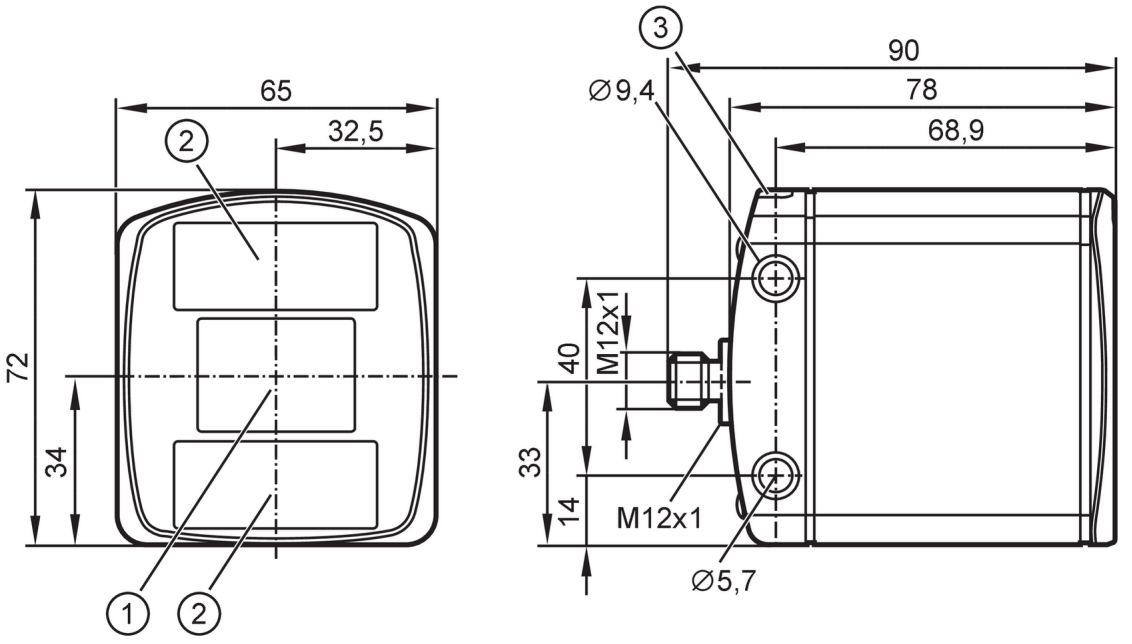
# O3D313

## ToF camera

O3DIRDKG/E1/GM/S/60




1 lens
2 Illumination unit
3 LED 2-colour yellow/green

| | | |
|---|---|---|
| **Product characteristics** | | |
| Type of light | | infrared light |
| Image resolution 3D | [px] | 352 x 264 |
| Angle of aperture 3D | [°] | 60 x 45; (nominal value without lens distortion correction) |
| Image repetition frequency 3D | [Hz] | 25 |
| Housing | | rectangular |
| **Application** | | |
| Application | | Camera for the output of 3D image data |
| **Electrical data** | | |
| Operating voltage | [V] | 20.4...28.8 DC; (EN 61131-2) |
| Current consumption | [mA] | 420; (maximum mean value: < 1600 mA) |
| Max. current consumption | [mA] | 2400; (peak current pulsed) |
| Power consumption | [W] | 10; (typical value) |
| Protection class | | III |
| Overvoltage category | | II |
| Type of light | | infrared light |
| Image sensor | | PMD 3D ToF-Chip |
| Internal lighting | | infrared: 850 nm invisible radiation LED |
| **Inputs / outputs** | | |
| Number of inputs and outputs | | Number of digital inputs: 1; Number of digital outputs: 2 |
| **Inputs** | | |
| Trigger | | external; 24 V PNP/NPN (IEC 61131-2 Typ 3) |
| Number of digital inputs | | 1 |

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| | | |
|---|---|---|
| **Outputs** | | |
| Number of digital outputs | | 2;  (configurable) |
| Output function | | 24 V PNP/NPN;  (EN 61131-2) |
| Max. voltage drop switching output DC | [V] | 1 |
| Max. current load per output | [mA] | 100 |
| Short-circuit protection | | yes |
| Type of short-circuit protection | | pulsed |
| Overload protection | | yes |
| **Detection zone** | | |
| 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 | [°] | 60 x 45; (nominal value without lens distortion correction) |
| Image repetition frequency 3D | [Hz] | 25 |
| **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 | | |
| Transmission standard | | 10Base-T; 100Base-TX |
| Transmission rate | | 10; 100 |
| 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 |
| Protection | | IP 65; IP 67; IP 69K |
| Max. immunity to extraneous light | [klx] | 8;  (with reduced measuring accuracy and repeatability: < 100) |

| | | |
|---|---|---|
| **Tests / approvals** | | |
| EMC | DIN EN 61000-6-4 | radiation of interference / industrial environments |
| | DIN EN 61000-6-2 | 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) |
| Photobiological safety | exempt group;  (DIN EN 62471) | |
| Electrical safety | DIN EN 61010-2-201 | electrical supply only via PELV circuits |

# O3D313

## ToF camera

O3DIRDKG/E1/GM/S/60

| | | |
|---|---|---|
| MTTF | [years] | 45 |

### Mechanical data

| | | |
|---|---|---|
| Weight | [g] | 1189 |
| Housing | | rectangular |
| Dimensions | [mm] | 72 x 65 x 78 |
| Materials | | housing: stainless steel (316L/1.4404); front pane: PMMA; function display: PA |
| Tightening torque | [Nm] | < 0.8 |

### Displays / operating elements

| | | |
|---|---|---|
| Display | function | 2 x LED, green Ethernet operation |
| | switching status | 2 x LED, yellow OUT 1 OUT 2 |

### Accessories

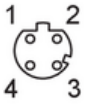
| | |
|---|---|
| Items supplied | Protective covers |

### 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

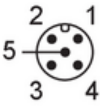
Connector: 1 x M12; coding: D; Contacts: 4




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

### Electrical connection - Process connection

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




| | |
|---|---|
| 1 | U+ |
| 2 | trigger input |
| 3 | GND |
| 4 | switching output 1 Ready |
| 5 | switching output 2 cascading |

# O3D313

## ToF camera

O3DIRDKG/E1/GM/S/60

## 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 | 0.40 | 0.56 | 0.37 | 0.50 |
| 1.00 | 0.80 | 1.13 | 0.75 | 1.00 |
| 2.00 | 1.60 | 2.26 | 1.50 | 2.00 |
| 3.00 | 2.40 | 3.39 | 2.25 | 3.00 |
| 4.00 | 3.20 | 4.52 | 3.00 | 4.00 |
| 5.00 | 4.00 | 5.65 | 3.75 | 5.00 |

### 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 centre of the image at an ambient temperature of 20°C

The repeatability can be optimised with filter functions

| | |
|---|---|
| Repeatability | 1 σ |

### Relative accuracy

| | |
|---|---|
| Relative accuracy | ± 4 mm |
| Temperature drift -10...+50 °C | 0.2 mm/K |

measured at a reflectivity of 18% to 90%

# O3D313

## ToF camera

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### 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 | deactivated |
| | 3D function: | |
| | mean value, median, bilateral function | deactivated |
| 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 |