

3-D LiDAR sensor OMD10M-R2300-B23-V1V1D-4S



- High angle resolution
- Can be aligned using an integrated pilot laser
- Measuring method PRT (Pulse Ranging Technology)
- Compact design
- High pollution tolerance

R2300, 3-D LiDAR sensor for object detection and positioning, measuring range to object up to 10 m, Ethernet



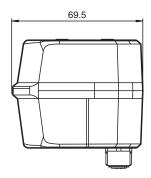
Function

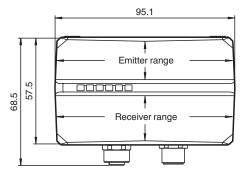
The 3-D LiDAR sensor uses Pulse Ranging Technology (PRT). So the sensor reaches a large detection range for small light spot widths. The device has a measuring angle of 100°. With 4 scanning layers the device produces 3-D-data.

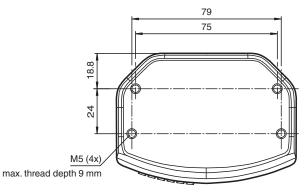
The optional switchable pilot laser is projected accurately on the scanning layers. Thus an optimal orientation of the sensor is possible.

Output of the measuring values as well as the parameterization takes place via standard Ethernet-interface.

Dimensions







Technical Data

| General specifications | | | |
|------------------------|---------------------------------------|--|--|
| Measurement range | 0.2 4 m (bk 10%) 0.2 10 m (wh 90%) | | |
| Reference target | Kodak white (90%) | | |
| Light source | laser diode | | |

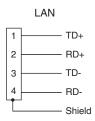
Release date: 2023-04-13 Date of issue: 2023-04-13 Filename: 70159636_eng.pdf

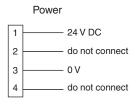
| MTFF _d 75 a Mission Time (T _M) 20 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator LED green Data flow indicator LED yellow: active ethernet LED green: Ethernet link Function indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications 10 30 V Sipple 10 % within the supply tolerance No-load supply current I ₀ ≤ 300 mA / 24 V DC Power consumption P ₀ < 8 W Time delay before availability t _v < 20 s Interface Fast Ethernet Protocol HTTP, UDP/IP Input/Output Input/Output Input/Output type none Conformity EN 60947-5-2 Laser safety EN 60947-5-2 | Technical Data | | |
|--|--------------------------------------|----------------|--|
| Note | Lacor nominal ratings | | |
| Laser diass | • | | LASER RADIATION DO NOT STADE INTO REAM |
| Wave length Measuring laser infared light 650 mm Pilot laser regit 185 f60 mm Pilot 185 f60 mm Pilot laser regit 185 f60 | | | |
| Piot laser red light 650 nm Piot laser real part 610 nm Piot laser red light 650 nm Piot laser 1 nm versual 2 mrad , longitudinal 9.5 mrad Piot laser 1.1 μs Piot laser 1.1 μs | | | |
| Pilot laser 0.3 mrad Pilot laser 0.3 mrad Pilot laser 1.1 µs Respetition rate 90 kHz Pilot laser 1.1 µs Pilot laser 1.1 µs Pilot laser 1.1 µs Pilot laser 1.1 µs Pilot laser 1.0 µ | | | Pilot laser red light 650 nm |
| Repetition rate 90 kHz max. pulse energy Measuring laser < 81 nJ Pilot laser < 60 nJ Pilot laser < | Ü | | Pilot laser: 0.3 mrad |
| max. pulse energy Measuring later < 81 nJ | Pulse length | | |
| Pilot laser. < 60 nJ | Repetition rate | | 90 kHz |
| Frame rate 25 fps Scan rate 100 s² s0 s² s1 Scanning zone 100° horizontal, 9° vertical Diameter of the light spot 25 mm x 100 mm at 10 m Filter Maximum, average, median Ambient light limit 60000 Lux Resolution 1 mm Functional safety related parameters MTTF ₈ 75 a Mission Time (Tw) 20 a Diagnostic Coverage (DC) 0 % Indicator/Soperating means 1 EED green Operation indicator LED green Data flow indicator LED green Ethernet link Function indicator 10 none Parameterization indicator 10 none Parameterization indicator 10 none Interface 10 % within the supply tolerance No-load supply current 10 % within the supply tolerance No-load supply current 2 so max / 24 V DC Time delay b | max. pulse energy | | Measuring laser: < 81 nJ Pilot laser: < 60 nJ |
| 12.5 fps 100 p 1 50 s 1 | Measuring method | | Pulse Ranging Technology (PRT) |
| S0 s-1 100° horizontal, 9° vertical 100° horizontal, 9° vertical, | Frame rate | | |
| Diameter of the light spot 25 mm x 100 mm at 10 m Filter Maximum, average, median Ambient light limit 60000 Lux Resolution 1 mm Filter Functional safety related parameters mm MTTFd 75 a Mission Time (Tw) 20 a Diagnostic Coverage (DC) % Indicators/operating means LED green Operation indicator LED green Let yellow: active ethernet link LED red: fault Control elements LED red: fault Control elements none Parameterization indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications 0 Operating voltage Us 10 % within the supply tolerance No-load supply current lo sold within the supply tolerance No-load supply current lo sold within the supply tolerance Interface Fast Ethernet Protocol the Turne delay before availability tv 20 s Interface type Fast Ethernet | Scan rate | | |
| Filter Maximum, average, median Ambient light limit 60000 Lux Resolution 1 mm Functional safety related parameters MTTFa 75 a Mission Time (Tw) 20 a Diagnostic Coverage (DC) 0 % Indicators/operating means LED green Operation indicator LED green: Ethernet link Function indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications none Operating voltage Ua 10 30 V Operating voltage Ua 10 30 V No-load supply current Ia ≤ 300 mA / 24 V DC Power consumption Pa < 8 W Time delay before availability t, < 20 s Interface Fast Ethernet Protocol HTTP , UDP/IP Input/Output p < 8 W Time delay before availability t, < 20 s Interface Fast Ethernet <t< td=""><td>Scanning zone</td><td></td><td>100° horizontal, 9° vertical</td></t<> | Scanning zone | | 100° horizontal, 9° vertical |
| Ambient light limit 60000 Lux Resolution 1 mm Functional safety related parameters MTTFa 75 a Mission Time (T _{IN}) 20 a Diagnostic Coverage (DC) 0 % Indicators/operating means Operation indicator LED green Data flow indicator LED yellow: active ethernet LED green: Ethernet link Function indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications none Operating voltage Ug 10 30 V Ripple 10 % within the supply tolerance No-load supply current Ig ≤ 300 mA /24 V DC Power consumption Po < 8 W | Diameter of the light spot | | 25 mm x 100 mm at 10 m |
| Resolution | Filter | | Maximum, average, median |
| Functional safety related parameters | Ambient light limit | | 60000 Lux |
| MTFT _d 75 a Mission Time (T _M) 20 a Diagnostic Coverage (DC) 0 % Indicators/operating means Very Coperation indicator Operation indicator LED green Data flow indicator LED yellow: active ethernet LED green: Ethernet link Function indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications very Coperating voltage Operating voltage U _B 10 30 V Ripple 10 % within the supply tolerance No-load supply current I ₀ ≤ 300 mA / 24 V DC Power consumption I ₀ < 8 W | Resolution | | 1 mm |
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| Decision indicator | | | 20 a |
| Departion indicator | Diagnostic Coverage (DC) | | 0 % |
| Operation indicator LED green Data flow indicator LED yellow: active ethernet LED green: Ethernet link Function indicator LED red: fault Control elements none Parameterization indicator none Electrical specifications Telectrical specifications Operating voltage U ₈ 10 30 V Ripple 10 % within the supply tolerance No-load supply current I ₀ ≤ 300 mA / 24 V DC Power consumption P ₀ < 8 W | | | |
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| Parameterization indicator none Electrical specifications U _B 10 30 V Ripple 10 % within the supply tolerance No-load supply current I₀ ≤ 300 mA / 24 V DC Power consumption P₀ < 8 W | Function indicator | | · · |
| Electrical specifications Operating voltage U _B 10 30 V Ripple 10 % within the supply tolerance No-load supply current I ₀ ≤ 300 mA / 24 V DC Power consumption P ₀ < 8 W | Control elements | | none |
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| No-load supply current I₀ ≤ 300 mA / 24 V DC Power consumption P₀ < 8 W | Operating voltage | U_B | 10 30 V |
| Power consumption Po < 8 W Time delay before availability t _v < 20 s Interface Interface type Fast Ethernet Protocol HTTP , UDP/IP Input/Output Input/output type none Conformity Product standard EN 60947-5-2 Laser safety EN 60825-1:2014 Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm , 1 sigma Angle resolution 0.1° at 12.5 Hz | | | 10 % within the supply tolerance |
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| Input/output type none Conformity Product standard EN 60947-5-2 Laser safety EN 60825-1:2014 Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm , 1 sigma Angle resolution 0.1° at 12.5 Hz | Protocol | | HTTP, UDP/IP |
| Product standard EN 60947-5-2 Laser safety EN 60825-1:2014 Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm , 1 sigma Angle resolution 0.1° at 12.5 Hz | Input/Output | | |
| Product standard EN 60947-5-2 Laser safety EN 60825-1:2014 Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm, 1 sigma Angle resolution 0.1° at 12.5 Hz | Input/output type | | none |
| Laser safety EN 60825-1:2014 Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm , 1 sigma Angle resolution 0.1° at 12.5 Hz | Conformity | | |
| Measurement accuracy Measuring speed 50000 measurements per second Measured value noise typ. 30 mm , 1 sigma Angle resolution 0.1° at 12.5 Hz | Product standard | | EN 60947-5-2 |
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| Angle resolution 0.1° at 12.5 Hz | Measuring speed | | 50000 measurements per second |
| | Measured value noise | | typ. 30 mm , 1 sigma |
| Absolute accuracy typ. ± 30 mm | Angle resolution | | 0.1° at 12.5 Hz |
| | Absolute accuracy | | typ. ± 30 mm |
| Repeat accuracy < 12 mm | Repeat accuracy | | <12 mm |
| Approvals and certificates | Approvals and certificates | | |

Technical Data

| Protection class | III (operating voltage 50 V) |
|-------------------------------------|--|
| CCC approval | CCC approval / marking not required for products rated ≤36 V |
| Ambient conditions | |
| Ambient temperature | -30 50 °C (-22 122 °F) |
| Storage temperature | -30 70 °C (-22 158 °F) |
| Relative humidity | 95 %, no moisture condensation |
| Mechanical specifications | |
| Housing width | 96 mm |
| Housing height | 57 mm |
| Degree of protection | IP65 |
| Connection | 4-pin, M12x1 connector, standard (supply), shield connected on both sides 4-pin, M12x1 socket, D-coded (LAN) |
| Material | |
| Housing | ABS + PC |
| Optical face | PC (Polycarbonate) |
| Mass | approx. 0.27 kg |
| Tightening torque, fastening screws | 1.5 Nm |
| Number of mounting holes | 4 , max. thread depth 9 mm |
| | |

Connection Assignment

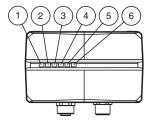






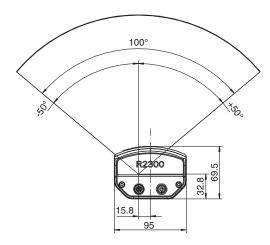


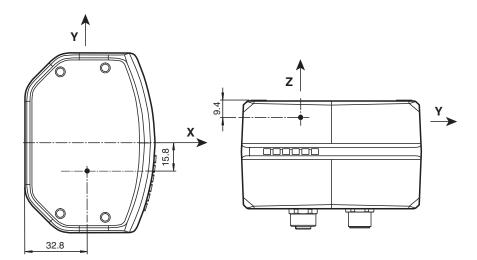
Assembly



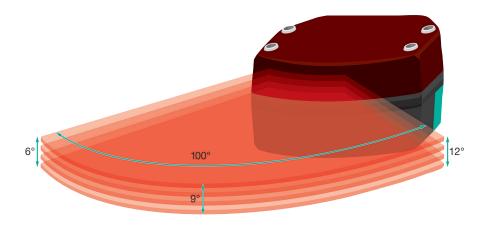
| 1 | Power ON greer | |
|---|----------------------|--|
| 2 | Error indication red | |
| 3 | Not used | |
| 4 | Not used | |
| 5 | Ethernet ACT yellow | |
| 6 | Ethernet Link green | |

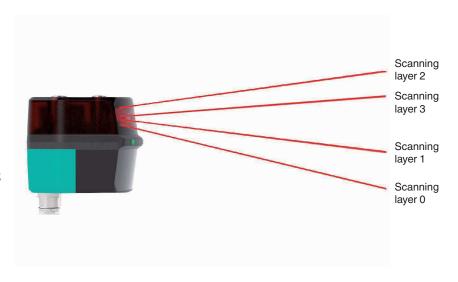
Technical Features



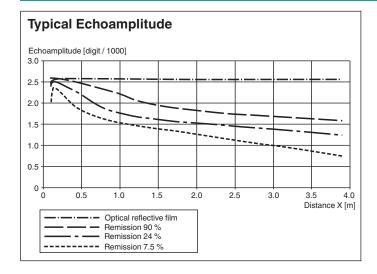


Technical Features





Technical Features





Safety Information

Laser Class 1 Information

The irradiation can lead to irritation especially in a dark environment. Do not point at people!

Maintenance and repairs should only be carried out by authorized service personnel!

Attach the device so that the warning is clearly visible and readable.

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Cybersecurity

From the security point-of-view, the responsible plant operator requires to take the following measures:

- · Provide physical protection of the device from unauthorized third-party access
- Ensure a point-to-point connection between the device and the higher-level controller
- Ensure that the device is only operated in an isolated network without any direct connection to a company network, the internet, or cloud
- in this context, the device may only communicate with a higher-level controller or with a defined, trustworthy group of network participants

Accessories

| • | Schutzkappe LS610 Zubehoer | M12 protective cap set (connector + socket) for series LS610 / LS611 |
|----|--------------------------------|---|
| 2 | V1SD-G-2M-PUR-ABG- V45-G | Connection cable, M12 to RJ-45, PUR cable 4-pin, CAT5e |
| | V1SD-G-ABG-PG9 | Male connector M12 straight D-coded 4-pin, for cable diameter 5 - 8 mm, shielded, field-attachable |
| 2 | V1SD-90-W-3M-PUR- ABG-V45-G | Ethernet bus cable M12 plug angled D-coded to RJ45 Ethernet-coded, 4-pin, PUR cable blue, Cat5e, shielded |
| 6/ | V1-G-5M-PUR | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey |
| 61 | V1-G-BK5M-PUR-U | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable black, UL approved, drag chain suitable, torsion resistant |
| 61 | V1-W-5M-PUR-ABG | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey, shielded |