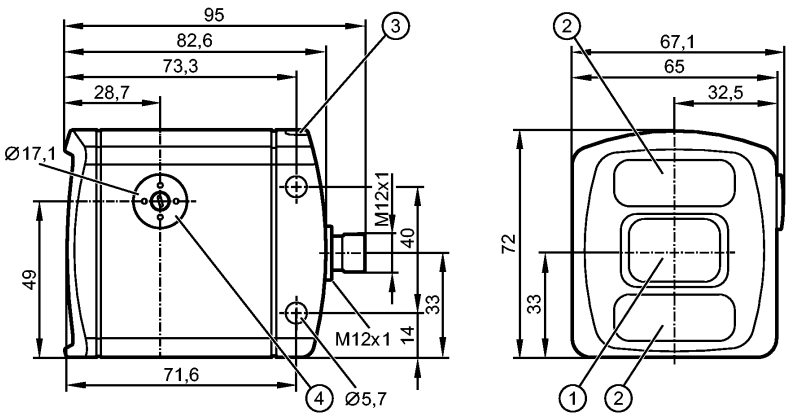
efector250

O3D311

O3DIRDKG/E1/GM/T/40

Object recognition



1: lens
2: Illumination unit
3: LED 2 colours (yellow/green)
4: Focus adjustment screw

CE

Product characteristics		
3D camera		
Connector		
PMD 3D ToF (Time of Flight) camera for the output of 3D image data		
Device interfaces: digital input/output; Ethernet		
Angle of aperture 40° x 30° (horizontal x vertical)		
Image resolution 176 x 132 pixels		
Electrical data		
Operating voltage	[V]	20.4...28.8 DC; to EN 61131-2
Current consumption	[mA]	< 2400 peak current pulsed; typ. mean value 420
Power consumption	[W]	10 *)
Protection class		III (PELV)
Type of sensor		PMD 3D ToF chip
Inputs		
Trigger		external; 24 V PNP/NPN to IEC61131-2 type 3
Outputs		
Output		max. 2 (configurable) / 24 V PNP/NPN to IEC 61131-2
Max. current load per output	[mA]	100
Voltage drop [V]		<1
Short-circuit protection		pulsed
Overload protection		yes
Range		
Operating distance	[mm]	300...10000 **)
Max. measuring range [m]		30 ***)
Resolution pixels	[pixel]	176 x 132
Angle of aperture	[°]	40 x 30 ****)
Image repetition rate max.	[Hz]	25
Software / programming		
Parameter setting options		via PC with ifm Vision Assistant or XML-RPC

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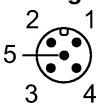
Software API		C, C++, Halcon
Interfaces		
parameter setting interface		Ethernet TCP/IP: 10BaseT / 100Base-TX
Process interface		Ethernet TCP/IP: 10Base-T / 100Base-TX, Ethernet/IP
IP address		192.168.0.69
subnet mask		255.255.255.000
gateway IP address		192.168.0.201
Environment		
Immunity to extraneous light	[klx]	8; *****)
Ambient temperature	[°C]	-10...50
Storage temperature	[°C]	-40...85
Protection		IP 66 / IP 67
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)
Electrical safety		DIN EN 61010-2-201 Electrical supply only via PELV circuits
Photobiological safety		Infrared LED (850 nm) Exempt group (to DIN EN 62471)
Mechanical data		
Housing materials		housing: 1.4404 (V4A); window: PMMA; Function display: PA (polyamide)
Weight	[kg]	1.162
Displays / operating elements		
Display		Function display 2 LED green Ethernet Operation 2 LED yellow Switching output 1 Switching output 2
Electrical connection		
Connection		M12 connector

Wiring



M12: supply
1: U+
2: trigger input
3: GND
4: Switching output 1 Ready
5: Switching output 2 Cascading

M12: Ethernet
1: TD +
2: RD +
3: TD -
4: RD -

Other technical data		
Integrated lighting		Infrared LED (850 nm) Invisible radiation of light-emitting diodes
Accessories		

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Accessories (included)	USB memory stick with software and documentation; Protective covers

Remarks

Remarks	*) typical value **) with reflectivity of 18 % and object size of 200 mm x 200 mm ***) depending on settings and reflectivity, typically up to 6000 mm ****) nominal value without lens distortion correction *****) up to 100 klx possible with reduced measuring accuracy and repeatability
Pack quantity [piece]	1

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

Measured in the centre of the image at an ambient temperature of 20°C .

The repeatability can be optimised with the filter functions.

Measuring range / distance [m]	Typical repeatability (1 Sigma) of the measured distance values on grey objects (18 % reflectivity) [mm]	Typical accuracy [mm]
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

Temperature drift

Typ. temperature drift of -10...+50 °C [mm/K]	0.2

Relative accuracy

Measured at a reflectivity of 18% to 90%.

Relative accuracy, typical [mm]	± 4

Setting parameters

Parameter	Setting range	Factory setting
Exposure time [ms]	0.002...10	5
Dynamics	low; normal; high	normal

filter	Timer: disabled, average value, adaptive exponential 3D function: disabled, average value, median, bilateral	disabled
Trigger mode	continuous Process interface positive edge negative edge positive and negative edge	continuous
Image repetition frequency [Hz]	0.02...25	5

Data format

Data type	Data value	Remark
Distance [mm]	0...65535 (16 bit unsigned integer)	Radial distance
Cartesian coordinates z,y,z [mm]	-32767...32767 (16 bit signed integer)	x,y: lateral position z: vertical distance
Amplitude [a.u.]	0...65535 (16 bit unsigned integer)	Object brightness