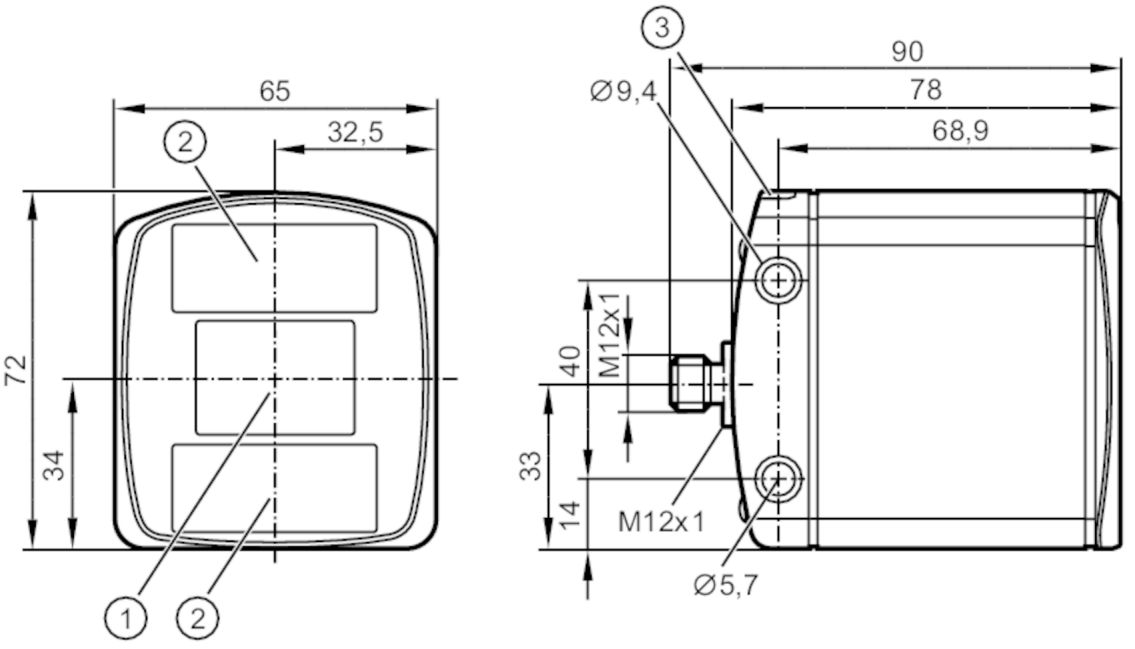
O3D314

3D sensor

O3DIRDKG/E1/GM/W/70



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

Product characteristics		
Type of light		infrared light
Communication interface		Ethernet
Dimensions	[mm]	72 x 65 x 90
Application		
Application		dimensioning of the object; completeness monitoring; Level monitoring; distance monitoring; volume monitoring; robot gripper navigation; depalletizing
Electrical data		
Operating voltage	[V]	20.4...28.8 DC; (EN 61131-2)
Current consumption	[mA]	420; (< 1600 mA: maximaler Mittelwert)
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
Inputs		
Number of digital inputs		2
Trigger		24 V PNP/NPN (IEC 61131-2 Typ 3)
Input circuit of digital inputs		24 V PNP/NPN; (configurable; IEC 61131-2 Typ 3)

O3D314

3D sensor

O3DIRDKG/E1/GM/W/70

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	[°]	70 x 51; (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
Ethernet - EtherNet/IP		
Usage type		data transmission
Ethernet - PROFINET		
Usage type		data transmission

O3D314

3D sensor

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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
Mechanical data			
Weight	[g]	1137.5	
Dimensions	[mm]	72 x 65 x 90	
Materials		housing: stainless steel (1.4404 / 316L); front lens: 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			
Components		USB memory stick with software and documentation	
Accessories (supplied)		Protective covers	
Remarks			
Pack quantity		1 pcs.	

Electrical connection - Ethernet

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

Connector: 1 x M12

O3D314

3D sensor

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Electrical connection - Process connection

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

Connector: 1 x M12

Other data

field of view size with lens distortion correction

measuring range / distance [m]	Length [m]	Width [m]
0.50	0.40	0.55
1.00	0.80	1.10
2.00	1.60	2.20
3.00	2.40	3.30
4.00	3.20	4.40
5.00	4.00	5.50

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	± 12	± 6	± 1.3

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

O3D314

3D sensor

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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	0.4	± 9
1.0...3.0	12	0.5	± 9
3.0...5.0	20	0.9	± 13
5.0...7.0	30	1.2	± 18
7.0...8.0	50	2.0	± 24

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	0.3 mm/K

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	