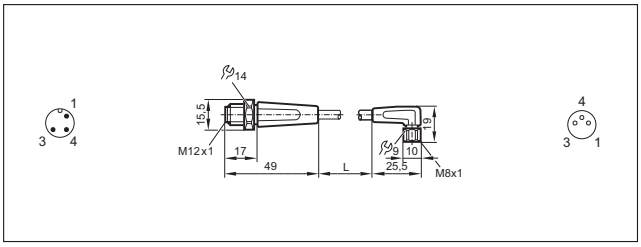

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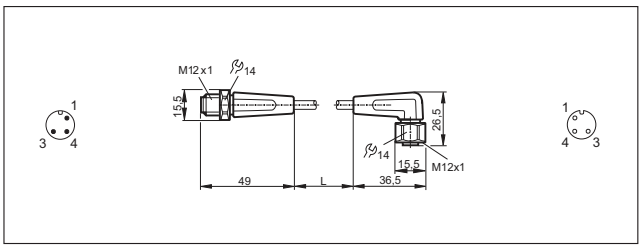

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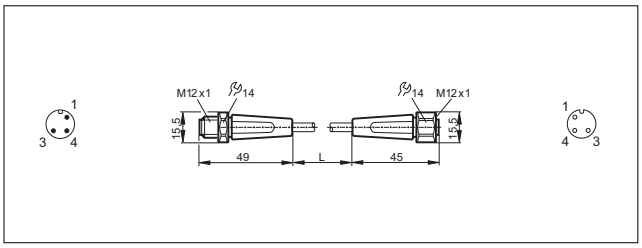

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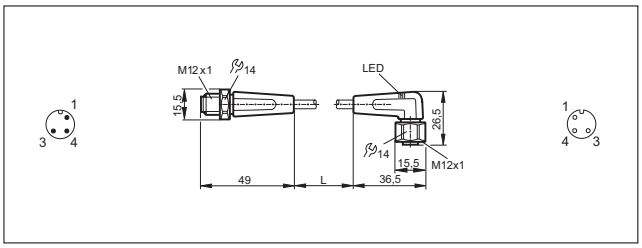

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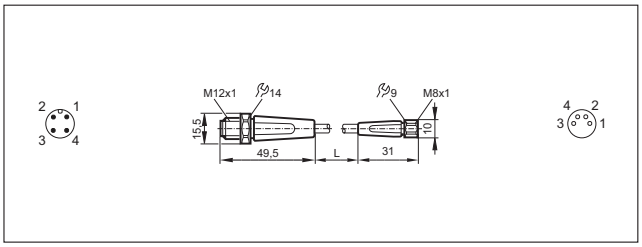

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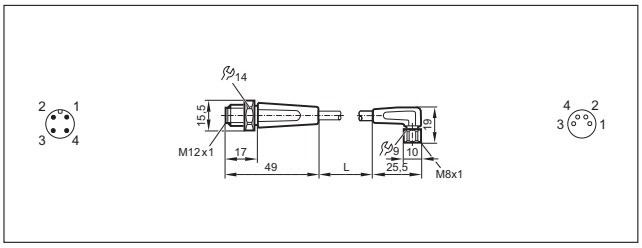
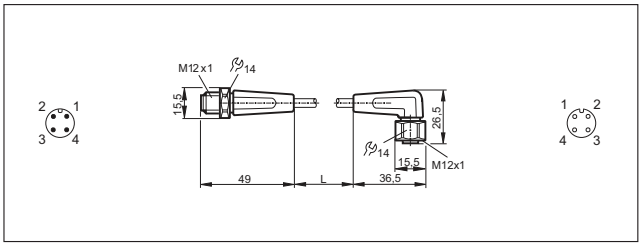
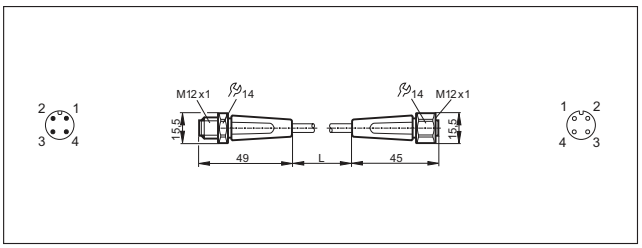


62



Scale drawings / drawing no. – CAD download: www.ifm.com

63



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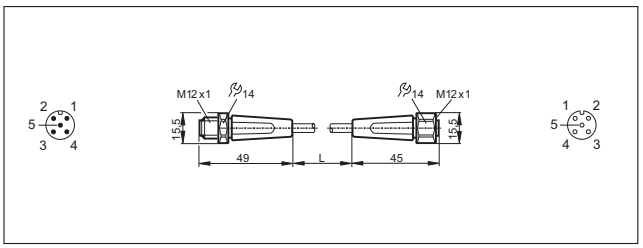

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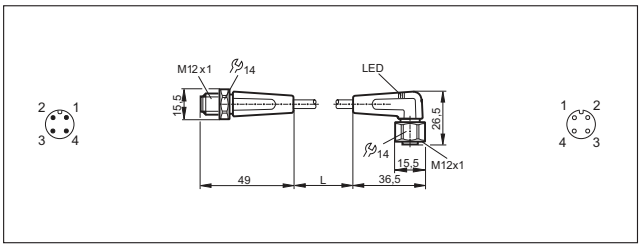

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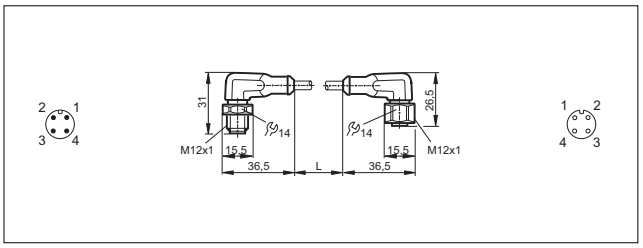


Splitter boxes

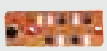
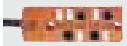
Splitter boxes enable the connection of several sensors and the transmission of the corresponding signals and supply voltages via a multi-wire cable.

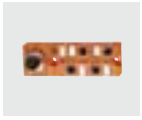
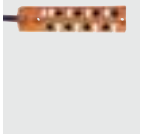
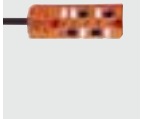
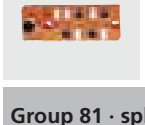
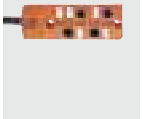
This considerably reduces installation and wiring complexity.

In addition to splitter boxes with potted cable, versions with central connector are also available.

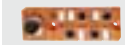
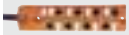
System overview	Page
Splitter boxes for industrial applications	770 - 775
Splitter boxes for hygienic and wet areas	776
Wiring diagrams	776 - 781
Scale drawings / drawing no. – CAD download: www.ifm.com	781 - 787

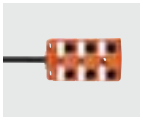
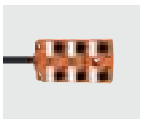
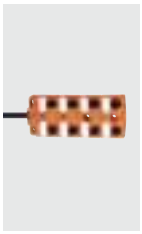
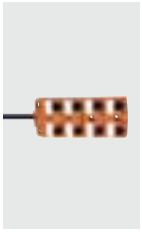
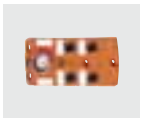
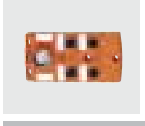
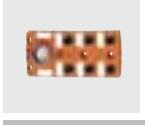
Splitter boxes for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 72 · M12 splitter box for 1 signal · Wiring diagram no. 1									
	5 m black PUR cable	4 x 0.25 mm², Ø 5 mm	TPU / Brass	10...55 DC	-25...80	IP 67	–	1	**E10437**
Group 73 · splitter box M8, 3-pole, LED · Wiring diagram no. 12									
	5 m black PUR cable	4 x 0.34 mm² + 2 x 0.75 mm², Ø 6.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 4 x yellow	2	**EBC048**
	10 m black PUR cable	4 x 0.34 mm² + 2 x 0.75 mm², Ø 6.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 4 x yellow	2	**EBC049**
Group 74 · splitter box M8, 3-pole, LED · Wiring diagram no. 13									
	M12 connector	–	PBT-GF 20	10...30 DC	-25...80	IP 67	green / 4 x yellow	3	**EBC050**
Group 75 · splitter box M8, 4-pole, LED · Wiring diagram no. 14									
	5 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 7.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	4	**EBC051**

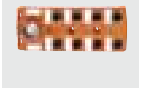
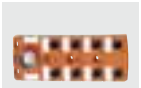
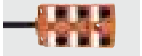
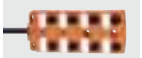
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 75 · splitter box M8, 4-pole, LED · Wiring diagram no. 14									
	10 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 7.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	4	**EBC052**
Group 76 · splitter box M8, 4-pole, LED · Wiring diagram no. 15									
	M16 connector	–	PBT-GF 20	10...30 DC	-25...80	IP 67	green / 8 x yellow	5	**EBC053**
Group 77 · splitter box M8, 3-pole, LED · Wiring diagram no. 16									
	5 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 7.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	6	**EBC054**
	10 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 9.1 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	6	**EBC055**
Group 78 · splitter box M8, 4-pole, LED · Wiring diagram no. 17									
	5 m black PUR cable	16 x 0.34 mm² + 2 x 0.75 mm², Ø 8.5 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 16 x yellow	7	**EBC056**
	10 m black PUR cable	16 x 0.34 mm² + 2 x 0.75 mm², Ø 8.5 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 16 x yellow	7	**EBC057**
Group 79 · splitter box M8, 3-pole, LED · Wiring diagram no. 18									
	5 m black PUR cable	4 x 0.34 mm² + 2 x 0.75 mm², Ø 6.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 4 x yellow	2	**EBC058**
	10 m black PUR cable	4 x 0.34 mm² + 2 x 0.75 mm², Ø 6.4 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 4 x yellow	2	**EBC059**
Group 80 · splitter box M8, 3-pole, LED · Wiring diagram no. 19									
	M12 connector	–	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 4 x yellow	3	**EBC060**
Group 81 · splitter box M8, 4-pole, LED · Wiring diagram no. 20									
	5 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 7.4 mm	PBT-GF 20	10...30 DC	-20...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	4	**EBC061**
	10 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 7.4 mm	PBT-GF 20	10...30 DC	-20...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	4	**EBC062**

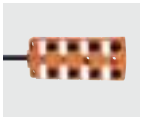
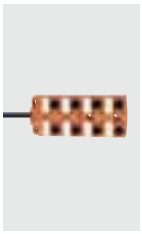
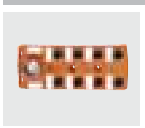
You can find wiring diagrams and scale drawings from page 776

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 82 · splitter box M8, 4-pole, LED · Wiring diagram no. 21									
	M16 connector	–	PBT-GF 20	10...30 DC	-25...80	IP 67	green / 8 x yellow	5	**EBC063**
Group 83 · splitter box M8, 3-pole, LED · Wiring diagram no. 22									
	5 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 9.1 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	6	**EBC064**
	10 m black PUR cable	8 x 0.34 mm² + 2 x 0.75 mm², Ø 9.1 mm	PBT-GF 20	10...30 DC	-25...80	IP 65 / IP 67 / IP 68	green / 8 x yellow	6	**EBC065**
Group 84 · splitter box M8, 4-pole, LED · Wiring diagram no. 23									
	5 m black PUR cable	16 x 0.34 mm² + 2 x 0.75 mm², Ø 8.5 mm	PBT-GF 20	10...30 DC	-20...80	IP 65 / IP 67 / IP 68	green / 16 x yellow	7	**EBC066**
	10 m black PUR cable	16 x 0.34 mm² + 2 x 0.75 mm², Ø 8.5 mm	PBT-GF 20	10...30 DC	-20...80	IP 65 / IP 67 / IP 68	green / 16 x yellow	7	**EBC067**
Group 85 · M12 splitter box for 1 signal · Wiring diagram no. 2									
	5 m black PUR cable	4 x 0.34 mm² + 3 x 1 mm², Ø 7.5 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	8	**EBC013**
	10 m black PUR cable	4 x 0.34 mm² + 3 x 1 mm², Ø 7.5 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	9	**EBC025**
Group 86 · M12 splitter box for 1 signal, LED · Wiring diagram no. 24									
	5 m black PUR cable	4 x 0.34 mm² + 3 x 1 mm², Ø 7.5 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 4 x yellow	10	**EBC015**
	10 m black PUR cable	4 x 0.34 mm² + 3 x 1 mm², Ø 7.5 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 4 x yellow	11	**EBC027**
Group 87 · M12 splitter box for 1 signal · Wiring diagram no. 3									
	5 m black PUR cable	6 x 0.34 mm² + 3 x 1 mm², Ø 7.8 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	12	**EBC017**
	10 m black PUR cable	6 x 0.34 mm² + 3 x 1 mm², Ø 7.8 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	13	**EBC029**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 88 · M12 splitter box for 1 signal, LED · Wiring diagram no. 25									
	5 m black PUR cable	6 x 0.34 mm² + 3 x 1 mm², Ø 7.8 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 6 x yellow	14	**EBC019**
	10 m black PUR cable	6 x 0.34 mm² + 3 x 1 mm², Ø 7.8 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 6 x yellow	15	**EBC031**
Group 89 · M12 splitter box for 1 signal · Wiring diagram no. 4									
	5 m black PUR cable	8 x 0.34 mm² + 3 x 0.75 mm², Ø 8.2 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	16	**EBC021**
	10 m black PUR cable	8 x 0.34 mm² + 3 x 0.75 mm², Ø 8.2 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	17	**EBC033**
Group 90 · M12 splitter box for 1 signal, LED · Wiring diagram no. 26									
	5 m black PUR cable	8 x 0.34 mm² + 3 x 0.75 mm², Ø 8.2 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 8 x yellow	18	**EBC023**
	10 m black PUR cable	8 x 0.34 mm² + 3 x 0.75 mm², Ø 8.2 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 8 x yellow	19	**EBC035**
Group 91 · M12 splitter box for 1 signal · Wiring diagram no. 5									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	20	**EBC001**
Group 92 · M12 splitter box for 1 signal, LED · Wiring diagram no. 27									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 4 x yellow	21	**EBC002**
Group 93 · M12 splitter box for 1 signal · Wiring diagram no. 6									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	22	**EBC005**
Group 94 · M12 splitter box for 1 signal, LED · Wiring diagram no. 28									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 6 x yellow	23	**EBC006**

You can find wiring diagrams and scale drawings from page 776

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 95 · M12 splitter box for 1 signal · Wiring diagram no. 7									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	24	**EBC009**
Group 96 · M12 splitter box for 1 signal, LED · Wiring diagram no. 29									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 8 x yellow	25	**EBC010**
Group 97 · M12 splitter box for 2 signals · Wiring diagram no. 8									
	5 m black PUR cable	8 x 0.34 mm² + 3 x 1.0 mm², Ø 8.2 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	8	**EBC014**
	10 m black PUR cable	8 x 0.34 mm² + 3 x 1.0 mm², Ø 8.2 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	9	**EBC026**
Group 98 · M12 splitter box for 2 signals, LED · Wiring diagram no. 30									
	5 m black PUR cable	8 x 0.34 mm² + 3 x 1.0 mm², Ø 8.2 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 8 x yellow	26	**EBC016**
	10 m black PUR cable	8 x 0.34 mm² + 3 x 1.0 mm², Ø 8.2 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 8 x yellow	27	**EBC028**
Group 99 · M12 splitter box for 2 signals · Wiring diagram no. 31									
	5 m black PUR cable	12 x 0.34 mm² + 3 x 1.0 mm², Ø 8.8 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	12	**EBC018**
	10 m black PUR cable	12 x 0.34 mm² + 3 x 1.0 mm², Ø 8.8 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	13	**EBC030**
Group 100 · M12 splitter box for 2 signals, LED · Wiring diagram no. 32									
	5 m black PUR cable	12 x 0.34 mm² + 3 x 1.0 mm², Ø 8.8 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 12 x yellow	28	**EBC020**
	10 m black PUR cable	12 x 0.34 mm² + 3 x 1.0 mm², Ø 8.8 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 12 x yellow	29	**EBC032**
Group 101 · M12 splitter box for 2 signals · Wiring diagram no. 33									
	5 m black PUR cable	16 x 0.34 mm² + 3 x 0.75 mm², Ø 9.7 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	16	**EBC022**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 101 · M12 splitter box for 2 signals · Wiring diagram no. 33									
	10 m black PUR cable	16 x 0.34 mm² + 3 x 0.75 mm², Ø 9.7 mm	PA	30 AC/DC	-25...80	IP 67 / IP 68	–	17	**EBC034**
Group 102 · M12 splitter box for 2 signals, LED · Wiring diagram no. 34									
	5 m black PUR cable	16 x 0.34 mm² + 3 x 1.0 mm², Ø 9.7 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 16 x yellow	30	**EBC024**
	10 m black PUR cable	16 x 0.34 mm² + 3 x 1.0 mm², Ø 9.7 mm	PA	10...30 DC	-25...80	IP 67 / IP 68	green / 16 x yellow	31	**EBC036**
Group 103 · M12 splitter box for 2 signals · Wiring diagram no. 9									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	32	**EBC003**
Group 104 · M12 splitter box for 2 signals, LED · Wiring diagram no. 35									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 8 x yellow	33	**EBC004**
Group 105 · M12 splitter box for 2 signals · Wiring diagram no. 10									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	34	**EBC007**
Group 106 · M12 splitter box for 2 signals, LED · Wiring diagram no. 36									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 12 x yellow	35	**EBC008**
Group 107 · M12 splitter box for 2 signals · Wiring diagram no. 11									
	M23 connector	–	PA	30 AC/DC	-25...80	IP 67	–	36	**EBC011**
Group 108 · M12 splitter box for 2 signals, LED · Wiring diagram no. 37									
	M23 connector	–	PA	10...30 DC	-25...80	IP 67	green / 16 x yellow	37	**EBC012**

You can find wiring diagrams and scale drawings from page 776

Splitter boxes for hygienic and wet areas

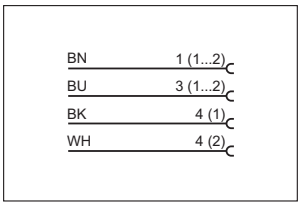
Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 109 · splitter box M12, LED · Wiring diagram no. 34									
	10 m black PUR / PVC cable	3 x 0.75 mm² + 16 x 0.34 mm², Ø 11 mm	high-grade stainless steel	10...36 DC	-5...70	IP 69K	green / 16 x yellow	38	**E11775**

Wiring diagrams

Core colours

BK	black
BN	brown
BU	blue
WH	white
GN	green
GY	grey
YE	yellow
PK	pink
RD	red
VT	lilac
GN/YE	green/yellow

1



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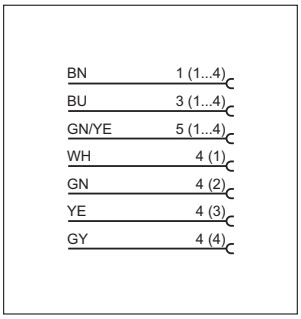

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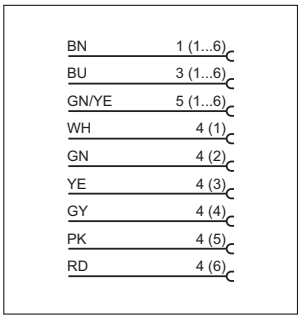

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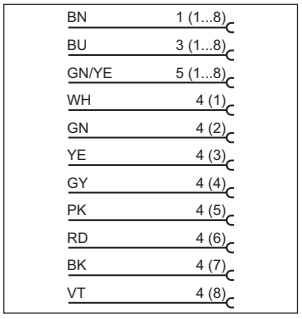

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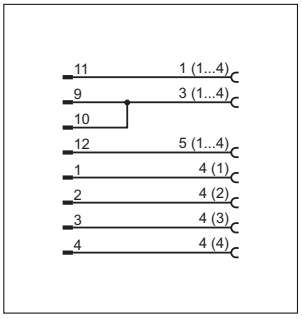

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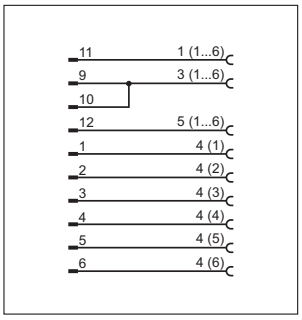

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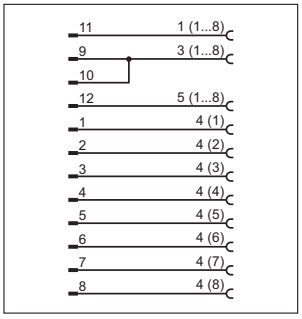

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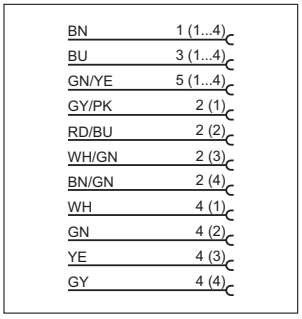

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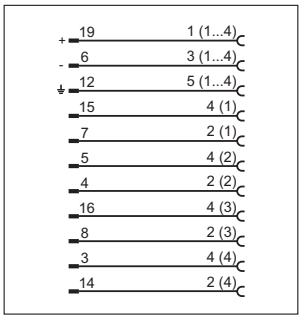

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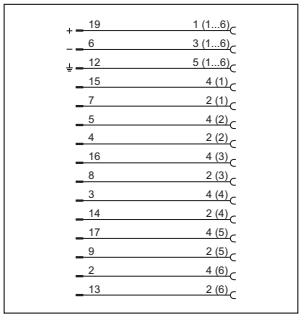

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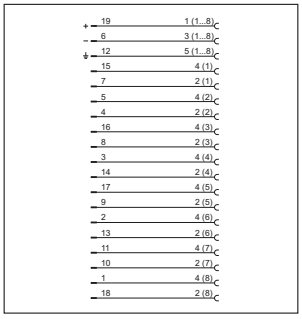
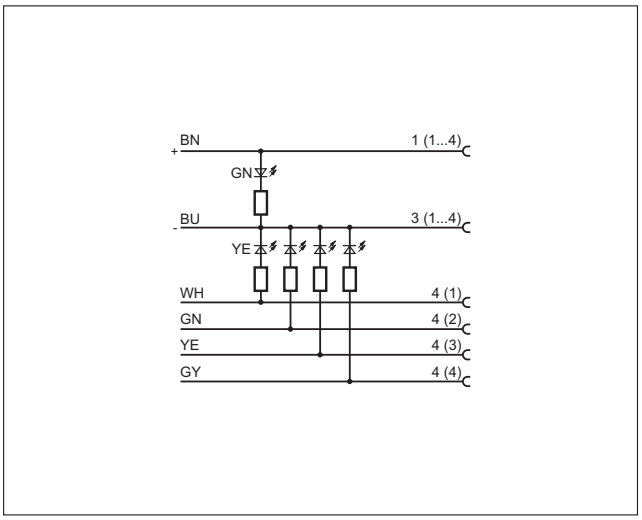


Wiring diagrams

12



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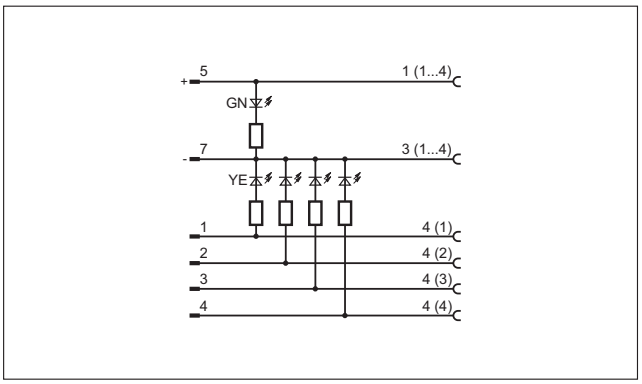

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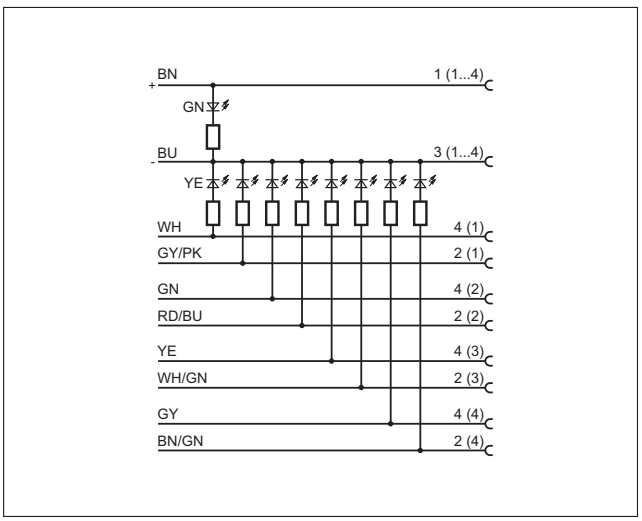

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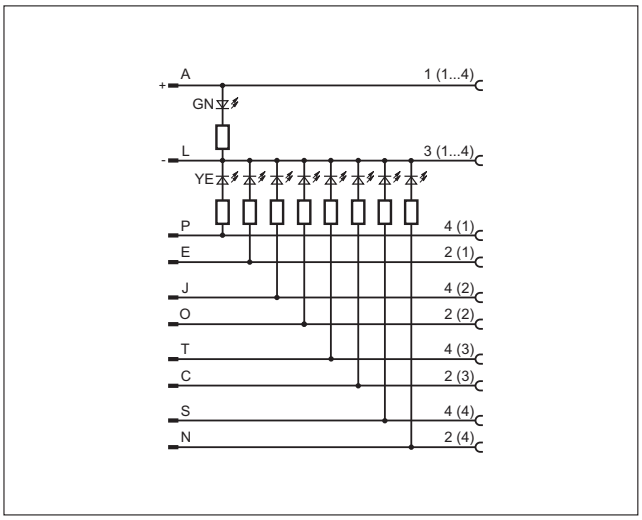

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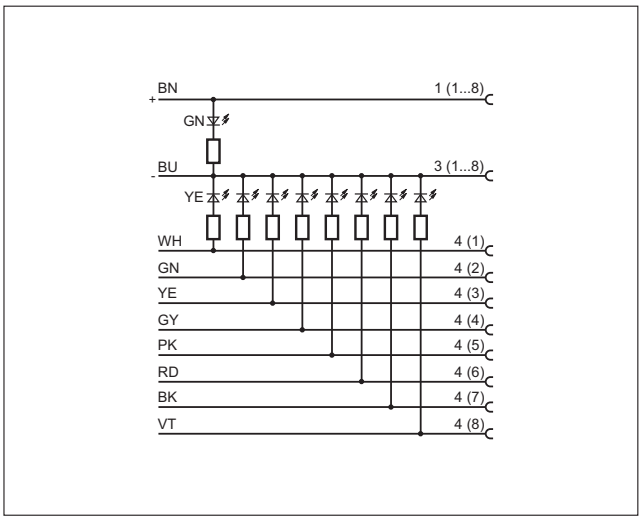

Wiring diagrams

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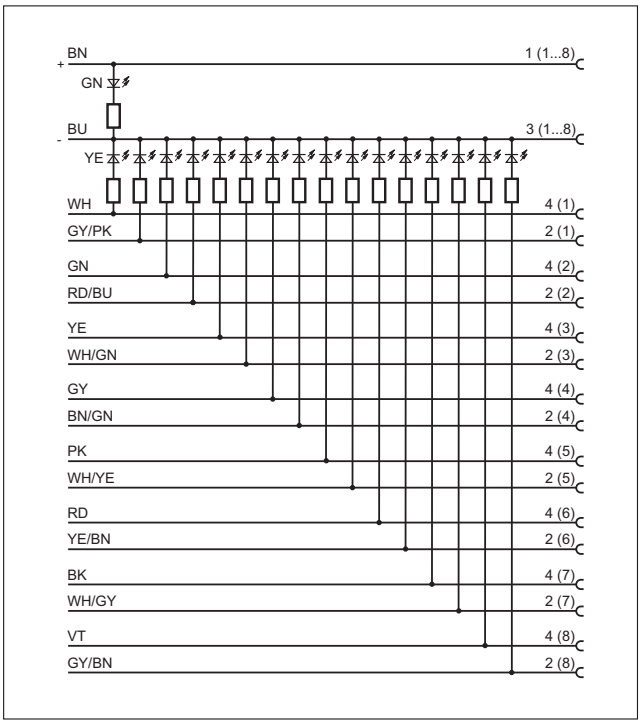

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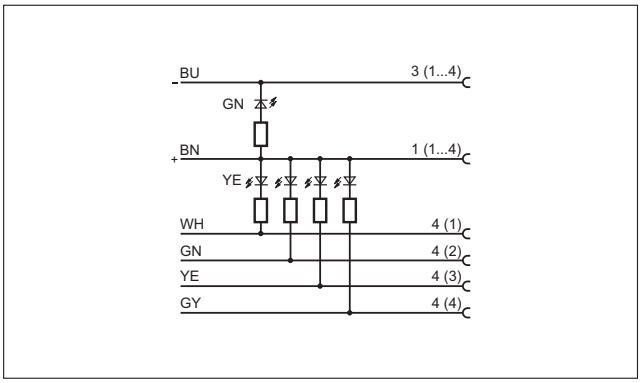

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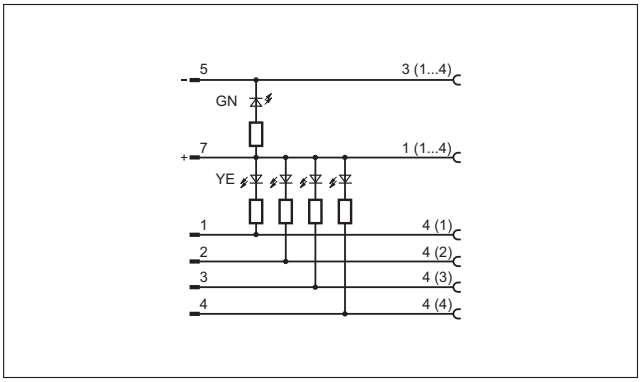

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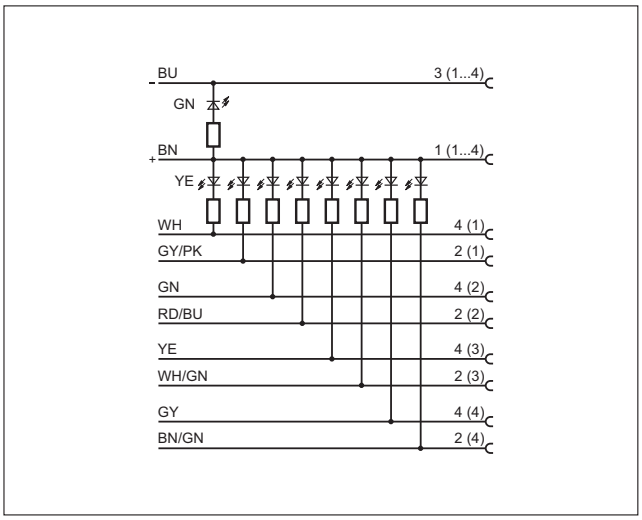

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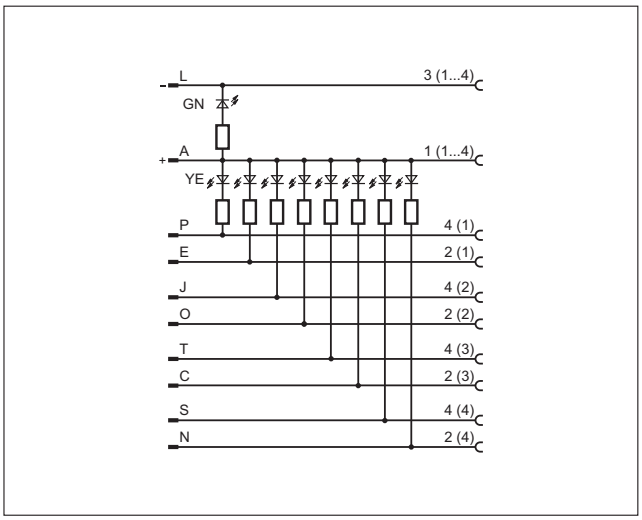

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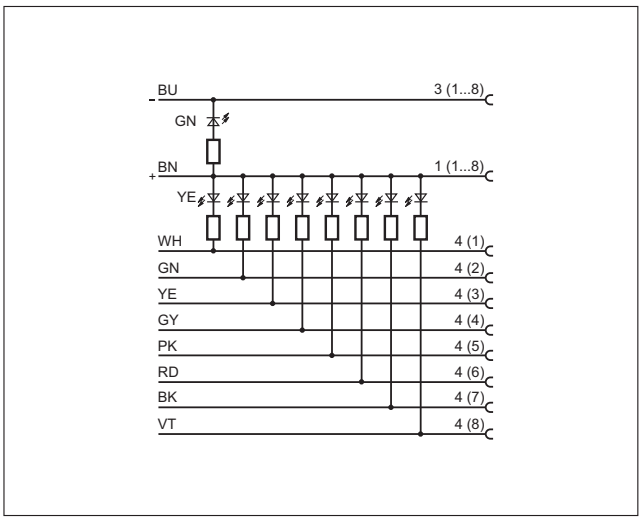

Wiring diagrams

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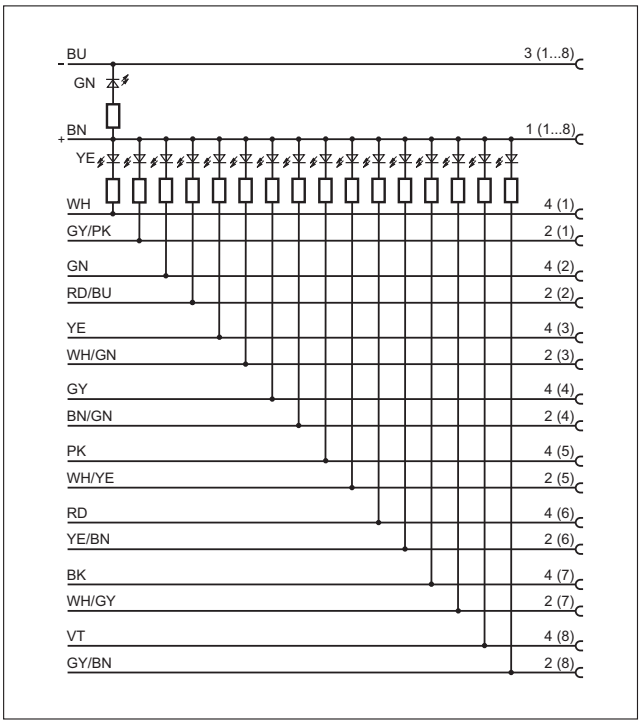

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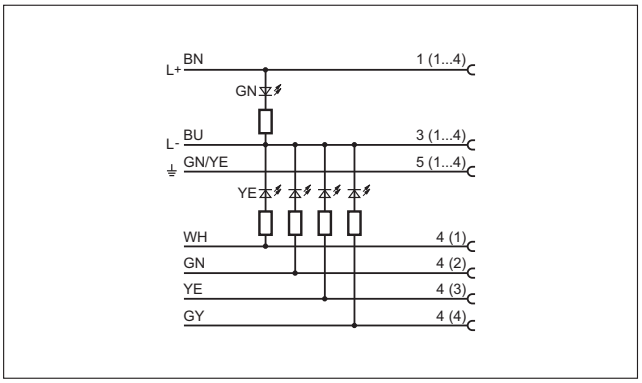

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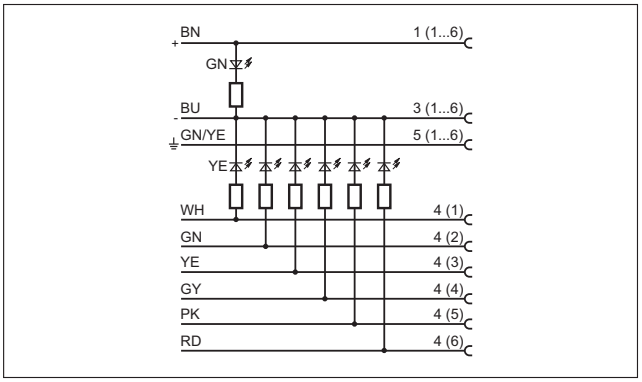

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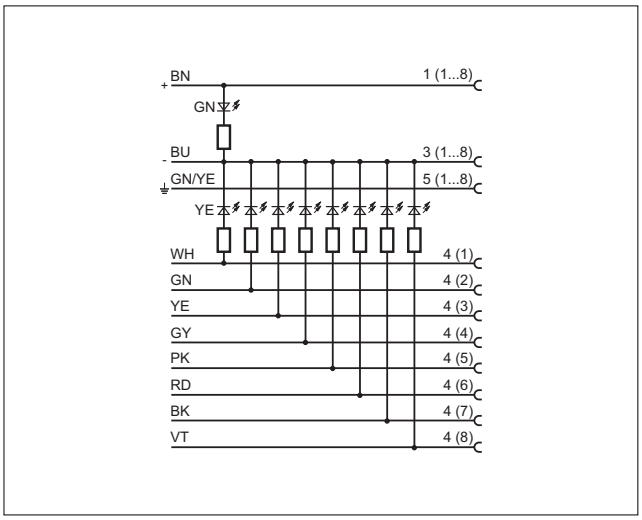

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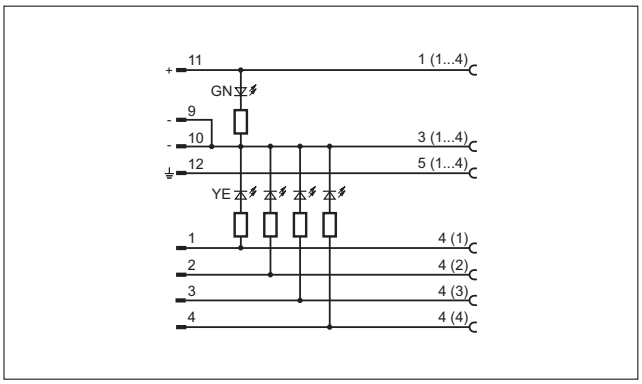

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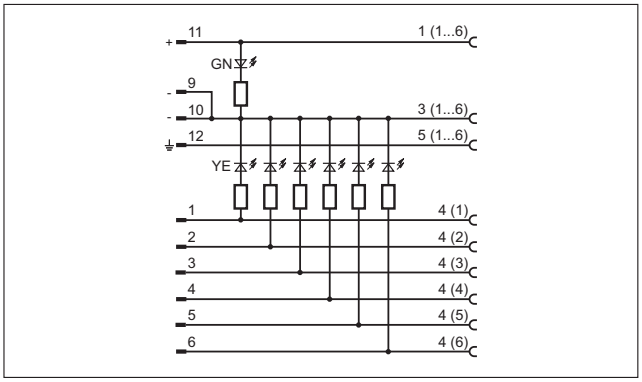

Wiring diagrams

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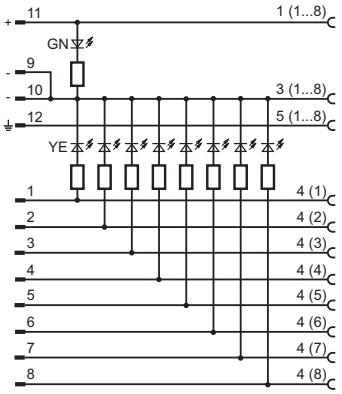

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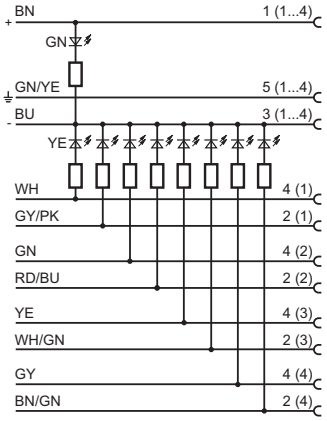
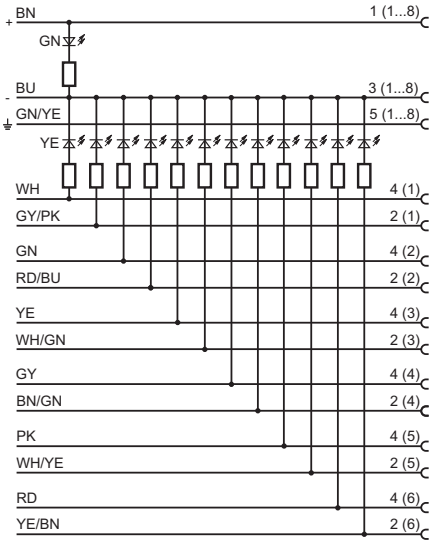


31

BN	1 (1...6)
BU	3 (1...6)
GN/YE	5 (1...6)
GY/PK	2 (1)
RD/BU	2 (2)
WH/GN	2 (3)
BN/GN	2 (4)
WH/YE	2 (5)
YE/BN	2 (6)
WH	4 (1)
GN	4 (2)
YE	4 (3)
GY	4 (4)
PK	4 (5)
RD	4 (6)

32



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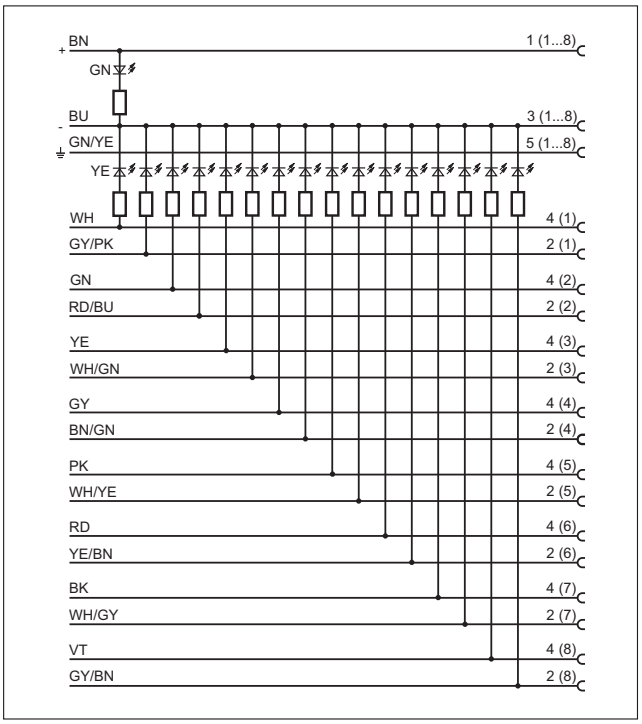
BN	1 (1...8)
BU	3 (1...8)
GN/YE	5 (1...8)
GY/PK	2 (1)
RD/BU	2 (2)
WH/GN	2 (3)
BN/GN	2 (4)
WH/YE	2 (5)
YE/BN	2 (6)
WH/GY	2 (7)
GY/BN	2 (8)
WH	4 (1)
GN	4 (2)
YE	4 (3)
GY	4 (4)
PK	4 (5)
RD	4 (6)
BK	4 (7)
VT	4 (8)

Wiring diagrams

34



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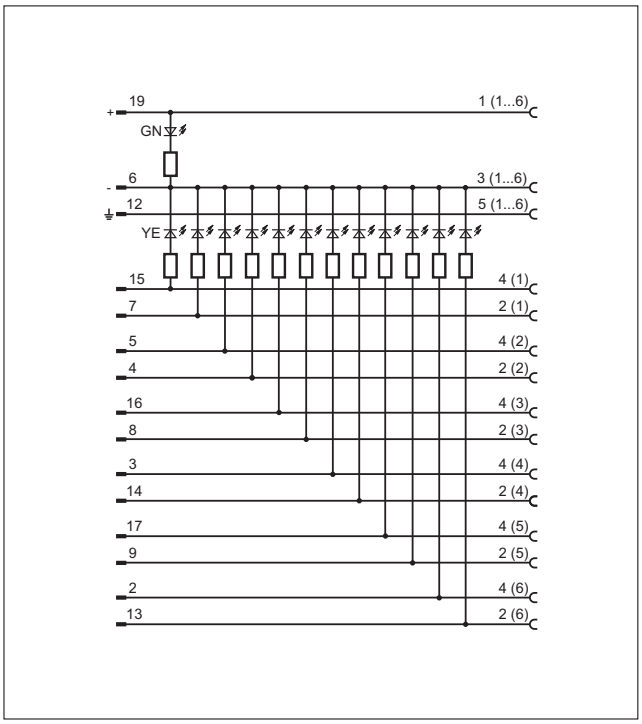

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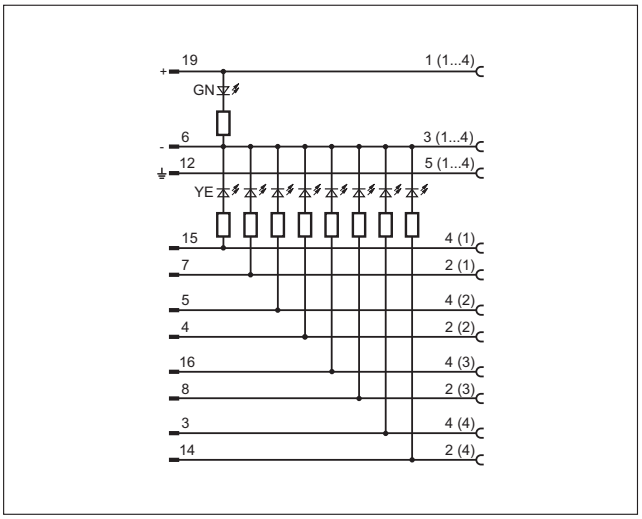

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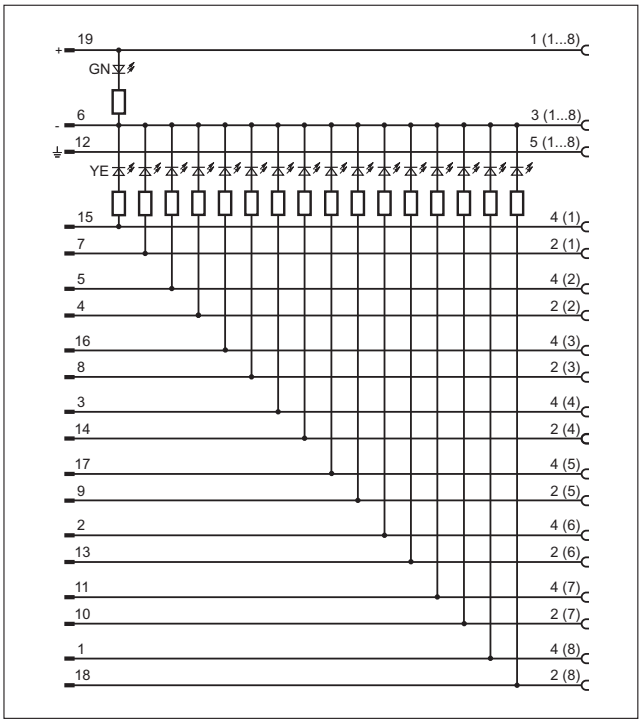

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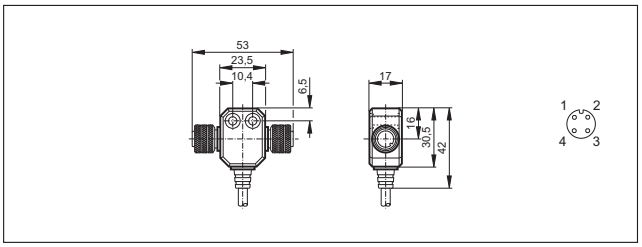

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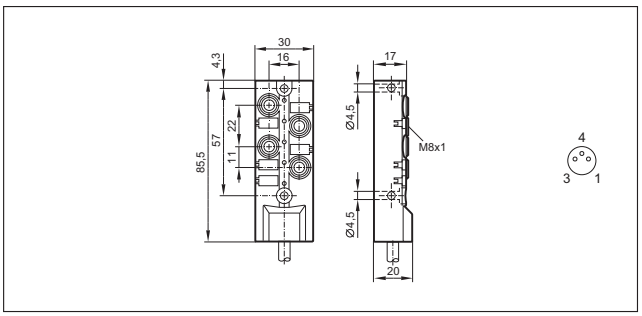

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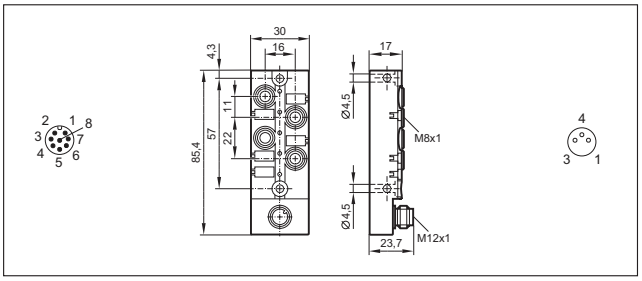

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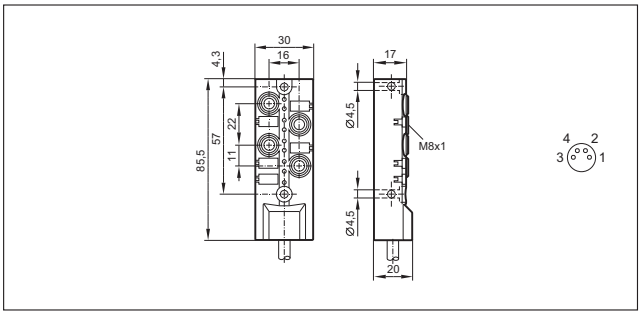

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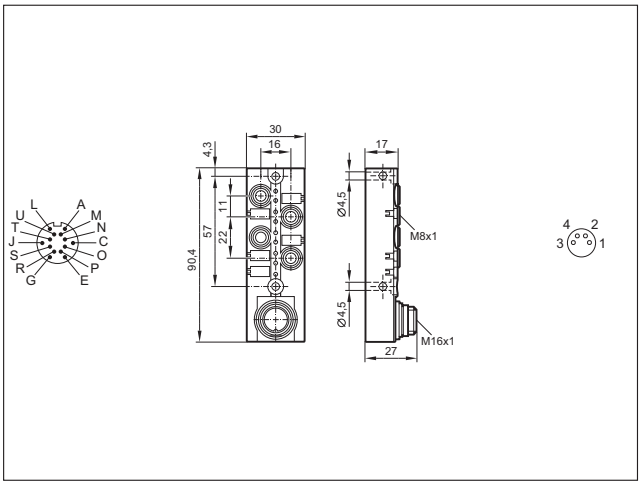

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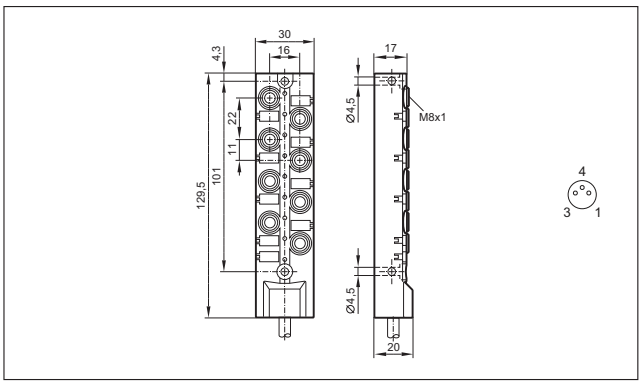

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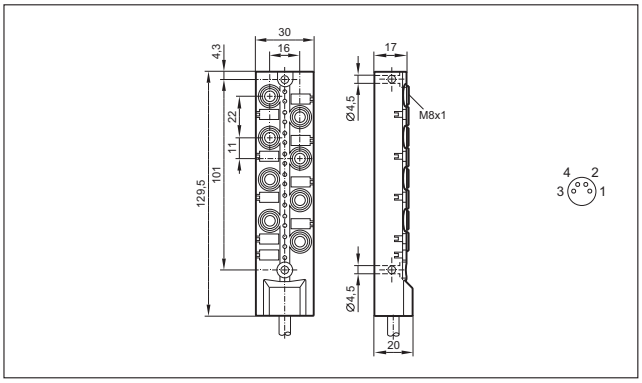

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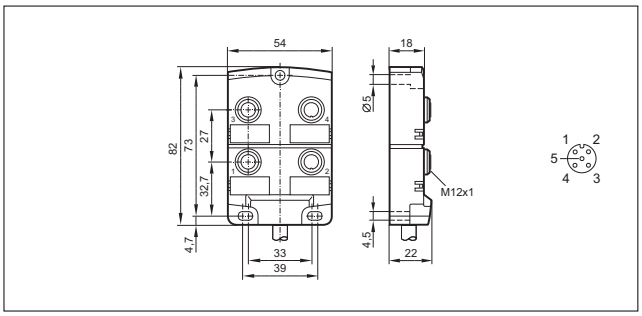

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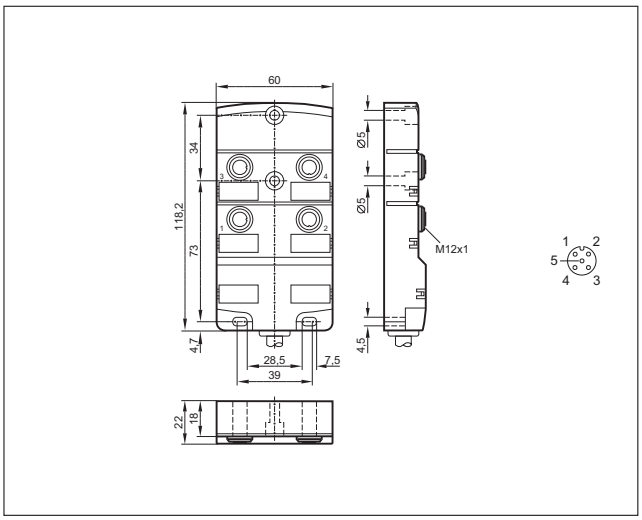

Scale drawings / drawing no. – CAD download: www.ifm.com

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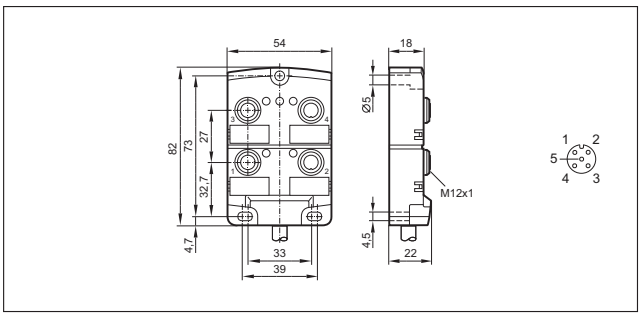

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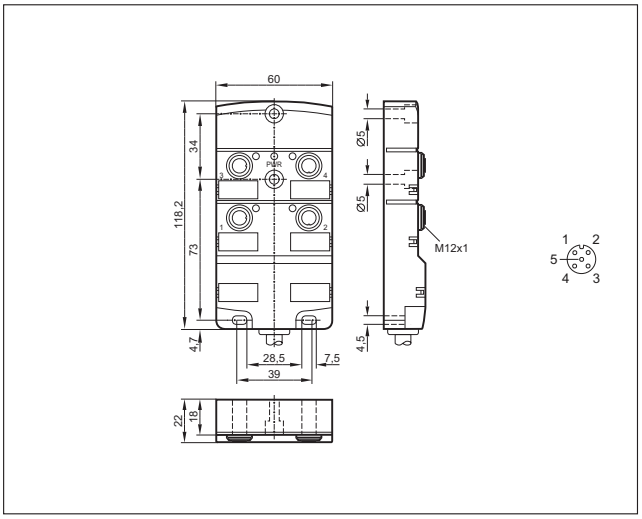

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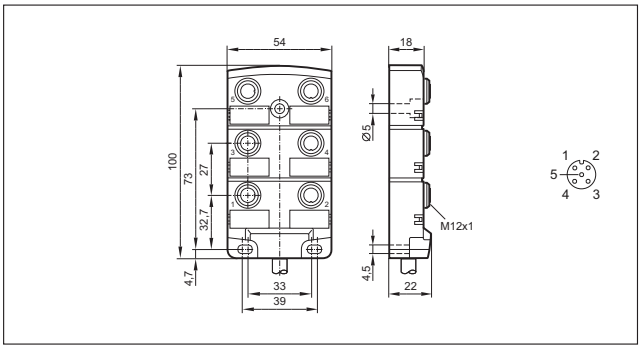

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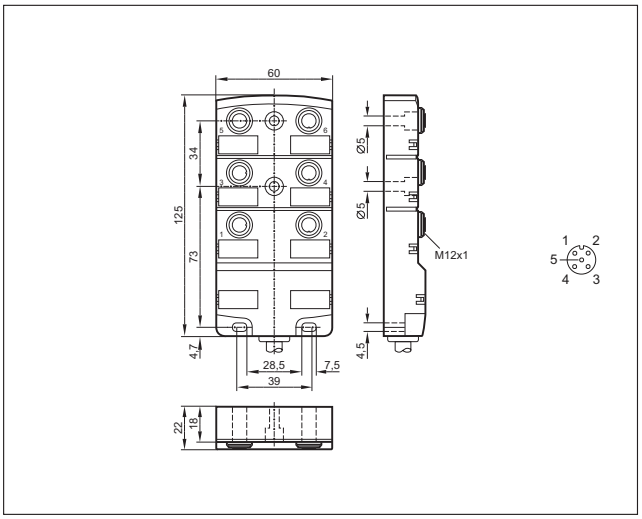

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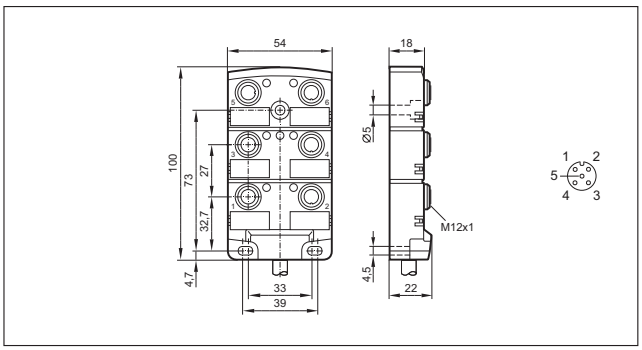

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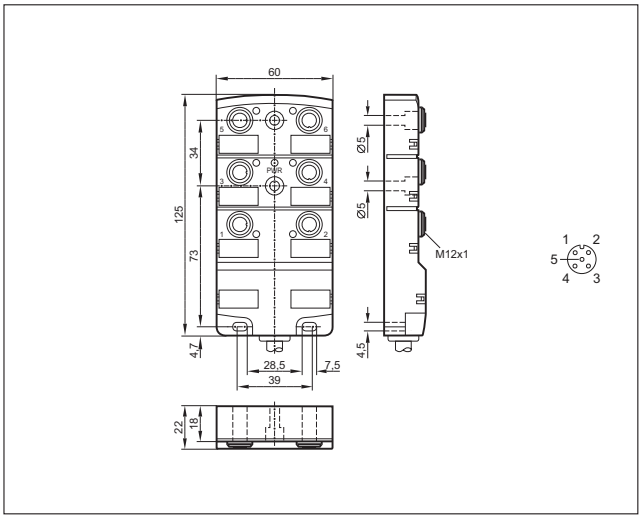

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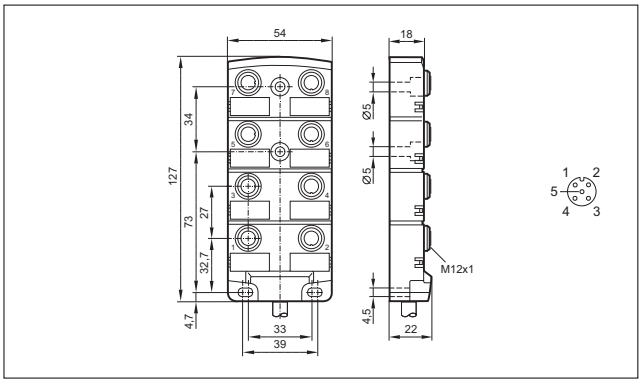

Scale drawings / drawing no. – CAD download: www.ifm.com

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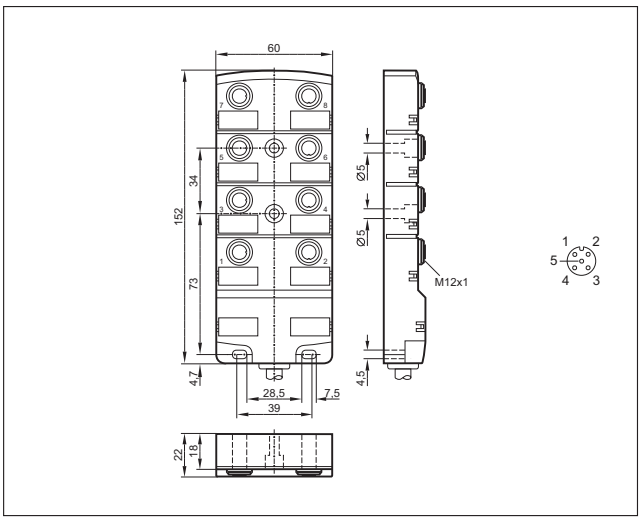

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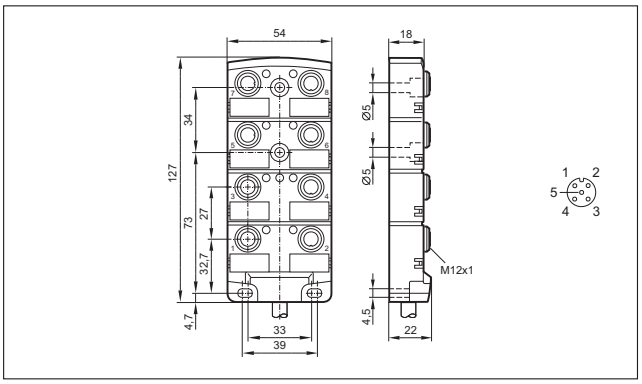

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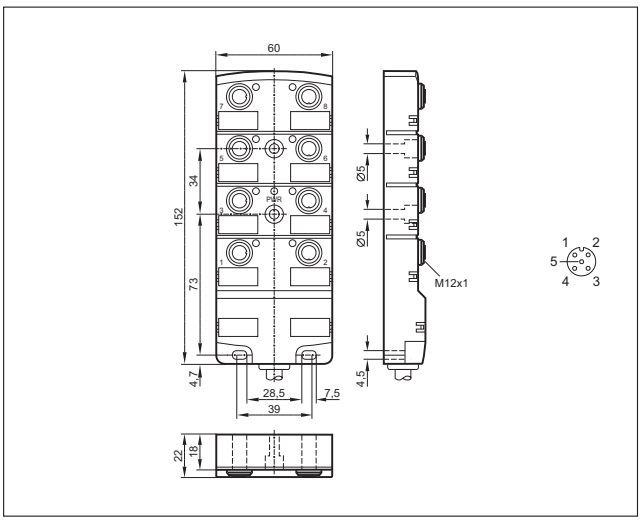

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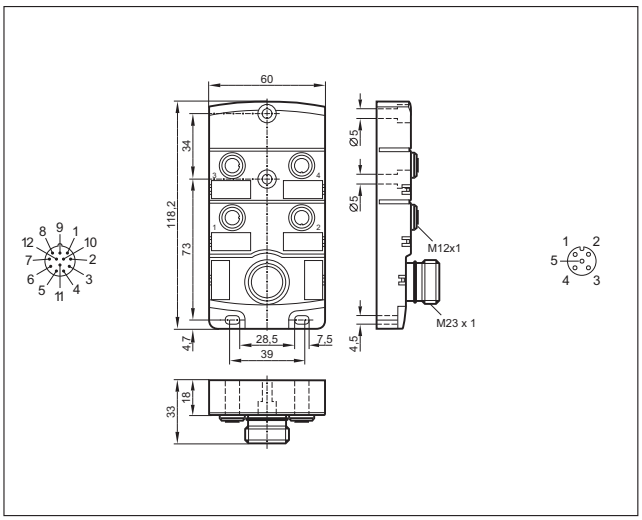

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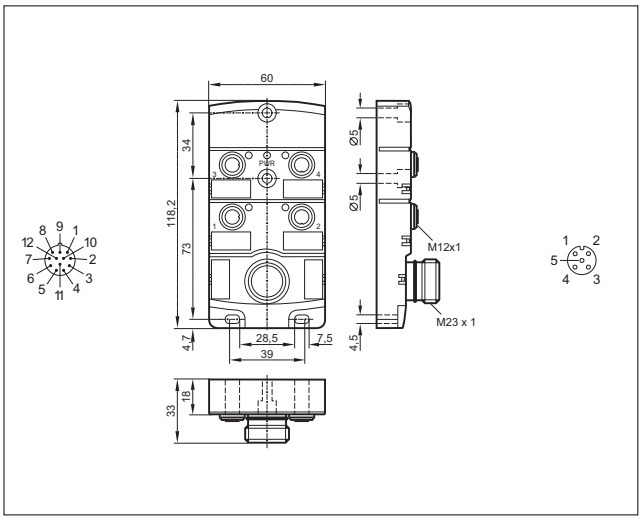

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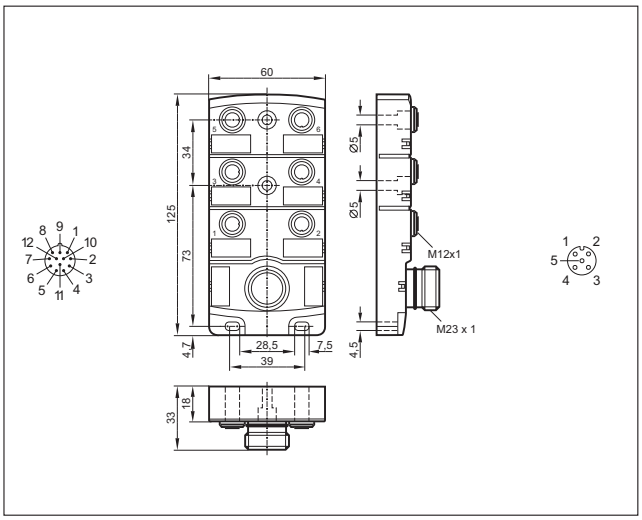

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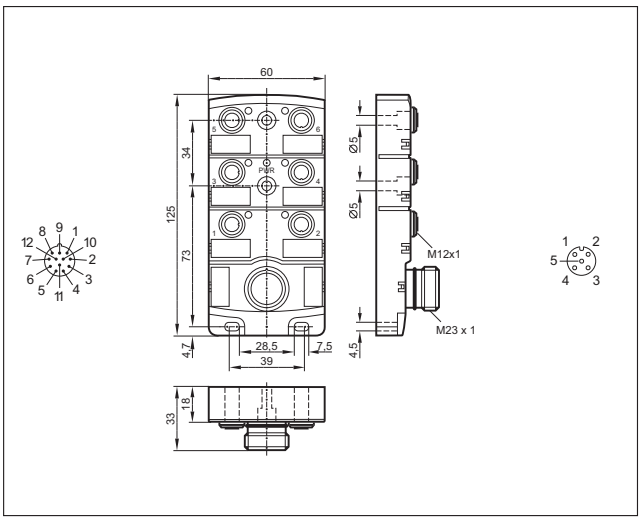

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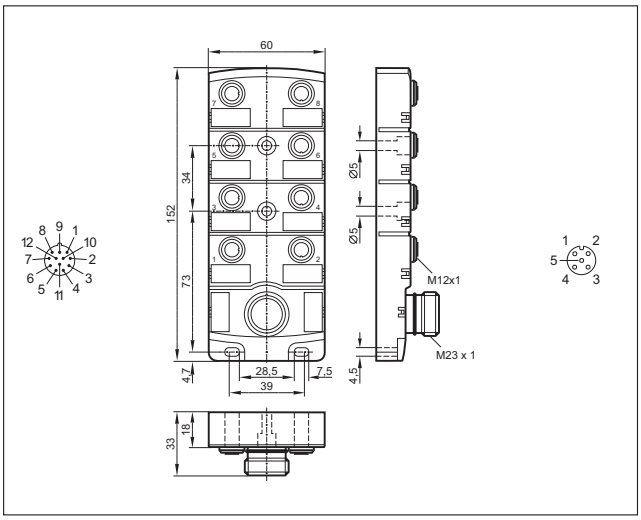

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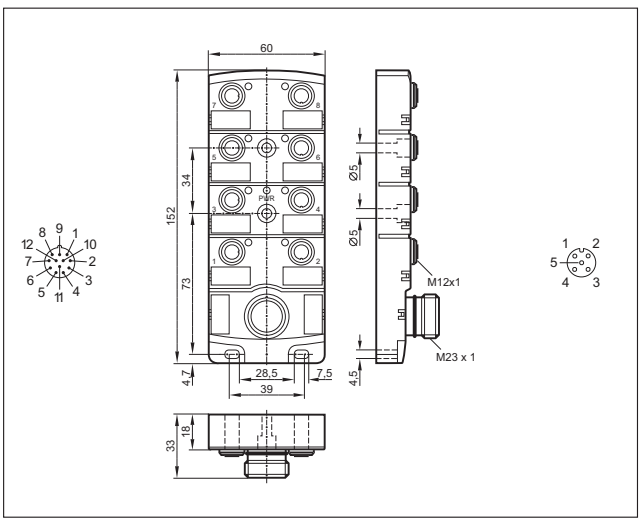

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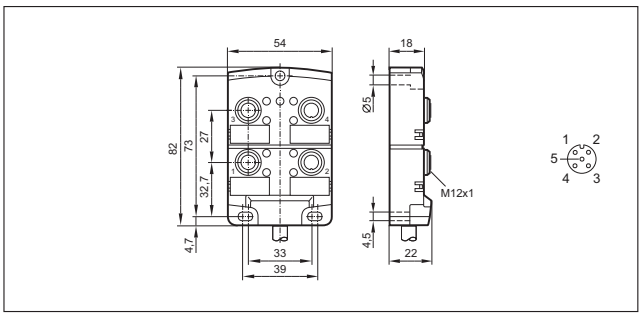

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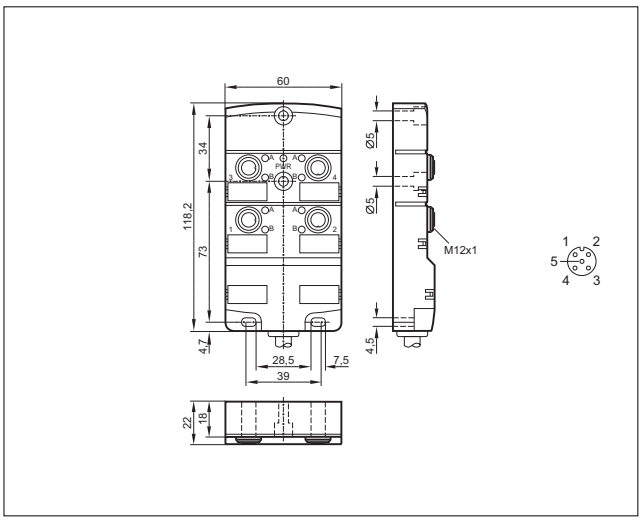

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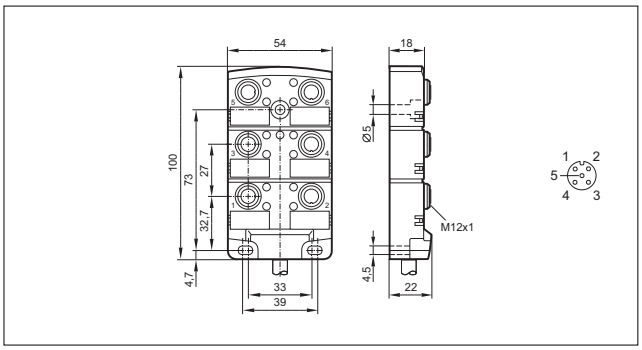

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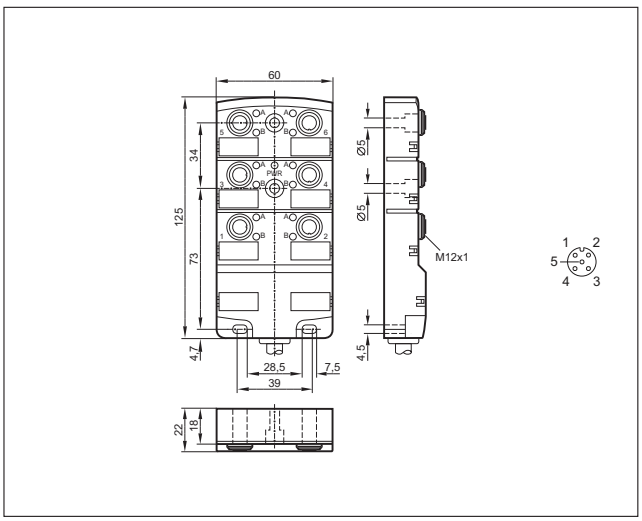

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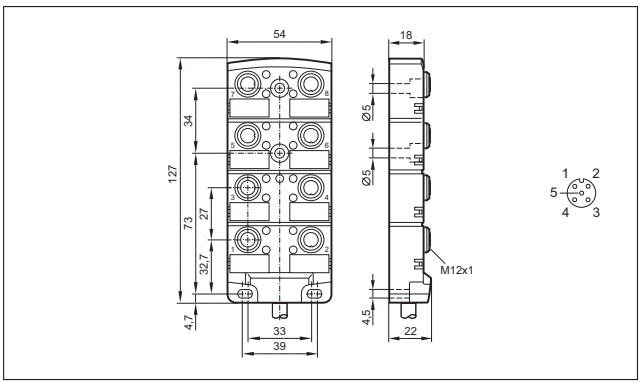

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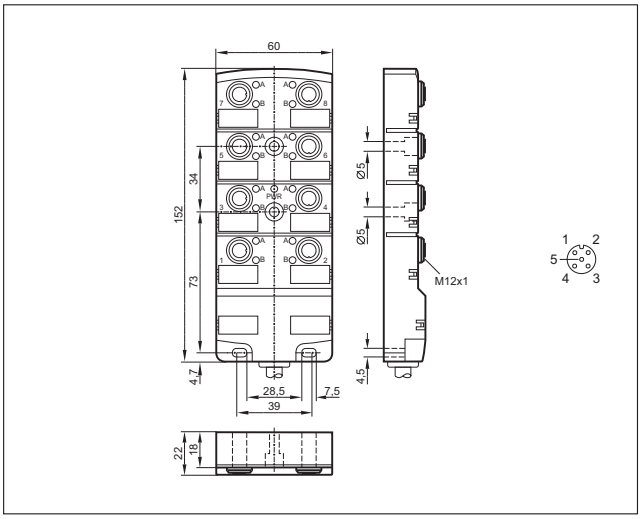

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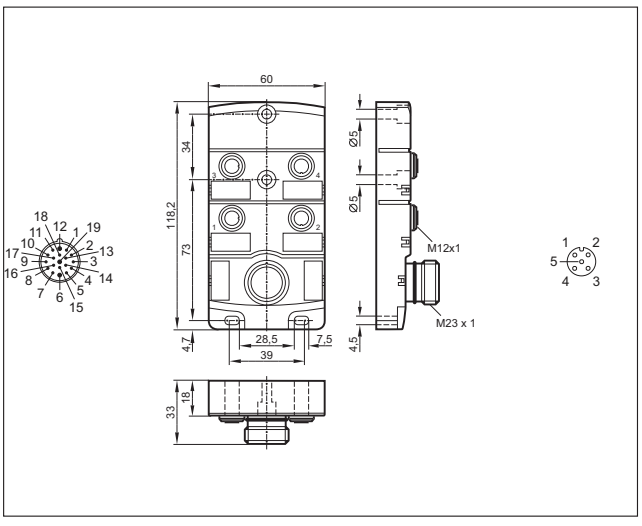

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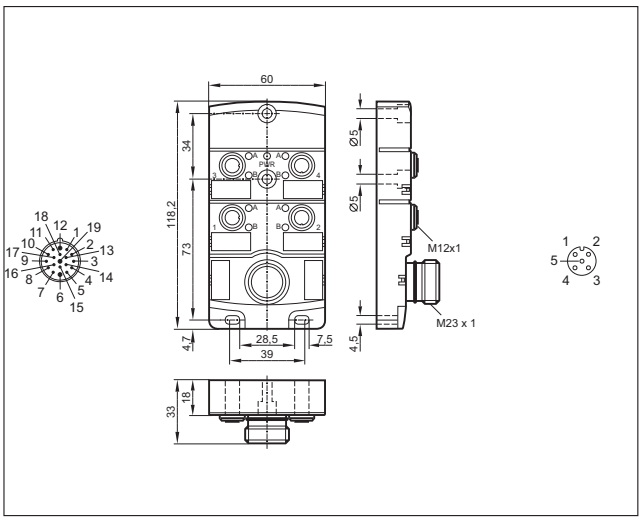

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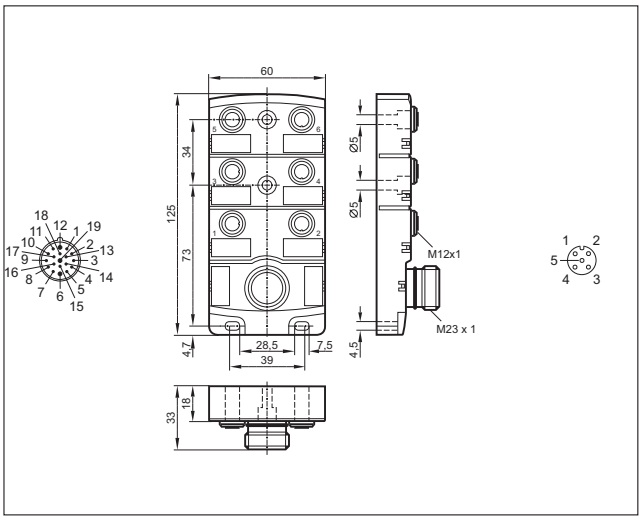

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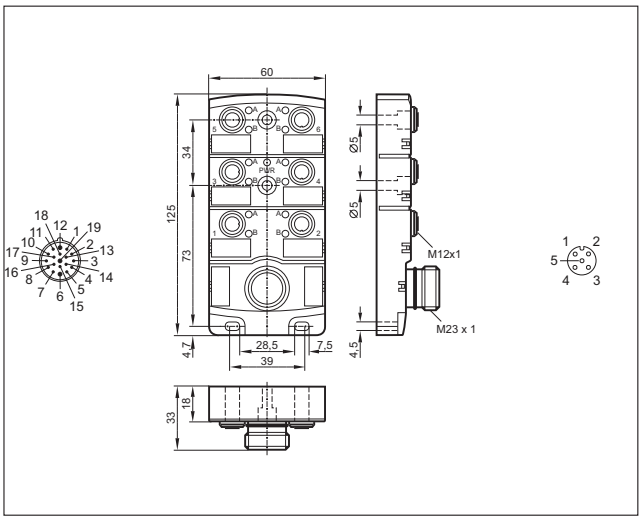

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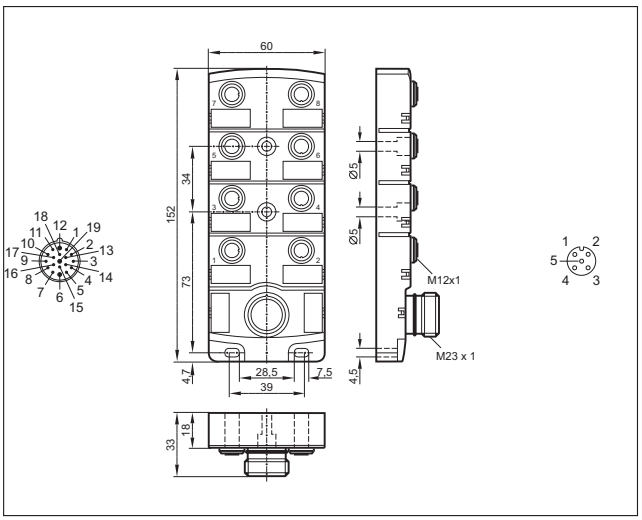

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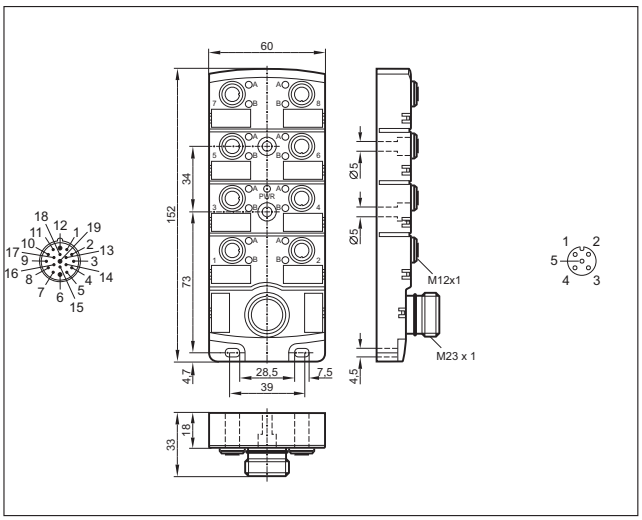

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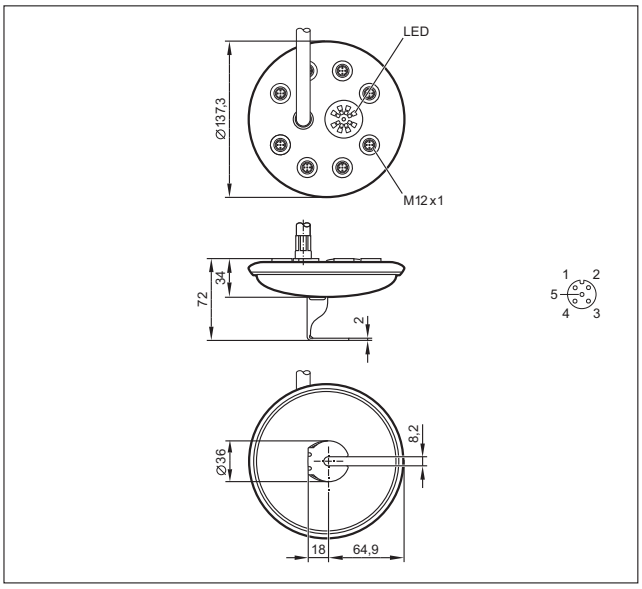

Y-splitters

Y connection cables are used for the distribution of signals and the connection of two units to a connector.

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Wiring diagrams	790
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M12 – M12 jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Protection	LEDs	Drawing no.	Order no.
Group 56 · Y connection cable , plug: M12, 5-pole, socket: M12, 5-pole, 5-wire · Wiring diagram no. 1									
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC431**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC432**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	1	**EVC433**
	1 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC434**
	2 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC435**
	5 m black PUR cable	4 x 0.34 mm², Ø 4.9 mm	TPU / Brass	60 AC 60 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	2	**EVC436**

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 58 · Y connection cable , plug: M12, 4-pole, socket: M12, 5-pole, 5-wire, LED · Wiring diagram no. 2									
	1 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC437**
	2 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC438**
	5 m black PUR cable	3 x 0.34 mm², Ø 4.9 mm	TPU / Brass	10...36 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	3	**EVC439**

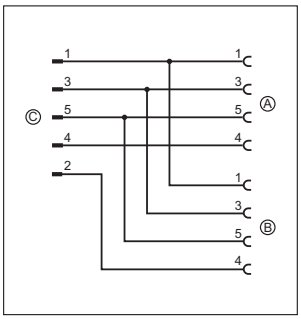
Jumpers for hygienic and wet areas

Type	Cable	Wire specification	Material housing / nut	U [V]	T_a [°C]	Pro-tection	LEDs	Draw-ing no.	Order no.
Group 137 · Y connection cable , plug: M12, 5-pole, socket: M12, 5-pole, 5-wire · Wiring diagram no. 1									
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVT329**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVT330**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	4	**EVT331**
	1 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVT332**
	2 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVT333**
	5 m orange PVC cable	4 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	60 AC 60 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	–	5	**EVT334**
Group 139 · Y connection cable , plug: M12, 4-pole, socket: M12, 5-pole, 5-wire, LED, PNP · Wiring diagram no. 2									
	1 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	6	**EVT335**
	2 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	6	**EVT336**
	5 m orange PVC cable	3 x 0.34 mm², Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 65 / IP 67 / IP 68 / IP 69K	green / yellow	6	**EVT337**

You can find wiring diagrams and scale drawings from page 790

Wiring diagrams

1



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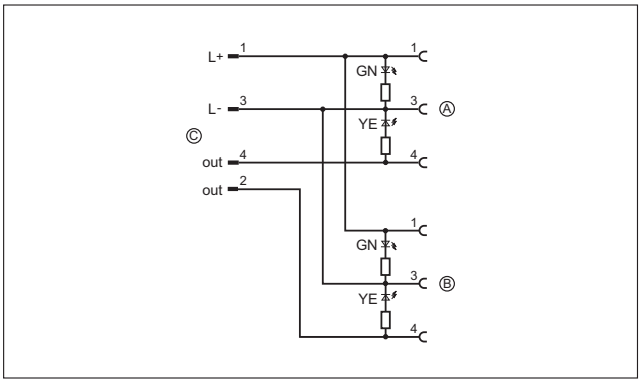

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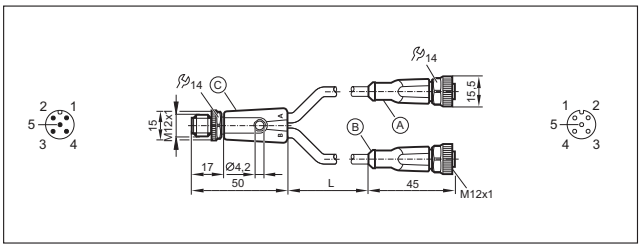

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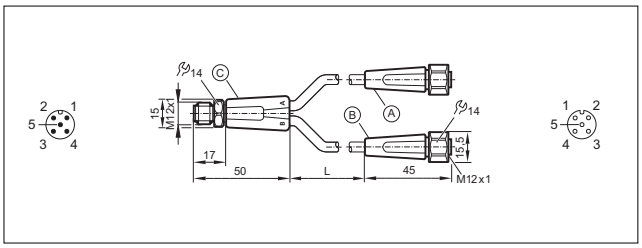

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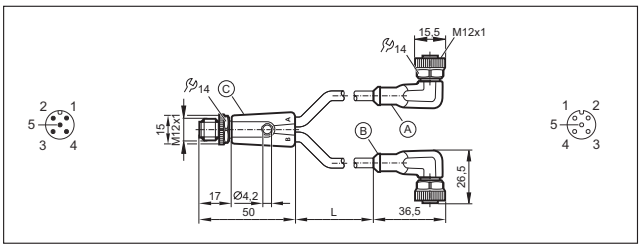

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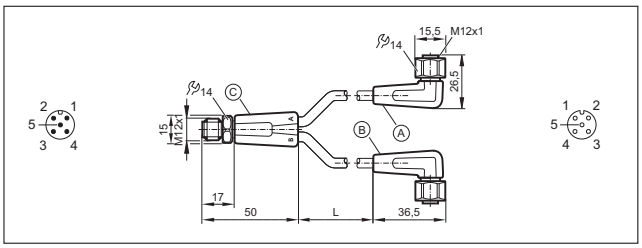

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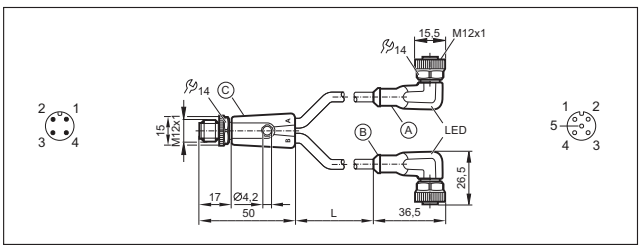

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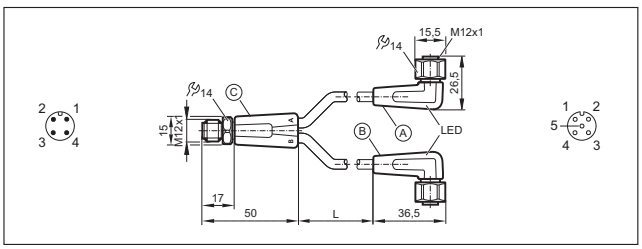

Voltage guaranteed

Suitable for the application: ifm provides power supplies in different power classes.

Power supplies

Transformer power supplies provide a low voltage, normally 24 V DC. A transformer according to DIN 0551 ensures a safe electrical separation from mains voltage and low voltage. The output voltage can be regulated (± 5 %) or smoothed by means of capacitors. The different designs and output powers allow adaptation to diverse operating conditions.

Switched-mode power supplies

Primary switched-mode power supplies are a compact and economical solution to supply sensors and actuators. As opposed to conventional transformer power supplies with regulated output voltage primary switched-mode power supplies need no heavy transformers so that there are fewer iron and copper losses. They are therefore distinguished by a very high degree of efficiency of up to 95 %. Due to the operating principle by means of high frequency transformers switched-mode power supplies are much smaller and lighter than transformer power supplies with identical power. Nevertheless they guarantee an electrical separation.

Furthermore, they offer a wide input voltage range as standard, e.g. 100...240 or 323...576 V AC. This makes them fit for worldwide use.ifm switched-mode power supplies have a regulated output voltage of typ. 24 V DC with a tolerance of ± 2 %. Apart from few exceptions the output voltage can be set between 24 V and 28 V to compensate for example for a voltage drop on long cables. Between no load and full load they ensure a stable supply voltage and thus operational reliability in case of supply voltage fluctuations.

Power reserves

Switched-mode power supplies from ifm are rated for permanent operation in the specified performance limits. This allows the power supplies to be used at full load over almost the complete temperature range. Moreover the power supplies feature an excess gain of 20 % while reaching 100 % switch-on time.

Mains fluctuations and interference are compensated for. Even mains voltage dips of a few milliseconds are compensated for, the output voltage is completely maintained.

An inrush current limitation actively reduces the peak inrush current and thus enables the use of common automatic circuit breakers.

The outputs are protected against short circuits and overload.

24 V DC power supplies 794 - 798

AS-i power supplies 800 - 802

24 V DC power supplies

These high-quality 24V switched-mode power supplies excel by their wide range of performance. Flexible one-phase or three-phase primary voltages with wide-range inputs can be used worldwide. Degrees of efficiency of up to 94 percent ensure that the control cabinet only heats up slightly. The units are protected against overvoltage and permanent short circuit.

System overview

System overview	Page
Power supplies / switching amplifiers with one output	794
Power supplies / switching amplifiers with on and off delay with external output	794
Power supplies / switching amplifiers with 2 inputs and 2 outputs	795
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Standard switched-mode power supplies, single phase, in robust metal housing	795
Standard switched-mode power supplies, two-phase, in robust metal housing	795
Standard switched-mode power supplies, three-phase, in robust metal housing	796
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Power supplies / switching amplifiers with one output

Type	Current [mA]	Output voltage [V]	Nominal voltage [V]	Output	Drawing no.	Order no.
	max. 100	24 DC ±5%	230 AC (47...63 Hz)	relay (1 changeover contact)	1	**DN0001**
	max. 100	24 DC ±5%	110 AC (47...63 Hz)	relay (1 changeover contact)	1	**DN0012**

Power supplies / switching amplifiers with on and off delay with external output

Type	Current [mA]	Output voltage [V]	Nominal voltage [V]	Output	Drawing no.	Order no.
	max. 40	24 DC ±5%	230 AC (50...60 Hz) / 24 DC	relay (1 changeover contact)	1	**DT0001**

Power supplies / switching amplifiers with 2 inputs and 2 outputs

Type	Current [mA]	Output voltage [V]	Nominal voltage [V]	Output	Drawing no.	Order no.
	max. 300	24 V DC ± 3 %	110...240 AC / -15 / +10	2 relays (1 changeover contact per channel)	2	**DN0200**

Switched-mode power supplies, single phase, in compact plastic housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	1.25	24...28	115 / 230 AC	–	84	3	**DN1030**
	2.5	24...28	115 / 230 AC	–	88	3	**DN1031**
	4.1	24...28 DC (±2%)	115 / 230 AC	–	90	4	**DN1022**

Standard switched-mode power supplies, single phase, in robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	3.3	24...28 DC	115 / 230 AC	–	88	6	**DN4011**
	5	24...28 DC	115 / 230 AC	–	89.4	6	**DN4012**
	10	24...28 DC	115 / 230 AC	–	91	7	**DN4013**
	20	24...28 DC	115 / 230 AC	–	92.7	8	**DN4014**

Standard switched-mode power supplies, two-phase, in robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	5	24...28 DC	2 x 380...480 AC	–	90.4	5	**DN4032**

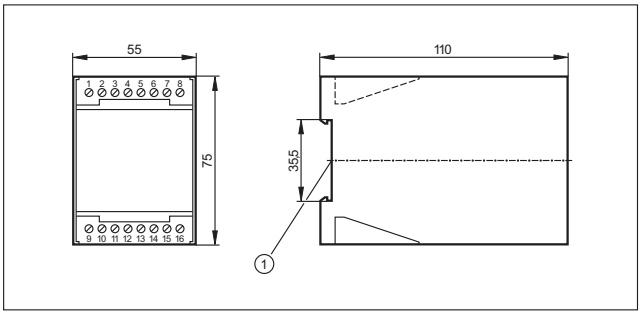
You can find scale drawings from page 796

Standard switched-mode power supplies, three-phase, in robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Draw-ing no.	Order no.
	10	24...28 DC	3 x 400 AC	–	92.8	9	**DN4033**
	20	24...28 DC	3 x 400 AC	–	95	10	**DN4034**
	40	24...28 DC (±2%)	3 x 400...500 AC	–	92.5	11	**DN2035**
	30	24...28 DC (±2%)	3 x 400...500 AC	–	93	12	**DN2036**

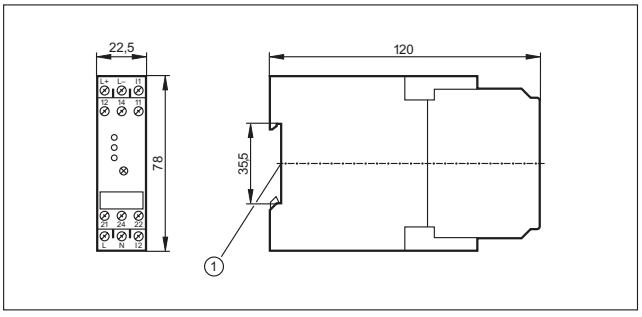
Scale drawings / drawing no. – CAD download: www.ifm.com

1



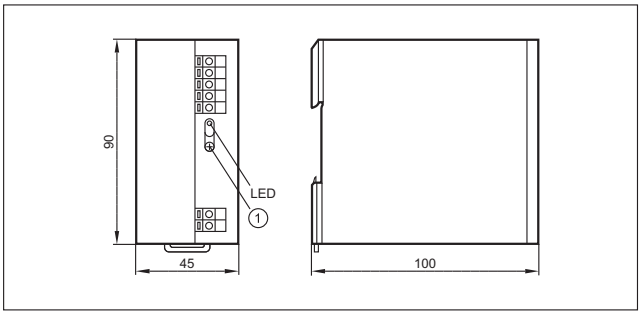
1: Mounting on DIN rail

2



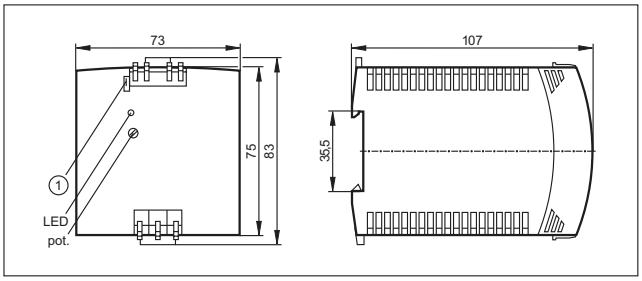
1: Mounting on DIN rail

3



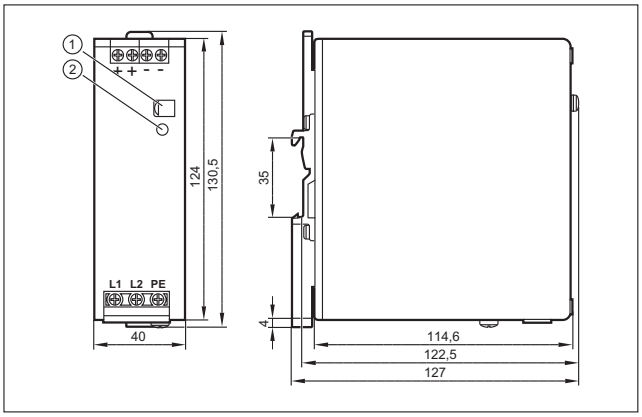
1: potentiometer

4



1: jumper "single/parallel operation"

5

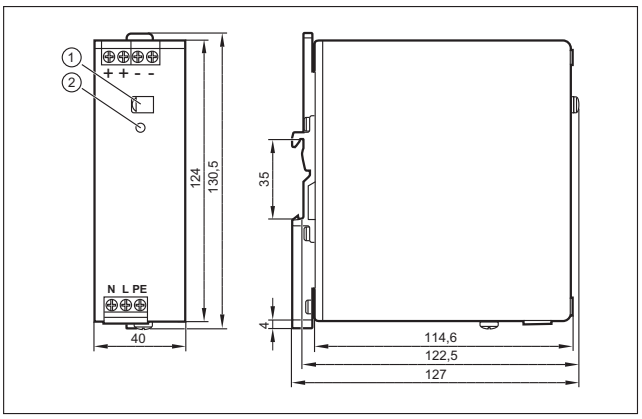


1: Potentiometer 24...28 V DC, 2: LED DC ok

Product selectors and further information can be found at: www.ifm.com

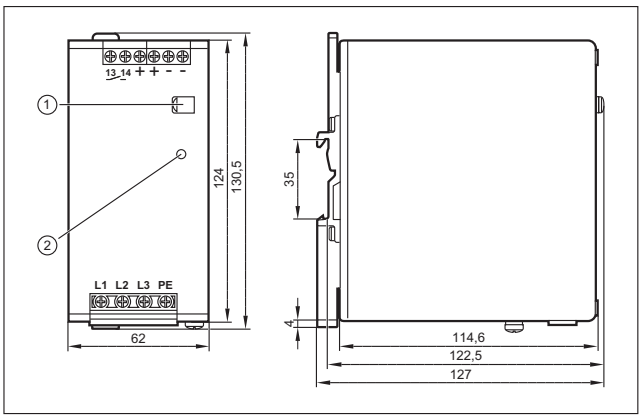
Scale drawings / drawing no. – CAD download: www.ifm.com

6



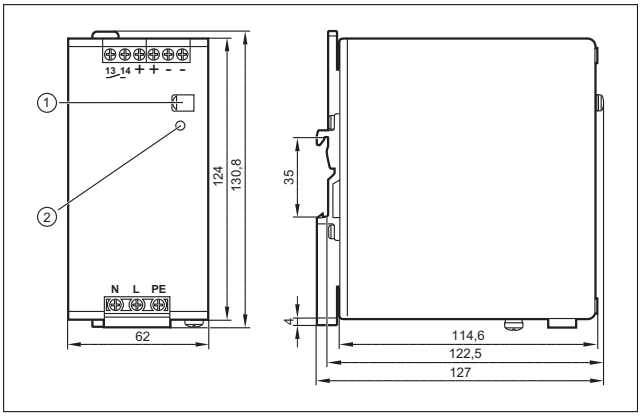
1: Potentiometer 24...28 V DC, 2: LED DC ok

9



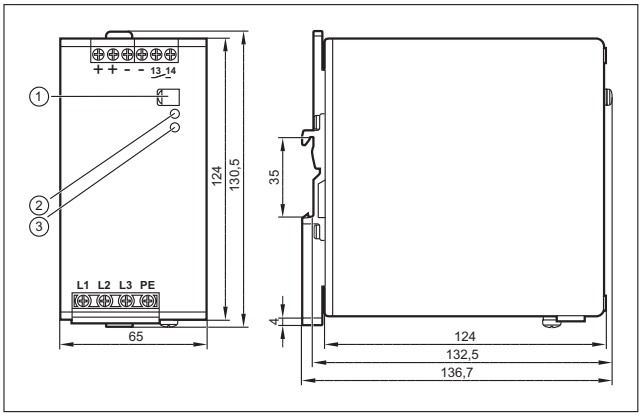
1: Potentiometer 24...28 V DC, 2: LED DC ok

7



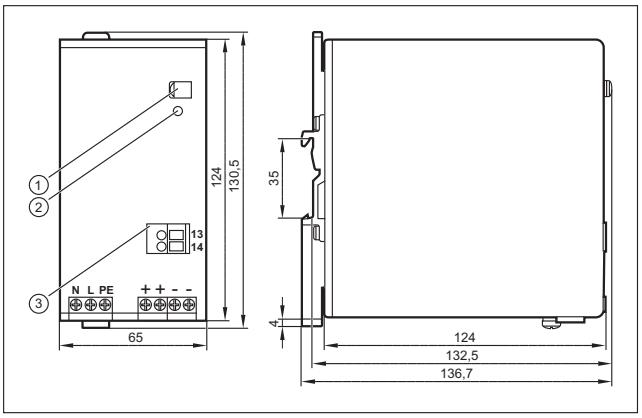
1: Potentiometer 24...28 V DC, 2: LED DC ok

10



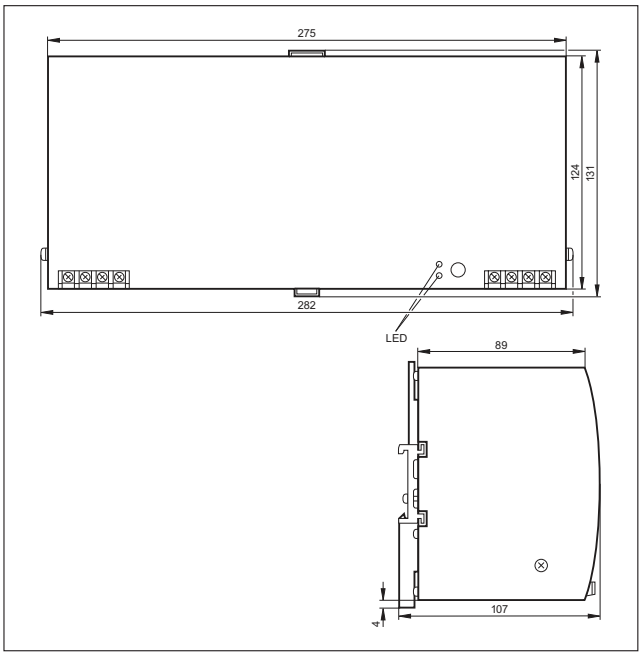
1: Potentiometer 24...28 V DC, 2: LED DC ok, 3: LED Overload

8



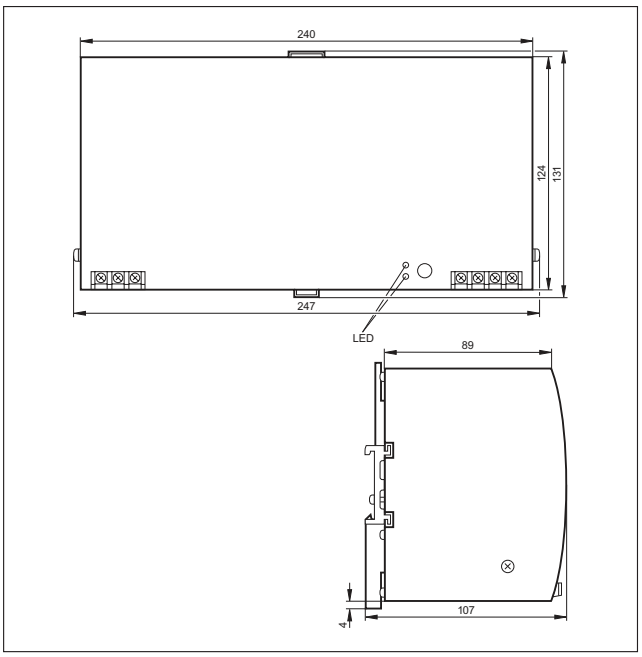
1: Potentiometer 24...28 V DC, 2: LED DC ok, 3: Terminals DC OK signal

11



Scale drawings / drawing no. – CAD download: www.ifm.com

12



AS-i power supplies

All AS-i power supplies are primary switched-mode power supplies with a high degree of efficiency. The robust DIN rail housing can be easily integrated in large control cabinets as well as in local boxes. The primary voltage range stretches from 24 V DC via 230 V AC up to 400 V AC three-phase and can consequently be adapted to the local conditions.

System overview

System overview	Page
AS-i switched-mode power supplies, single phase, in robust metal housing	800
AS-i switched-mode power supplies, single phase, in compact plastic housing	800
AS-i switched-mode power supplies, three-phase, in robust metal housing	801
DC / DC converter (24 V / AS-i), in robust metal housing	801
Scale drawings / drawing no. – CAD download: www.ifm.com	801 - 802

AS-i switched-mode power supplies, single phase, in robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	2.8	30.5 DC	115 / 230 AC	–	86.9	1	**AC1256**
	4	30.5 DC	115 / 230 AC	–	88	1	**AC1254**
	8	30.5 DC	115 / 230 AC	–	89.4	2	**AC1258**

AS-i switched-mode power supplies, single phase, in compact plastic housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	0.95	29.5...31.6 DC	100...240 AC	–	86	3	**AC1220**
	1.9	29.5...31.6 DC	100...240 AC	–	88	3	**AC1221**

AS-i switched-mode power supplies, three-phase, in robust metal housing

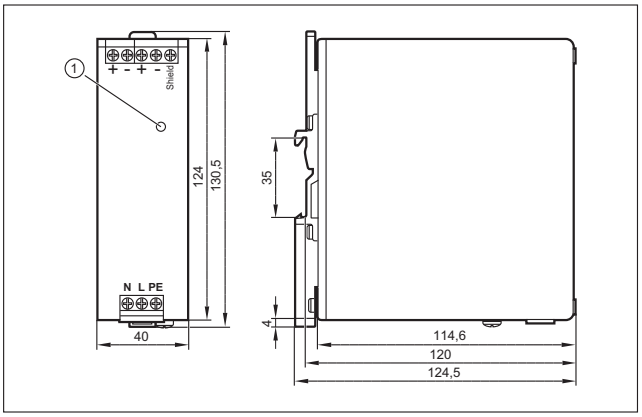
Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	8	30.5 DC	3 x 400 AC	–	92	4	**AC1253**

DC / DC converter (24 V / AS-i), in robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Drawing no.	Order no.
	4	30.5 DC	24 DC	–	90.5	5	**AC1257**

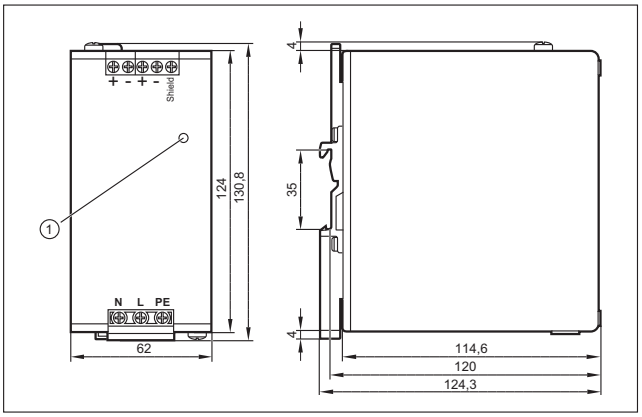
Scale drawings / drawing no. – CAD download: www.ifm.com

1



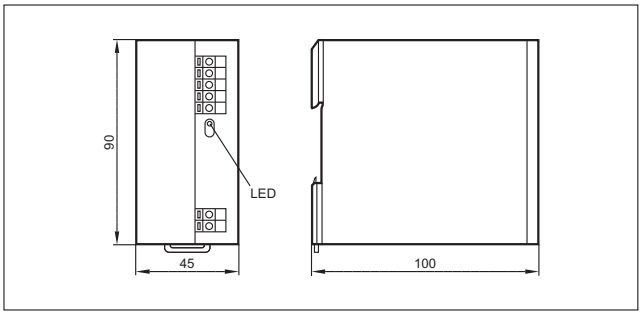
1: LED AS-i ok

2



1: LED AS-i ok

3



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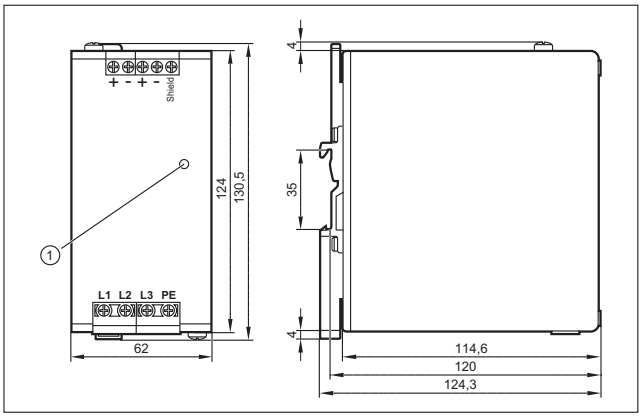
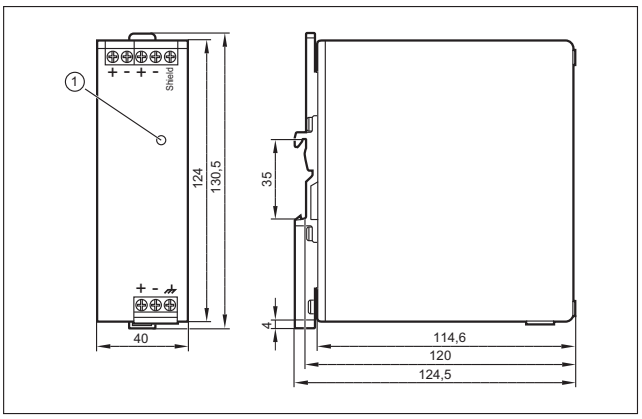


1: LED AS-i ok

Scale drawings / drawing no. – CAD download: www.ifm.com

5



1: LED AS-i ok

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