

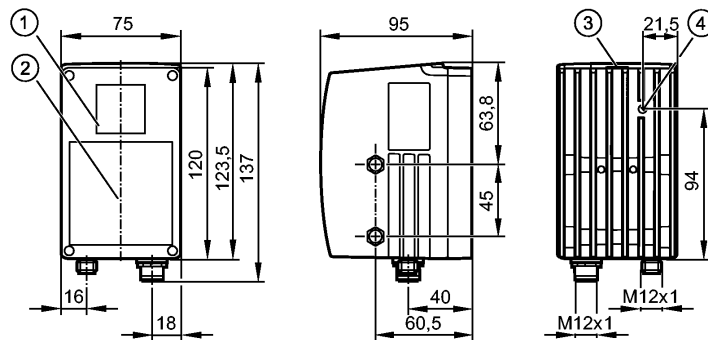
Please note the wiring of the sensor and the sockets (see data sheet) as for 8-pole sockets the core colours are not standardised.

efector250
O3D200



PMD 3D SENSOR

Object recognition



- 1: lens
- 2: Illumination unit
- 3: Display / buttons / LEDs
- 4: Focus setting



Made in Germany

Product characteristics

PMD 3D sensor

Connector

Angle of aperture 30° x 40°

(horizontal x vertical)

Electrical data

Operating voltage [V] 24 DC ± 10 %

Current consumption [mA] < 2500 *)

Power consumption [W] 16

Protection class III

Type of sensor PMD 3D chip, resolution 64 x 48 pixels

Inputs

max. 2 (configurable) / 24 V PNP to IEC 61131-2 type 2

Trigger

external; 24 V PNP to IEC61131-2 type 2

Outputs

max. 2 (configurable) / 24 V PNP

Output

Max. current load per output [mA] 100

Voltage drop [V] 1

Short-circuit protection pulsed

Overload protection yes

Analogue output

current output [mA] 4...20 mA

- Max. load [Ω] 300

voltage output [V] 0...10 V

- Min. load [Ω] 10000

Range

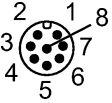
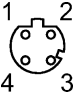
Resolution pixels [pixel] 64 x 48

angle of aperture [°] 30 x 40

max. sampling rate (adjustable) [Hz] 20

Software / programming

O3D200 - PMD 3D sensor - eclass: 27310205 / 27-31-02-05

Parameter setting options	via 2 pushbuttons and 10-segment display or via PC / notebook with operating software
Interfaces	
parameter setting interface	Ethernet; 10Base-T / 100Base-TX
IP address	192.168.000.69
subnet mask	255.255.255.000 (Class C)
gateway IP address	192.168.000.201
MAC address	see type label
Environment	
Ambient temperature [°C]	-10...50
Storage temperature [°C]	-40...85
Protection	IP 67
Tests / approvals	
MTTF [Years]	55
Mechanical data	
Housing materials	housing: diecast aluminium; window: PMMA; display window: PC
Weight [kg]	1.205
Displays / operating elements	
Display	4 x LED yellow 4 x LED green 4-digit 10-segment display
Electrical connection	
Connection	M12 connector
Wiring	
	<p>Process connection M12</p> <ul style="list-style-type: none"> 1: U+ 2: trigger input 3: 0 V 4: OUT 1 / analogue output 5: Ready 6: OUT 2 7: IN 1 / Switching input 1 8: IN 2 / Switching input 2
	<p>Parameter setting connection M12</p> <ul style="list-style-type: none"> 1: TD + 2: RD + 3: TD - 4: RD -
Other technical data	
Integrated lighting	Infrared LED (850 nm) Invisible radiation of light-emitting diodes class 1
Remarks	
Remarks	*) peak current I max < 2.5 A (pulsed) / typ. 600 mA DC
Pack quantity [piece]	1
Other data	

Field of view size				
Measuring range / distance [mm]	Length [mm]	Width [mm]	Center pixel [mm]	Minimum object surface [mm]
500	420	290	7 x 7	13 x 13
1000	840	580	13 x 13	26 x 26
1500	1260	870	20 x 20	39 x 39
2000	1680	1160	26 x 26	53 x 53
2500	2100	1450	33 x 33	66 x 66
3000	2520	1740	39 x 39	79 x 79
3500	2940	2030	46 x 46	92 x 92
4000	3360	2320	53 x 53	105 x 105
4500	3780	2610	59 x 59	118 x 118
5000	4200	2900	66 x 66	131 x 131

O3D200 - PMD 3D sensor - eclass: 27310205 / 27-31-02-05

5500	4620	3190	72 x 72	144 x 144
6000	5040	3480	79 x 79	158 x 158

For reliable detection the object must be detected by at least two pixels

Typical repeatability (6 Sigma) of the measured distance values

Measuring range / distance [mm]	white 90% [mm]	grey 18% [mm]	black 6% [mm]
500	± 5	± 8	± 16
1000	± 5	± 8	± 16
1500	± 5	± 9	± 17
2000	± 6	± 9	± 20
2500	± 6	± 10	± 23
3000	± 6	± 13	± 32
3500	± 6	± 14	± 34
4000	± 7	± 17	± 45
4500	± 7	± 20	± 58
5000	± 8	± 24	± 74
5500	± 9	± 29	
6000	± 10	± 34	

The values apply at:

- factory setting with the exposure time adjusted to object distance
- constant ambient conditions: 23 ° C / 960 hPa
- extraneous light on object max.: 8 klx
- minimum power on time in minutes: 10

Recommended exposure times

Measuring range / distance [mm]	white 90% [ms]	grey 18% [ms]	black 6% [ms]
500	8	9	14
1000	9	17	27
1500	11	27	27
2000	15	27	27
2500	19	27	27
3000	24	27	27
3500	27	27	27
4000	27	27	27
4500	27	27	27
5000	27	27	27
5500	27	27	
6000	27	27	

Applies to normal dynamics and bordered background

Typical range

Exposure time [ms]	Min. distance white 90% [mm]	Max. distance white 90% [mm]	Min. distance grey 18% [mm]	Max. distance grey 18% [mm]	Min. distance black 6% [mm]	Max. distance black 6% [mm]
7.3	210	2010	90	900	50	520
10.3	850	8050	380	3600	220	2080
13.9	1240	11730	550	5250	320	3030
17.1	1500	14230	670	6360	390	3670
20.3	1720	16350	770	7310	440	4220
23.5	1920	18220	860	8150	500	4710
27.1	2120	20120	950	9000	550	5200

Applies to normal dynamics and bordered background

Unambiguous range

Parameter setting	bordered	open-ended
Maximum background distance [mm]	6500	48000
Maximum measuring range [mm]	6500	6500

Accuracy of the distance measurement of an individual pixel

Cause	Typical remaining deviation
Reflectivity differences	± 10 mm
Ambient temperature	0.5 mm / K
Irregularly triggered measurements (burst)	± 10 mm

The values apply at:

- constant ambient conditions: 23 ° C / 960 hPa
- extraneous light on object max.: 8 klx

- minimum power on time in minutes: 10

Typical repeatability of the process values distance / level with minimum object surface

Measuring range / distance [mm]	white 90% [mm]	grey 18% [mm]	black 6% [mm]
500	± 3	± 5	± 10
1000	± 3	± 5	± 10
1500	± 3	± 5	± 11
2000	± 4	± 6	± 12
2500	± 4	± 6	± 14
3000	± 4	± 8	± 19
3500	± 4	± 8	± 21
4000	± 4	± 10	± 27
4500	± 5	± 12	± 35
5000	± 5	± 15	± 45
5500	± 6	± 17	
6000	± 6	± 20	

The values apply at:

- factory setting with the exposure time adjusted to object distance
- constant ambient conditions: 23 ° C / 960 hPa
- extraneous light on object max.: 8 klx
- minimum power on time in minutes: 10

Typical repeatability of the process value volume

Measuring range / distance [mm]	Typical reference volume [l]	white 90% [%]	grey 18% [%]	black 6% [%]
500	1.5	3	5	8
1000	12.3	2	3	5
1500	42	2	3	4
2000	99	2	2	3
2500	193	2	2	3
3000	333	2	2	4
3500	529	2	2	3
4000	790	2	2	4
4500	1125	2	2	4
5000	1543	2	2	4
5500	2054	2	3	
6000	2667	2	3	

Referred to a cubic volume the edge length of which is 1/3 of the distance

- factory setting with the distance for adapted exposure time
- constant ambient conditions: 23 ° C / 960 hPa
- extraneous light on the object of max. 8 klx
- only after unit powered up for 10 minutes