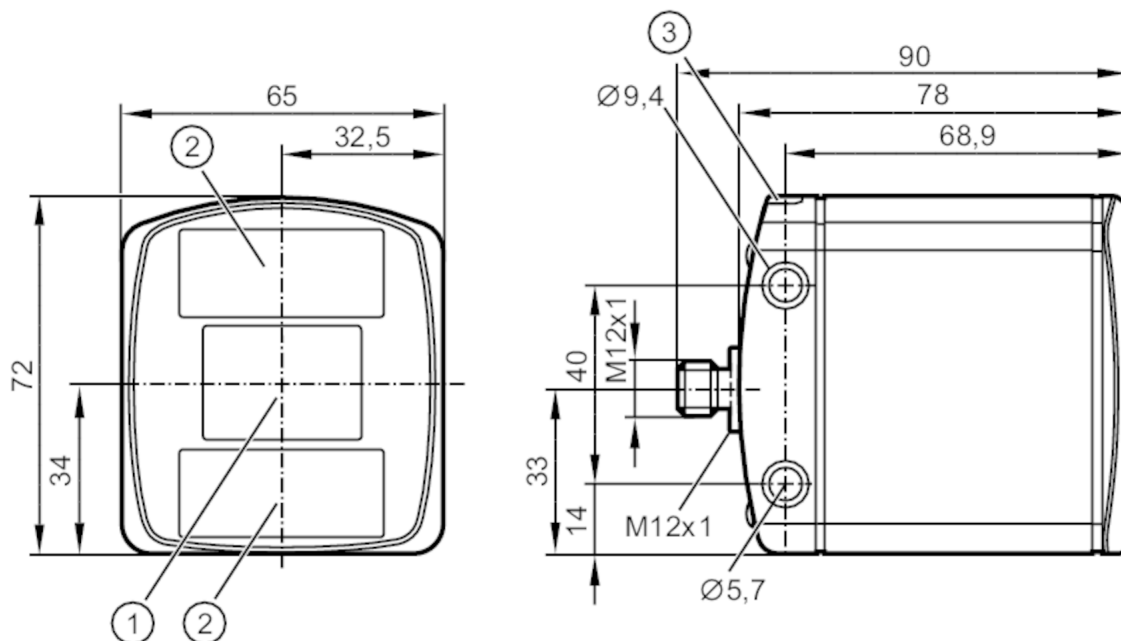


3D sensor

O3DIRDKG/E1/GM/S/60



- 1 lens
2 illumination unit
3 LED 2-colour yellow/green



Product characteristics

Type of light	infrared light
Image resolution 3D [px]	176 x 132
Angle of aperture 3D [°]	60 x 45; (nominal value without lens distortion correction)
Image repetition frequency 3D [Hz]	25

Application

Application	dimensioning of the object; completeness monitoring; Level monitoring; distance monitoring; volume monitoring; robot gripper navigation; depalletizing
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Electrical data

Operating voltage [V]	20.4...28.8 DC; (EN 61131-2)
Current consumption [mA]	420; (maximum mean value: < 1600 mA)
Max. current consumption [mA]	2400; (peak current pulsed)
Power consumption [W]	10; (typical value)
Protection class	III
Type of light	infrared light
Image sensor	PMD 3D ToF-Chip
Internal lighting	yes; (infrared: 850 nm invisible radiation LED)

Inputs / outputs

Number of inputs and outputs	Number of digital inputs: 2; Number of digital outputs: 3; Number of analogue outputs: 1
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Inputs	
Trigger	24 V PNP/NPN (IEC 61131-2 Typ 3)
Number of digital inputs	2
Input circuit of digital inputs	24 V PNP/NPN; (configurable; IEC 61131-2 Typ 3)
Outputs	
Total number of outputs	3
Number of digital outputs	3; (configurable)
Output function	24 V PNP/NPN; (EN 61131-2)
Max. voltage drop switching output DC [V]	1
Max. current load per output [mA]	100
Number of analogue outputs	1; (configurable)
Analogue current output [mA]	4...20
Max. load [Ω]	500
Analogue voltage output [V]	0...10
Min. load resistance [Ω]	10000
Precision analogue output [%]	1
Short-circuit protection	yes
Type of short-circuit protection	pulsed
Overload protection	yes
Resolution of analogue output	12 bit
Detection zone	
Operating distance [mm]	300...8000
Note on operating distance	object size: 200 x 200 mm reflectivity: 18 %
Image resolution 3D [px]	176 x 132
Angle of aperture 3D [°]	60 x 45; (nominal value without lens distortion correction)
Image repetition frequency 3D [Hz]	25
Measuring/setting range	
Measuring range [m]	< 30
Software / programming	
Parameter setting options	via PC with ifm Vision Assistant
Interfaces	
Communication interface	Ethernet
Ethernet	
Transmission standard	10Base-T; 100Base-TX
Transmission rate	10; 100
Protocol	TCP/IP; EtherNet/IP; PROFINET
Factory settings	IP address: 192.168.0.69
	subnet mask: 255.255.255.0
	gateway IP address: 192.168.0.201



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Ethernet - EtherNet/IP		
Usage type	data transmission	
Ethernet - PROFINET		
Usage type	data transmission	
Ethernet - TCP/IP		
Usage type	parameter setting; data transmission	
Operating conditions		
Ambient temperature	[°C]	-10...50
Storage temperature	[°C]	-40...85
Protection	IP 65; IP 67; IP 69K	
Max. immunity to extraneous light	[klx]	8; (with reduced measuring accuracy and repeatability: < 100)
Tests / approvals		
EMC	DIN EN 61000-6-4	radiation of interference / industrial environments
	DIN EN 61000-6-2	immunity / industrial environments
Shock resistance	DIN EN 60068-2-27	50 g / (11 ms) not repetitive
	DIN EN 60068-2-27	40 g / (6 ms) repetitive
Vibration resistance	DIN EN 60068-2-6	2 g / (10...150 Hz)
	DIN EN 60068-2-64	2.3 g RMS / (10...500 Hz)
Photobiological safety	exempt group; (DIN EN 62471)	
Electrical protection	DIN EN 61010-2-201	electrical supply only via PELV circuits
MTTF	[years]	43.08
Mechanical data		
Weight	[g]	1212
Dimensions	[mm]	72 x 65 x 89.2
Materials	housing: stainless steel (316L/1.4404); front pane: PMMA; function display: PA	
Tightening torque	[Nm]	< 0.8
Displays / operating elements		
Display	function	2 x LED, green Ethernet operation
	switching status	2 x LED, yellow OUT 1 OUT 2
Accessories		
Items supplied	Protective covers	
Remarks		
Pack quantity	1 pcs.	

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3D sensor

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Electrical connection - Ethernet

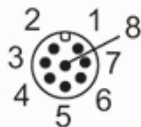
Connector: 1 x M12; coding: D



1	TD +
2	RD +
3	TD -
4	RD -

Electrical connection - Process connection

Connector: 1 x M12; coding: A



1	U+
2	trigger input
3	GND
4	switching output 1 digital or analogue
5	switching output 3 digital Ready
6	switching output 2 digital
7	switching input 1 digital
8	switching input 2 digital

Other data

field of view size with lens distortion correction

measuring range / distance [m]	Length [m]	Width [m]
0.50	0.37	0.50
1.00	0.75	1.00
2.00	1.50	2.00
3.00	2.25	3.00
4.00	3.00	4.00
5.00	3.75	5.00

**3D sensor**

O3DIRDKG/E1/GM/S/60

Accuracy of dimensioning of the object

measuring range / distance [m]	accuracy object size (Length, Width, Height) [mm]	accuracy object position (X, Y, Z coordinates) [mm]	accuracy angle of rotation [°]
typical value	typical value	typical value	typical value
1.0...3.0	± 10	± 5	± 1
Operating distance:		0.3 ... 5 m	
Image repetition frequency:		1 Hz	
information applies for:			
rectangular objects			
reflectivity:		6...90 % for non-glossy objects	
minimum object size:		100x100x100 mm	
object in centre of the image			
object speed:		< 0.2 m/s	

completeness monitoring

	object speed < 0.2 m/s [mm]	object speed > 0.2 m/s [mm]
typical value:		
minimum height	25	45
Image repetition frequency [Hz]		5
Operating distance [m]		0.3...5
max. packaging size (orthogonal packaging arrangement)		maximum number of objects 64
The image repetition frequency is reduced by using the position tracking function		

level and distance monitoring

measuring range / distance [m]	repeatability of the measured distance values on grey objects (18% reflectivity) [mm]	repeatability of ROI of 50x50 pixels on grey objects [mm]	accuracy (reflectivity 6-90%) [mm]
	typical value	typical value	typical value
0.3...1.0	8	0.3	± 7
1.0...3.0	12	0.4	± 7
3.0...5.0	20	0.7	± 10
5.0...7.0	30	1.0	± 15
7.0...8.0	50	1.7	± 20
measured in the centre of the image at an ambient temperature of 20°C			
Repeatability		1 σ	
The repeatability can be optimised with filter functions			
Temperature drift -10...+50 °C		0.2 mm/K	

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robot gripper navigation and depalletizing

	robot gripper navigation	depalletizing
Operating distance [m]	0.2...6	0.5...6
object types	any object shape	closed rectangular objects
minimum object size [mm]	20 x 20 x 20	50 x 50 x 50 at minimum operating distance
accuracy object position [mm]		
typical value:	± 10 rectangular objects	± 15
accuracy angle of rotation [°]		
typical value:	± 1 rectangular objects	± 3
object speed [m/s]	< 0.2	
Image repetition frequency [Hz]	2 for one object to be measured	1
maximum number of objects	20	