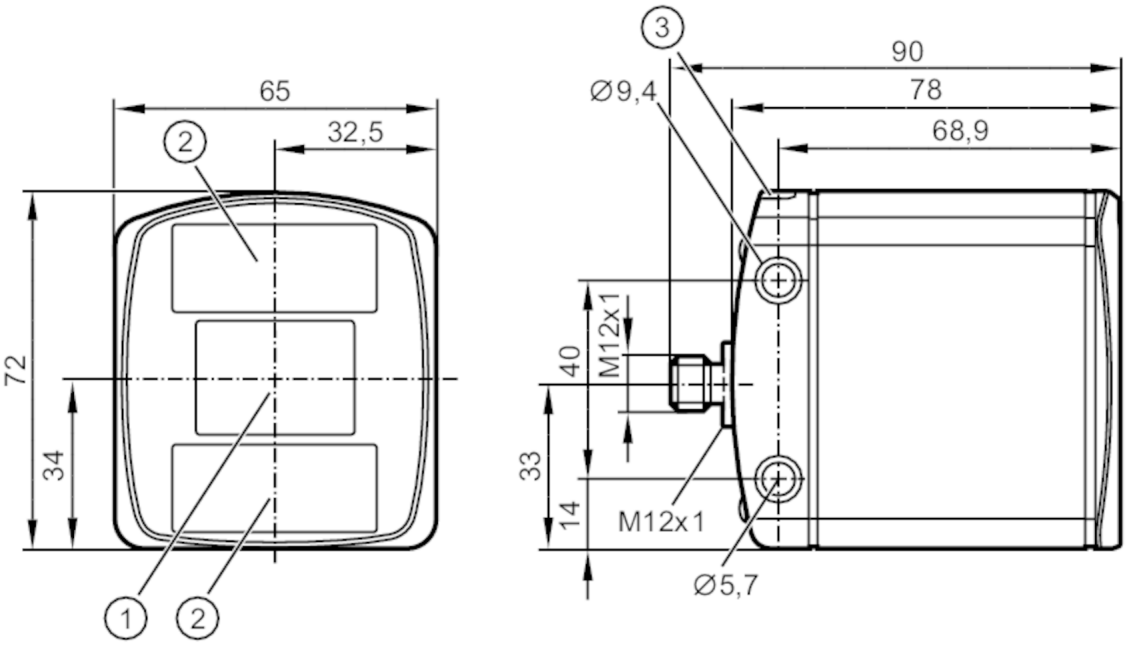
O3D312

3D sensor

O3DIRDKG/E1/GM/S/60



1 lens
2 Illumination unit
3 LED 2-color 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
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
Integrated 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 analog 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 analog outputs		1; (configurable)
Analog current output	[mA]	4...20
Max. load	[Ω]	500
Analog voltage output	[V]	0...10
Min. load resistance	[Ω]	10000
Precision analog output	[%]	1
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Resolution of analog output		12 bit
Monitoring range		
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	noise 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 safety		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	
Material		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 Power
		Switching status	2 x LED, yellow OUT 1 OUT 2
Accessories			
Items supplied		Protective covers	
Remarks			
Pack quantity		1 pcs.	
Electrical connection - Ethernet			

Connector: 1 x M12; coding: D

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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 analog
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

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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 center of the image at an ambient temperature of 20°C	
Repeatability	1 σ
The repeatability can be optimized 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	