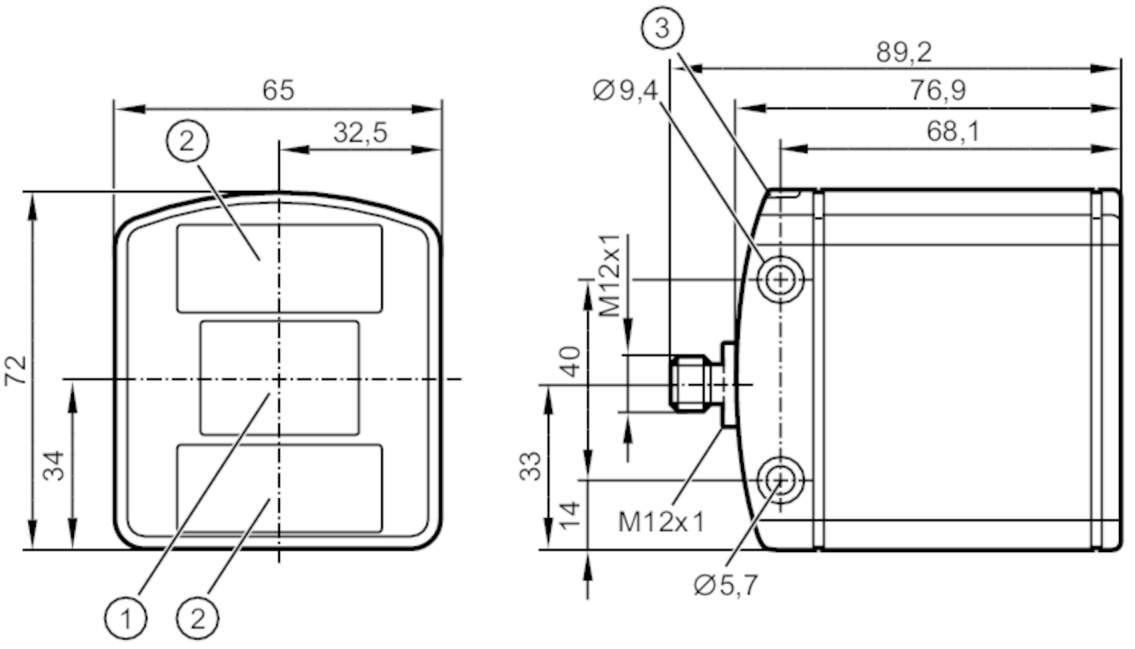
# O3D352

## 3D sensor

O3DIRDKG/E1/GM/S/60




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

| | | |
|---|---|---|
| **Product characteristics** | | |
| Type of light | | infrared light |
| Image resolution 3D | [px] | 176 x 132 |
| Angle of aperture 3D | [°] | 60 x 45; (nominal value without lens distortion correction) |
| Image repetition frequency 3D | [Hz] | 25 |
| **Application** | | |
| Application | | dimensioning of the object; completeness monitoring; Level monitoring; distance monitoring; volume monitoring; robot gripper navigation; depalletizing |
| **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 |
| Type of light | | infrared light |
| Image sensor | | PMD 3D ToF-Chip |
| Internal lighting | | yes; (infrared: 850 nm invisible radiation LED) |
| **Inputs / outputs** | | |
| Number of inputs and outputs | | Number of digital inputs: 2; Number of digital outputs: 3; Number of analogue outputs: 1 |

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|---|---|---|
| **Inputs** | | |
| Trigger | | 24 V PNP/NPN (IEC 61131-2 Typ 3) |
| Number of digital inputs | | 2 |
| Input circuit of digital inputs | | 24 V PNP/NPN; (configurable; IEC 61131-2 Typ 3) |
| **Outputs** | | |
| Total number of outputs | | 3 |
| Number of digital outputs | | 3; (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 |
| Number of analogue outputs | | 1; (configurable) |
| Analogue current output | [mA] | 4...20 |
| Max. load | [Ω] | 500 |
| Analogue voltage output | [V] | 0...10 |
| Min. load resistance | [Ω] | 10000 |
| Precision analogue output | [%] | 1 |
| Short-circuit protection | | yes |
| Type of short-circuit protection | | pulsed |
| Overload protection | | yes |
| Resolution of analogue output | | 12 bit |
| **Detection zone** | | |
| Operating distance | [mm] | 300...8000 |
| Note on operating distance | | object size: 200 x 200 mm |
| | | reflectivity: 18 % |
| Image resolution 3D | [px] | 176 x 132 |
| Angle of aperture 3D | [°] | 60 x 45; (nominal value without lens distortion correction) |
| Image repetition frequency 3D | [Hz] | 25 |
| **Measuring/setting range** | | |
| Measuring range | [m] | < 30 |
| **Software / programming** | | |
| Parameter setting options | | via PC with ifm Vision Assistant |
| **Interfaces** | | |
| Communication interface | | Ethernet |
| Ethernet | | |
| Transmission standard | | 10Base-T; 100Base-TX |
| Transmission rate | | 10; 100 |
| Protocol | | TCP/IP; EtherNet/IP; PROFINET |
| Factory settings | | IP address: 192.168.0.69 |
| | | subnet mask: 255.255.255.0 |
| | | gateway IP address: 192.168.0.201 |

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|---|---|---|---|
| **Ethernet - EtherNet/IP** | | | |
| Usage type | | data transmission | |
| **Ethernet - PROFINET** | | | |
| Usage type | | data transmission | |
| **Ethernet - TCP/IP** | | | |
| Usage type | | parameter setting; data transmission | |
| **Operating conditions** | | | |
| Ambient temperature | [°C] | -10...50 | |
| Storage temperature | [°C] | -40...85 | |
| Protection | | IP 65; IP 67 | |
| 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 protection | | DIN EN 61010-2-201 | electrical supply only via PELV circuits |
| **Mechanical data** | | | |
| Weight | [g] | 728.9 | |
| Dimensions | [mm] | 72 x 65 x 89.2 | |
| Materials | | housing: diecast aluminium; front pane: Gorilla Glas; 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** | | | |
| Pack quantity | | 1 pcs. | |

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## Electrical connection - Ethernet

Connector: 1 x M12; coding: D

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

## Electrical connection - Process connection

Connector: 1 x M12; coding: A

| | |
|---|---|
| 1 | U+ |
| 2 | trigger input |
| 3 | GND |
| 4 | switching output 1 digital or analogue |
| 5 | switching output 3 digital Ready |
| 6 | switching output 2 digital |
| 7 | switching input 1 digital |
| 8 | switching input 2 digital |

## Other data

**field of view size with lens distortion correction**

| measuring range / distance [m] | Length [m] | Width [m] |
|---|---|---|
| 0.50 | 0.37 | 0.50 |
| 1.00 | 0.75 | 1.00 |
| 2.00 | 1.50 | 2.00 |
| 3.00 | 2.25 | 3.00 |
| 4.00 | 3.00 | 4.00 |
| 5.00 | 3.75 | 5.00 |

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### Accuracy of dimensioning of the object

| measuring range / distance [m] | accuracy object size (Length, Width, Height) [mm] | accuracy object position (X, Y, Z coordinates) [mm] | accuracy angle of rotation [°] |
|---|---|---|---|
| typical value | typical value | typical value | typical value |
| 1.0...3.0 | ± 10 | ± 5 | ± 1 |

| | |
|---|---|
| Operating distance: | 0.3 ... 5 m |
| Image repetition frequency: | 1 Hz |
| information applies for: | |
| rectangular objects | |
| reflectivity: | 6...90 % for non-glossy objects |
| minimum object size: | 100x100x100 mm |
| object in centre of the image | |
| object speed: | < 0.2 m/s |

### completeness monitoring

| | object speed < 0.2 m/s [mm] | object speed > 0.2 m/s [mm] |
|---|---|---|
| typical value: | | |
| minimum height | 25 | 45 |

| | |
|---|---|
| Image repetition frequency [Hz] | 5 |
| Operating distance [m] | 0.3...5 |
| max. packaging size (orthogonal packaging arrangement) | maximum number of objects 64 |
| The image repetition frequency is reduced by using the position tracking function | |

### level and distance monitoring

| measuring range / distance [m] | repeatability of the measured distance values on grey objects (18% reflectivity) [mm] | repeatability of ROI of 50x50 pixels on grey objects [mm] | accuracy (reflectivity 6-90%) [mm] |
|---|---|---|---|
| | typical value | typical value | typical value |
| 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 |

| | |
|---|---|
| measured in the centre of the image at an ambient temperature of 20°C | |
| Repeatability | 1 σ |
| The repeatability can be optimised with filter functions | |
| Temperature drift -10...+50 °C | 0.2 mm/K |

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### robot gripper navigation and depalletizing

| | robot gripper navigation | depalletizing |
|---|---|---|
| Operating distance [m] | 0.2...6 | 0.5...6 |
| object types | any object shape | closed rectangular objects |
| minimum object size [mm] | 20 x 20 x 20 | 50 x 50 x 50 at minimum operating distance |
| accuracy object position [mm] | | |
| typical value: | ± 10 rectangular objects | ± 15 |
| accuracy angle of rotation [°] | | |
| typical value: | ± 1 rectangular objects | ± 3 |
| object speed [m/s] | < 0.2 | |
| Image repetition frequency [Hz] | 2 for one object to be measured | 1 |
| maximum number of objects | 20 | |