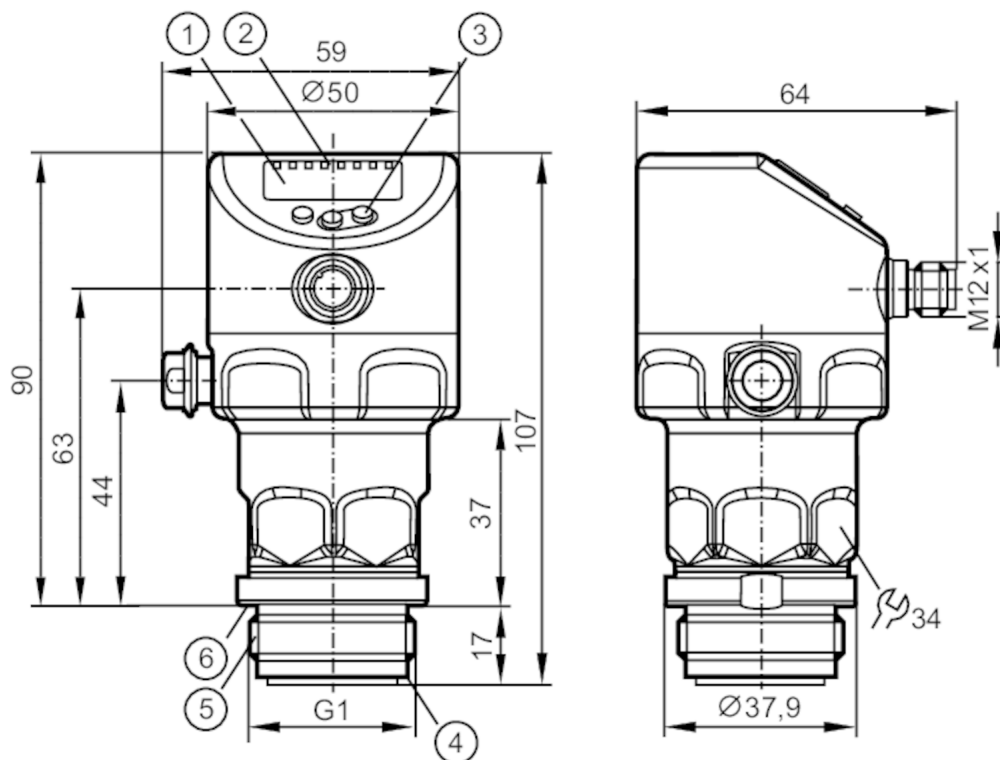




## Flush pressure sensor with display

PI-016-REA01-MFRKG/US/ /P

When selecting an alternative article and accessories please note that technical data may differ!



- 1 alphanumeric display 4-digit
- 2 status LEDs
- 3 programming button
- 4 groove for sealing ring
- 5 external thread G1 Aseptoflex Vario
- 6 groove with sealing ring (DIN 3869-33)



### Product characteristics

|                              |                                                             |                 |                |
|------------------------------|-------------------------------------------------------------|-----------------|----------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |                 |                |
| Measuring range              | -1...16 bar                                                 | -14.6...232 psi | -0.1...1.6 MPa |
| Process connection           | threaded connection G 1 external thread Aseptoflex Vario    |                 |                |

### Application

|                                                |                                                                       |          |         |
|------------------------------------------------|-----------------------------------------------------------------------|----------|---------|
| Special feature                                | Gold-plated contacts                                                  |          |         |
| Application                                    | flush mountable for the food and beverage industry                    |          |         |
| Media                                          | viscous media and liquids with suspended particles; liquids and gases |          |         |
| Medium temperature [°C]                        | -25...150                                                             |          |         |
| Min. bursting pressure                         | 250 bar                                                               | 3625 psi | 25 MPa  |
| Pressure rating                                | 75 bar                                                                | 1085 psi | 7.5 MPa |
| Vacuum resistance [mbar]                       | -1000                                                                 |          |         |
| Type of pressure                               | relative pressure; vacuum                                             |          |         |
| No dead space                                  | yes                                                                   |          |         |
| MAWP (for applications according to CRN) [bar] | 50                                                                    |          |         |



## Flush pressure sensor with display

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| Electrical data                                 |                |                                                             |                  |
|-------------------------------------------------|----------------|-------------------------------------------------------------|------------------|
| Min. insulation resistance                      | [MΩ]           | 100; (500 V DC)                                             |                  |
| Protection class                                |                | III                                                         |                  |
| Reverse polarity protection                     |                | yes                                                         |                  |
| Integrated watchdog                             |                | yes                                                         |                  |
| 2-wire                                          |                |                                                             |                  |
| Operating voltage                               | [V]            | 20...30 DC                                                  |                  |
| Current consumption                             | [mA]           | 3.5...21.5                                                  |                  |
| Power-on delay time                             | [s]            | < 1                                                         |                  |
| 3-wire                                          |                |                                                             |                  |
| Operating voltage                               | [V]            | 18...30 DC                                                  |                  |
| Current consumption                             | [mA]           | 5...45; (430 bei max. Laststrom)                            |                  |
| Power-on delay time                             | [s]            | < 0.5                                                       |                  |
| Inputs / outputs                                |                |                                                             |                  |
| Number of inputs and outputs                    |                | Number of digital outputs: 2; Number of analogue outputs: 1 |                  |
| Outputs                                         |                |                                                             |                  |
| Total number of outputs                         |                | 2                                                           |                  |
| Output signal                                   |                | switching signal; analogue signal; IO-Link                  |                  |
| Electrical design                               |                | PNP/NPN                                                     |                  |
| Number of digital outputs                       |                | 2                                                           |                  |
| Output function                                 |                | normally open / normally closed; (parameterisable)          |                  |
| Number of analogue outputs                      |                | 1                                                           |                  |
| Analogue current output                         | [mA]           | 4...20, invertible; (scalable)                              |                  |
| Short-circuit protection                        |                | yes                                                         |                  |
| Type of short-circuit protection                |                | pulsed                                                      |                  |
| Overload protection                             |                | yes                                                         |                  |
| 2-wire                                          |                |                                                             |                  |
| Max. load                                       | [Ω]            | 300                                                         |                  |
| 3-wire                                          |                |                                                             |                  |
| Max. voltage drop switching output DC           | [V]            | 2                                                           |                  |
| Permanent current rating of switching output DC | [mA]           | 100                                                         |                  |
| Switching frequency DC                          | [Hz]           | 125                                                         |                  |
| Max. load                                       | [Ω]            | (Ub - 10 V) / 21,5 mA; 650 Ω (Ub = 24 V)                    |                  |
| Measuring/setting range                         |                |                                                             |                  |
| Measuring range                                 | -1...16 bar    | -14.6...232 psi                                             | -0.1...1.6 MPa   |
| Set point SP                                    | -0.98...16 bar | -14.2...232.1 psi                                           | -0.098...1.6 MPa |
| Reset point rP                                  | -1...15.98 bar | -14.5...231.7 psi                                           | -0.1...1.598 MPa |
| Analogue start point                            | -1...12.8 bar  | -14.5...185.6 psi                                           | -0.1...1.28 MPa  |
| Analogue end point                              | 2.2...16 bar   | 31.9...232.1 psi                                            | 0.22...1.6 MPa   |
| Min. difference between SP and rP               | 0.03 bar       | 0.4 psi                                                     | 0.003 MPa        |
| In steps of                                     | 0.01 bar       | 0.1 psi                                                     | 0.001 MPa        |



## Flush pressure sensor with display

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|                                                   |                                                                                                         |                 |                                                       |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------|
| Factory setting                                   |                                                                                                         | SP1 = 4.00bar   | rP1 = 3.68 bar                                        |
|                                                   |                                                                                                         | SP2 = 12.00 bar | rP2 = 11.68 bar                                       |
|                                                   |                                                                                                         | ASP = 0.00 bar  | AEP = 16.00 bar                                       |
|                                                   |                                                                                                         | dAP = 0.06 s    | dAA = 0.06 s                                          |
| Temperature monitoring                            |                                                                                                         |                 |                                                       |
| Measuring range                                   | -25...150 °C                                                                                            |                 | -13...302 °F                                          |
| Accuracy / deviations                             |                                                                                                         |                 |                                                       |
| Switch point accuracy<br>[% of the span]          | < ± 0,2; (DIN EN IEC 62828-1; Turn down 1:1)                                                            |                 |                                                       |
| Repeatability<br>[% of the span]                  | < ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)                                          |                 |                                                       |
| Characteristics deviation<br>[% of the span]      | < ± 0,2; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1) |                 |                                                       |
| Linearity deviation<br>[% of the span]            | < ± 0,15; (Turn down 1:1)                                                                               |                 |                                                       |
| Hysteresis deviation<br>[% of the span]           | < ± 0,15; (Turn down 1:1)                                                                               |                 |                                                       |
| Long-term stability<br>[% of the span]            | < ± 0,1; (Turn down 1:1; per year)                                                                      |                 |                                                       |
| Total deviation over temperature range            | Temperature range                                                                                       |                 | total deviation                                       |
|                                                   | -25...15 °C                                                                                             |                 | Characteristics deviation ± 0,05 % of the span / 10 K |
|                                                   | 15...80 °C                                                                                              |                 | Characteristics deviation                             |
|                                                   | 80...150 °C                                                                                             |                 | Characteristics deviation ± 0,1 % of the span / 10 K  |
| Notes on the accuracy / deviation                 | for further details see section Diagrams and graphs                                                     |                 |                                                       |
| Temperature monitoring                            |                                                                                                         |                 |                                                       |
| Accuracy [K]                                      | ± 2,5+ (0,08 x ( Umgebungstemperatur - Mediumtemperatur ))                                              |                 |                                                       |
| Repeatability [K]                                 | ± 0,2                                                                                                   |                 |                                                       |
| Resolution [K]                                    | 0.2                                                                                                     |                 |                                                       |
| Response times                                    |                                                                                                         |                 |                                                       |
| Damping process value dAP [s]                     | 0...99.99                                                                                               |                 |                                                       |
| Damping for the analogue output dAA [s]           | 0...99.99                                                                                               |                 |                                                       |
| 2-wire                                            |                                                                                                         |                 |                                                       |
| Step response time analogue output [ms]           | 30                                                                                                      |                 |                                                       |
| 3-wire                                            |                                                                                                         |                 |                                                       |
| Min. response time of switching output (dAP) [ms] | 3                                                                                                       |                 |                                                       |
| Step response time analogue output [ms]           | 7                                                                                                       |                 |                                                       |
| Temperature monitoring                            |                                                                                                         |                 |                                                       |
| Dynamic response T05 / T09 [s]                    | < 35 / < 135; (DIN EN 60751 water ; > 0,9 m/s)                                                          |                 |                                                       |
| Interfaces                                        |                                                                                                         |                 |                                                       |
| Communication interface                           | IO-Link                                                                                                 |                 |                                                       |
| Transmission type                                 | COM2 (38,4 kBaud)                                                                                       |                 |                                                       |



## Flush pressure sensor with display

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|                                    |                                                                                                                          |            |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------|
| IO-Link revision                   | 1.1                                                                                                                      |            |
| SDCI standard                      | IEC 61131-9                                                                                                              |            |
| Profiles                           | Identification and Diagnosis (0x4000), Measurement Data Channel (0x800A)                                                 |            |
| SIO mode                           | yes                                                                                                                      |            |
| Required master port type          | A                                                                                                                        |            |
| Min. process cycle time [ms]       | 5.6                                                                                                                      |            |
| IO-Link resolution pressure [bar]  | 0.0005                                                                                                                   |            |
| IO-Link resolution temperature [K] | 0.2                                                                                                                      |            |
| IO-Link process data (cyclical)    | function                                                                                                                 | bit length |
|                                    | pressure                                                                                                                 | 32         |
|                                    | temperature                                                                                                              | 32         |
|                                    | device status                                                                                                            | 4          |
|                                    | binary switching information                                                                                             | 2          |
| IO-Link functions (acyclical)      | application specific tag; internal temperature; operating hours counter; switching cycles counter; Pressure peak counter |            |
| Supported DeviceIDs                | Type of operation                                                                                                        | DeviceID   |
|                                    | default                                                                                                                  | 1147       |

| Operating conditions     |  |                      |
|--------------------------|--|----------------------|
| Ambient temperature [°C] |  | -25...80             |
| Storage temperature [°C] |  | -40...100            |
| Protection               |  | IP 67; IP 68; IP 69K |

| Tests / approvals    |                                                                                                                           |                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------|
| EMC                  | DIN EN 61326-1                                                                                                            |                     |
| Shock resistance     | DIN EN 60068-2-27                                                                                                         | 50 g (11 ms)        |
| Vibration resistance | DIN EN 60068-2-6                                                                                                          | 20 g (10...2000 Hz) |
| MTTF [years]         |                                                                                                                           | 214                 |
| Note on approval     | factory certificate available as download at <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a> |                     |
| UL approval          | UL Approval no.                                                                                                           | J048                |
|                      | File number UL                                                                                                            | E174189             |

| Mechanical data          |                                                                                                                                  |             |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------|
| Weight [g]               |                                                                                                                                  | 357.8       |
| Materials                | stainless steel (316L/1.4404); FKM; PTFE; PBT; PEI; PFA                                                                          |             |
| Materials (wetted parts) | ceramics (99.9 % Al <sub>2</sub> O <sub>3</sub> ); stainless steel (316L/1.4435); surface characteristics: Ra < 0,4 / Rz 4; PTFE |             |
| Min. pressure cycles     |                                                                                                                                  | 100 million |
| Tightening torque [Nm]   |                                                                                                                                  | 35          |
| Process connection       | threaded connection G 1 external thread Aseptoflex Vario                                                                         |             |

| Displays / operating elements |                  |                               |
|-------------------------------|------------------|-------------------------------|
| Display                       | Display unit     | LED, green                    |
|                               | switching status | LED, yellow                   |
|                               | function display | alphanumeric display, 4-digit |
|                               | measured values  | alphanumeric display, 4-digit |
| Display unit                  | bar; psi; MPa    |                               |

| Remarks       |  |        |
|---------------|--|--------|
| Pack quantity |  | 1 pcs. |



## Flush pressure sensor with display

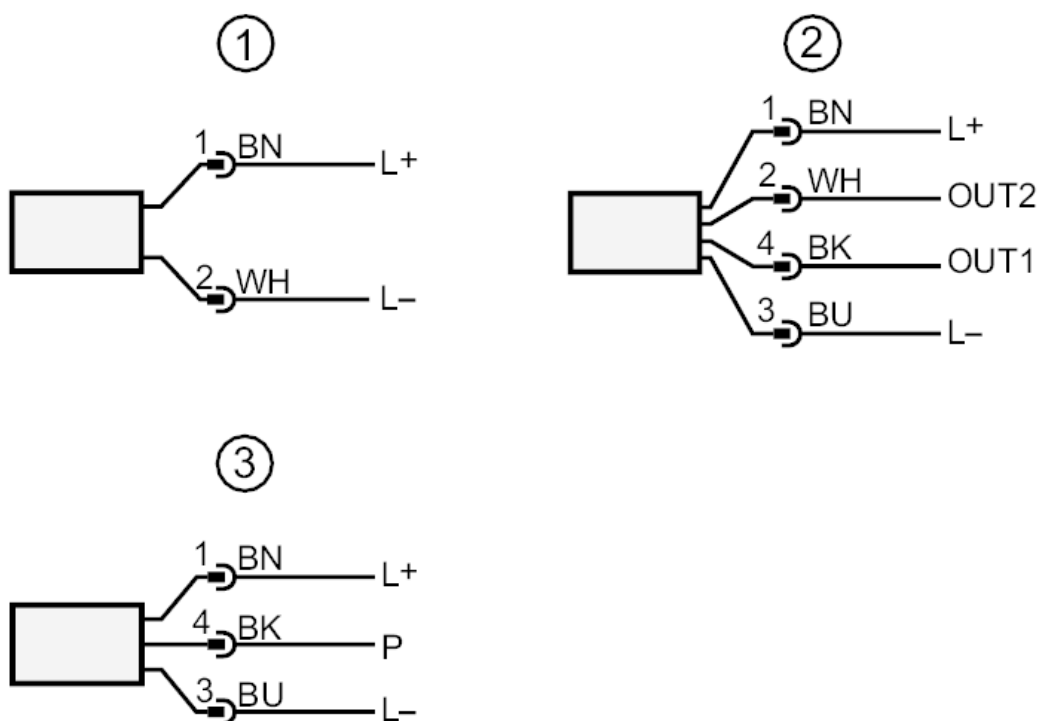
PI-016-REA01-MFRKG/US/ /P

### Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



### Connection



- 1 connection for 2-wire operation
- 2 connection for 3-wire operation
- OUT1 switching output / IO-Link
- OUT2 switching output / analogue output
- 3 connection for IO-Link parameter setting (P = communication via IO-Link)
- colours to DIN EN 60947-5-2
- Core colours
- BK = black
- BN = brown
- BU = blue
- WH = white

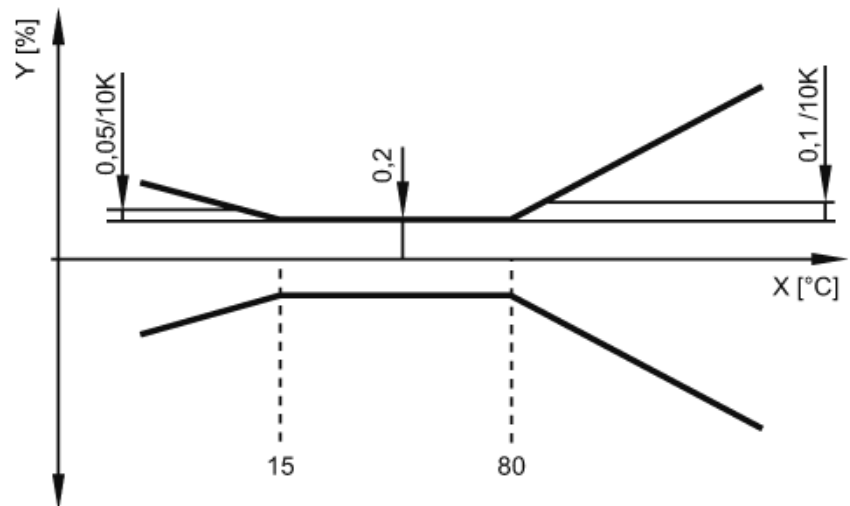


## Flush pressure sensor with display

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### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation