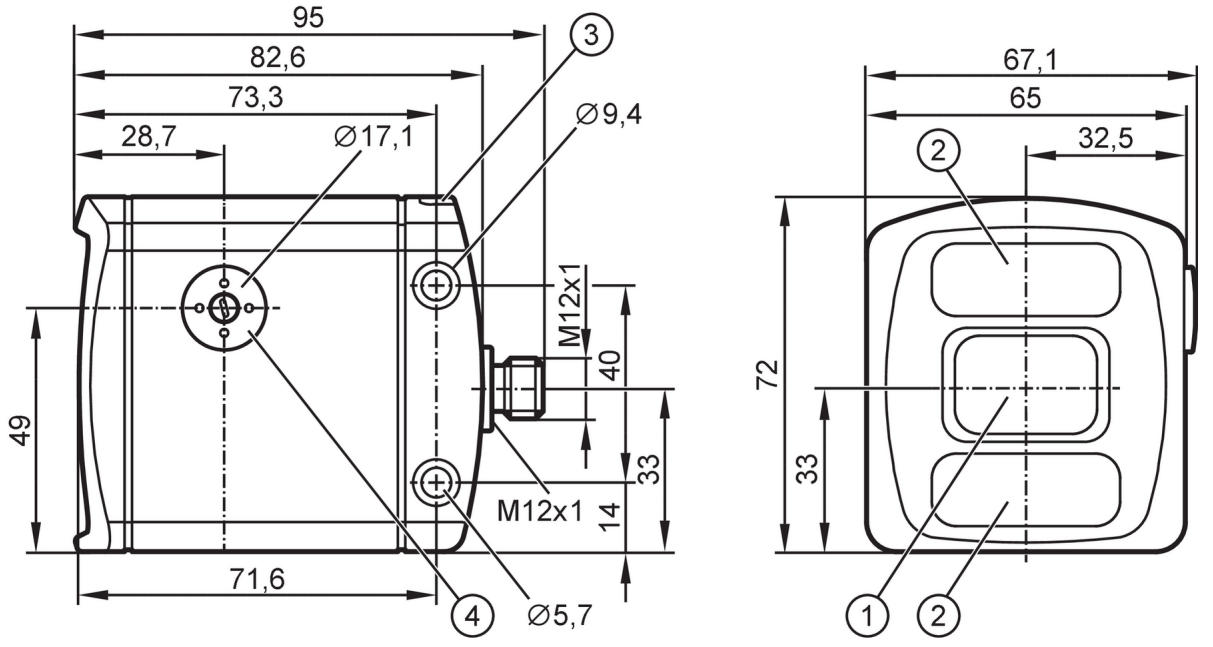
O3D301

ToF camera

O3DIRDKG/E1/GM/T/40



1 lens
2 Illumination unit
3 LED 2-color yellow/green
4 Focus adjustment screw

Product characteristics		
Type of light		Infrared light
Image resolution 3D	[px]	352 x 264
Angle of aperture 3D	[°]	40 x 30; (nominal value without lens distortion correction)
Max. reading rate	[Hz]	25
Housing		rectangular
Application		
Application		Camera for the output of 3D image data
Electrical data		
Operating voltage tolerance	[%]	-15...20
Operating voltage	[V]	24 DC; (EN 61131-2)
Current consumption	[mA]	350; (typical)
Max. current consumption	[mA]	830; (mean value at 24 VDC ; with switched outputs ; <1600 peak current pulsed)
Protection class		III
Overvoltage category		II
Type of light		Infrared light
Image sensor		PMD 3D ToF-Chip
Integrated lighting		yes; (infrared: 850 nm)
Inputs / outputs		
Number of inputs and outputs		Number of digital inputs: 1; Number of digital outputs: 2
Inputs		
Trigger		24 V PNP/NPN (IEC 61131-2 Typ 3)

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Number of digital inputs		1; (including trigger input)
Input circuit of digital inputs		24 V PNP/NPN; (configurable; IEC 61131-2 Typ 3)
Outputs		
Total number of outputs		2
Electrical design		24 V PNP/NPN; (EN 61131-2)
Number of digital outputs		2; (configurable)
Max. voltage drop switching output DC	[V]	1
Max. current load per output	[mA]	100
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Monitoring range		
Operating distance	[mm]	300...8000
Note on operating distance		object size: 200 x 200 mm reflectivity: 18 %
Image resolution 3D	[px]	352 x 264
Angle of aperture 3D	[°]	40 x 30; (nominal value without lens distortion correction)
Max. reading rate	[Hz]	25
Measuring/setting range		
Measuring range	[m]	< 30
Software / programming		
Parameter setting options		via PC with ifm Vision Assistant or XML-RPC; software API for C, C++ and Halcon
Interfaces		
Communication interface		Ethernet
Ethernet		
Number of Ethernet interfaces		1
Transmission standard		10Base-T; 100Base-TX
Transmission rate		10 MBit/s; 100 MBit/s
Protocol		TCP/IP
Factory settings		IP address: 192.168.0.69 subnet mask: 255.255.255.0 gateway IP address: 192.168.0.201
Usage type		Parameter setting; Data transmission
Operating conditions		
Ambient temperature	[°C]	-10...50
Storage temperature	[°C]	-40...85
Max. relative air humidity	[%]	90; (non condensing)
Max. height above sea level	[m]	4000
Protection		IP 65; IP 67
Pollution degree		3
Max. immunity to extraneous light	[klx]	8; (with reduced measuring accuracy and repeatability: < 100)

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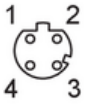
Tests / approvals			
EMC		DIN EN IEC 61000-6-4	radiation of interference / industrial environments
		DIN EN IEC 61000-6-2	noise immunity / industrial environments
Shock resistance		DIN EN 60068-2-27	50 g / (11 ms) not repetitive
		DIN EN 60068-2-27	40 g / (6 ms) repetitive
Vibration resistance		DIN EN 60068-2-6	2 g / (10...150 Hz)
		DIN EN 60068-2-64	2.3 g RMS / (10...500 Hz)
Laser protection class		1	
Notes on laser protection		Caution invisible laser radiation	
		EN 60825-1:2014 +A11:2021	
		IEC 60825-1:2014	
		Complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.	
Electrical safety		DIN EN IEC 61010-2-201	electrical supply only via PELV circuits
MTTF	[years]	45	
Mechanical data			
Weight	[g]	785	
Housing		rectangular	
Dimensions	[mm]	72 x 67.1 x 82.6	
Material		housing: diecast aluminium; front lens: gorilla glass; 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	
		spring washers	
Remarks			
Remarks		Repeatability and accuracy depend on the image settings and the environmental conditions.	
		The data sheet values apply to typical settings and conditions.	
Pack quantity		1 pcs.	

Electrical connection - Ethernet

Connector: 1 x M12; coding: D; Contacts: 4



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

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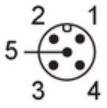
Electrical connection - Process connection

Connector: 1 x M12; coding: A; Contacts: 5



1	L+	
2	IN	DI (trigger input)
3	L-	
4	OUT1	DO1 (Ready)
5	OUT2	DO2 (Cascading)

DI: digital input; DO: digital output

Other data

Field of view size

	without lens distortion correction		with lens distortion correction	
Measuring range / distance [m]	Length [m]	Width [m]	Length [m]	Width [m]
0.50	0.27	0.36	0.26	0.35
1.00	0.53	0.73	0.52	0.69
2.00	1.07	1.46	1.04	1.39
3.00	1.60	2.19	1.56	2.08
4.00	2.13	2.92	2.08	2.78
5.00	2.67	3.65	2.61	3.47

repeatability of the distance measurement of an individual pixel

Measuring range / distance [m]	repeatability of the measured distance values on grey objects (18% reflectivity) [mm]	Accuracy [mm]
	typical value	typical value
0.3...1.0	± 8	± 7
1.0...3.0	± 12	± 7
3.0...5.0	± 20	± 10
5.0...7.0	± 30	± 15
7.0...8.0	± 50	± 20

measured in the center of the image at an ambient temperature of 20°C

The repeatability can be optimized with filter functions

Repeatability	1 σ

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Relative accuracy

Relative accuracy	± 4 mm
Temperature drift -10...+50 °C	0.2 mm/K
measured at a reflectivity of 18% to 90%	

Parameter setting options

Parameter	Setting range	Factory setting
Exposure time [ms]	0.002...10	5
dynamic range	low; Normal operation ; high	Normal operation
filter	Time function:	
	mean value; adaptive exponential	disabled
	3D function:	
	mean value, median, bilateral function	disabled
Trigger	Continuous; data interface; positive edge; negative edge;positive and negative edge	Continuous
Image repetition frequency [Hz]	0.02...25	5

data format

data type	data value	Remarks
Distance [mm]	0...65535 uint16	radial distance
Cartesian coordinates x,y,z [mm]	-32767...32767 int16	x,y: lateral position z: vertical distance
amplitude	0...65535 uint16	object brightness