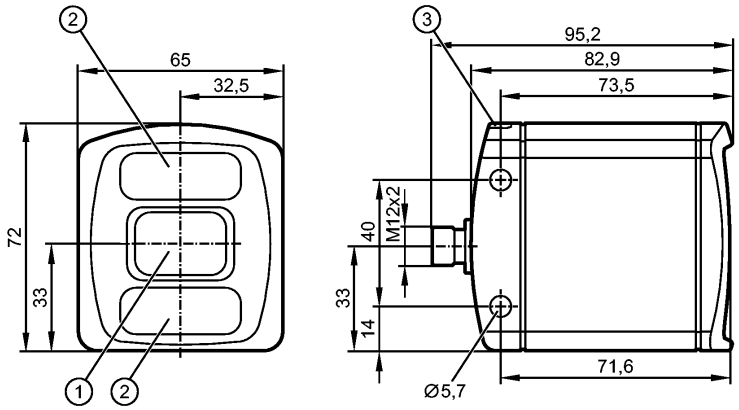
efector250

# O3D303

O3DIRDKG/E1/GM/S/60

**Object recognition**




1: lens
2: Illumination unit
3: LED 2 colours (yellow/green)

Made in Germany

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 60° x 45° (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 1 |
| **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** | | |
| Max. measuring range [m] | | 30 *) |
| Operating distance | [mm] | 300...8000 **) |
| Resolution pixels | [pixel] | 176 x 132 |
| Angle of aperture | [°] | 60 x 45 |
| Image repetition rate max. | [Hz] | 14 |
| **Software / programming** | | |
| Parameter setting options | | via PC with ifm Vision Assistant or XML-RPC |
| Software API | | C, C++, Matlab, Halcon |

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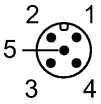
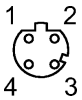
| **Interfaces** | | |
| parameter setting interface | Ethernet TCP/IP: 10BaseT / 100Base-TX | |
| Process interface | Ethernet TCP/IP: 10BaseT / 100Base-TX | |
| IP address | 192.168.0.69 | |
| subnet mask | 255.255.255.000 | |
| gateway IP address | 192.168.0.201 | |
| **Environment** | | |
| Immunity 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<br>DIN EN 61000-6-2 | radiation of interference / industrial environments<br>noise immunity / industrial environments |
| Shock resistance | DIN EN 60068-2-27:<br>DIN EN 60068-2-27: | 50 g / (11 ms) not repetitive<br>40 g / (6 ms) repetitive |
| Vibration resistance | DIN EN 60068-2-6:<br>DIN EN 60068-2-64: | 2 g / (10...150 Hz)<br>2.3 g / (10...500 Hz) |
| Electrical safety | EN61131-2; electrical supply only via PELV circuits | |
| Photobiological safety | Infrared LED (850 nm)<br>Exempt group (to DIN EN 62471) | |
| **Mechanical data** | | |
| Housing materials | housing: diecast aluminium; window: Gorilla Glass | |
| **Displays / operating elements** | | |
| Display | Function display 2 LED green Ethernet Operation<br>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 -

| | | |
|---|---|---|
| **Accessories** | | |
| Accessories (included) | USB memory stick with software and documentation; Protective covers | |
| **Remarks** | | |
| Remarks | *) depending on settings and reflectivity<br>**) with reflectivity of 18 % and object size of 200 mm x 200 mm<br>***) up to 100 klx possible with reduced measuring accuracy and repeatability | |

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**Object recognition**

| | | |
|---|---|---|
| Pack quantity | [piece] | 1 |

## Other data

### Field of view size

| Measuring range / distance [mm] | Length [mm] | Width [mm] |
|---|---|---|
| 500 | 433 | 577 |
| 1000 | 866 | 1155 |
| 2000 | 1732 | 2309 |
| 3000 | 2598 | 3464 |
| 4000 | 3464 | 4619 |
| 5000 | 4330 | 5774 |

### 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 [mm] | Typical repeatability (1 Sigma) of the measured distance values on grey objects (18 % reflectivity) [mm] | Typical accuracy [mm] |
|---|---|---|
| 300...1000 | ± 8 | ± 7 |
| 1000...3000 | ± 12 | ± 7 |
| 3000...5000 | ± 20 | ± 10 |
| 5000...7000 | ± 30 | ± 15 |
| 7000...8000 | ± 50 | ± 20 |

### Temperature drift

| | |
|---|---|
| Typ. temperature drift of -10...50 °C [mm] | ± 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<br>3D function: disabled, average value, median, bilateral | disabled |
| Trigger mode | continuous<br>Process interface<br>positive edge<br>negative edge<br>positive and negative edge | continuous |
| Image repetition frequency [Hz] | 0.02...25 | 5 |

**Data format**

| Data type | Data value | Remark |
|---|---|---|
| Distance [mm] | 0...65535 | Radial distance |
| Cartesian coordinates z,y,z [mm] | -32767...32767 | x,y: lateral position<br>z: vertical distance |
| Amplitude [a.u.] | 0...65535 | Object brightness |