

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



Product characteristics

3D sensor

Connector

Device interfaces: digital input/output; analogue output; Ethernet

Angle of aperture 40° x 30° (horizontal x vertical)

Image resolution 176 x 132 pixels

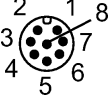

PMD 3D ToF (Time of Flight) sensor for

- dimensioning of the object: determination / comparison of size, position, orientation, measurement quality
- completeness monitoring
- level monitoring
- distance monitoring

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		
Circuit		2 inputs (configurable), 24 V PNP/NPN to IEC 61131-2 type 3
Trigger		external; 24 V PNP/NPN to IEC61131-2 type 3
Outputs		
Output		digital outputs: 3 (configurable), 24 V PNP/NPN acc. to IEC 61131-2 analogue outputs: 1 output (configurable as current or voltage output **)
Max. current load per output	[mA]	100
Voltage drop	[V]	< 1
Short-circuit protection		pulsed
Overload protection		yes
Analogue output		
Accuracy (of the final value)		1 % ***)
Resolution		12 Bit
current output	[mA]	4...20
- Max. load	[Ω]	500
- Min. load	[Ω]	230

# O3D310 - 3D sensor - eclass: 27310205 / 27-31-02-05

voltage output [V]	0..10
- Min. load [ $\Omega$ ]	10000
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
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 65 / 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]	0.466
Displays / operating elements	
Display	Function display 2 LED green Ethernet Operation 2 LED yellow Switching input/output 1 Switching input/output 2
Electrical connection	
Connection	M12 connector
<b>Wiring</b>	
	M12: Supply and switching inputs/outputs 1: U+ 2: trigger input 3: GND 4: Switching output 1 ( digital or analogue ) 5: Switching output 3 Ready 6: Switching output 2 ( digital ) 7: Switching input 1 8: Switching input 2
	M12: Ethernet 1: TD + 2: RD + 3: TD - 4: RD -
Other technical data	

**O3D310 - 3D sensor - eclass: 27310205 / 27-31-02-05**

Integrated lighting	Infrared LED (850 nm) Invisible radiation of light-emitting diodes
Accessories	
Accessories (included)	USB memory stick with software and documentation; Protective covers
Remarks	
Remarks	<p>*) typical value                  **) The analog output may be used instead of digital output 1                  ***) function mode current output (see operating instructions)                  ****) 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</p>
Pack quantity [piece]	1
Other data	

Field of view size with lens distortion correction		
Measuring range / distance [m]	Length [m]	Width [m]
0.50	0.26	0.35
1.00	0.52	0.69
2.00	1.04	1.39
3.00	1.56	2.08
4.00	2.08	2.78
5.00	2.61	3.47

Setting parameters	
Parameter	Setting range
Trigger mode	continuous Process interface positive edge negative edge

**Dimensioning of the object**

Accuracy of dimensioning of the object			
Indications valid for - rectangular objects - reflectivity 6...90 %, non-shiny - minimum object size 100 x 100 x 100 mm - object in centre of the image - object speed < 0.2 m/s			
Measuring range / distance [m]	Typical accuracy of the measured values for object size (length, width, height) [mm]	Typical accuracy of the measured values for object position (coordinates x, y, z) [mm]	Typical accuracy of the measured values for angle of rotation [°]
1.0...3.0	± 10	± 5	± 1

More data for dimensioning of the object	
Image repetition frequency [Hz]	1
Operating distance [m]	0.3...5

**Completeness monitoring**

Minimum height of objects for completeness monitoring		
	Object speed 0...0.2 m/s	Object speed > 0.2 m/s
Minimum height (typical)	25 mm	45 mm

More data for completeness monitoring	
The image repetition frequency is reduced by using the anchor function.	
Image repetition frequency [Hz]	5
Operating distance [m]	0.3...5
Packaging size (orthogonal packaging arrangement)	64 objects

**Level and distance monitoring**

<b>Repeatability with level and distance monitoring</b>			
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 repeatability (1 sigma) of an ROI (setting "ROI average value") of 50x50 pixels on grey objects (18 % reflectivity) [mm]	Typical accuracy (6-90 % reflectivity) [mm]
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
<b>Temperature drift</b>			
Typ. temperature drift of -10...+50 °C [mm/K]			0.2