



## 2-D LiDAR Sensor OBD60M-R2000-4EP-V1V17-T-1L



- 4 freely programmable monitoring fields
- 4 inputs/outputs (selectable)
- High operating range
- High angle resolution
- 360°-angle of measurement
- Deep-freeze applications
- Measuring method PRT (Pulse Ranging Technology)

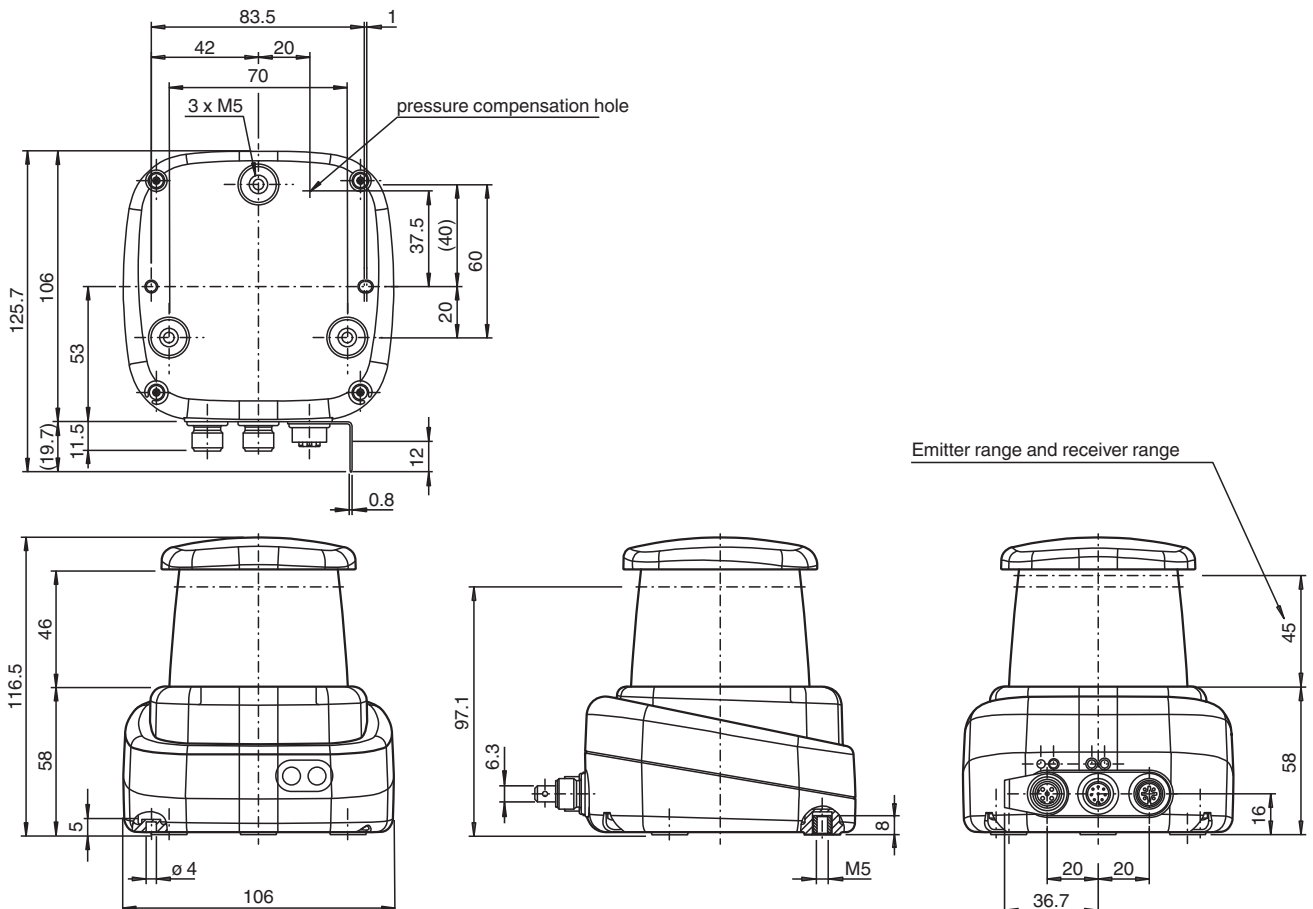
R2000 Detection, 2-D LiDAR sensor for precise field monitoring, measuring range to object up to 60 m



### Function

Based on Pulse Ranging Technology (PRT), the sensor is powerful for measurements with a long range and a small light spot. The device scans its environment over the complete measuring angle of 360°. Due to the high scanning frequency, this sensor type is suitable for advanced applications. The device meets laser class 1 and is eye safe. Additional precautions to protect the operating personnel are not required. The interactive all-round display integrated in the optical surface can freely display individual texts and graphics. A wide range of accessories enables the sensor to be used in different applications. A PACTware device type manager (DTM) specially developed for this series offers extensive configuration and diagnostic options.

### Dimensions



Release date: 2025-02-03 Date of issue: 2025-02-03 Filename: 70137274\_eng.pdf

## Technical Data

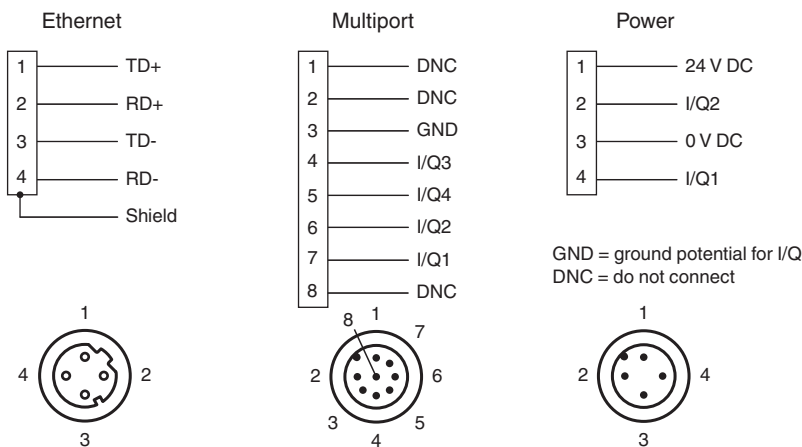
| General specifications               |                |   |
|--------------------------------------|----------------|---|
| Measuring range                      |                | 0.1 ... 20 m (black 10 %)<br>0.1 ... 60 m (white 90 %)<br>0.1 ... 60 m (reflector)<br>Min. reflectivity 1.8 % |
| Light source                         |                | laser diode   |
| Light type                           |                | modulated infrared light  |
| Lasers nominal ratings               |                |   |
| Note                                 |                | LASER RADIATION , DO NOT STARE INTO BEAM  |
| Laser class                          |                | 1   |
| Wave length                          |                | 905 nm  |
| Beam divergence                      |                | transversal 2 mrad , longitudinal 10 mrad   |
| Pulse length                         |                | 5 ns  |
| Repetition rate                      |                | 54 kHz  |
| max. pulse energy                    |                | < 94 nJ   |
| Measuring method                     |                | Pulse Ranging Technology (PRT)  |
| Scan rate                            |                | 10 Hz, 20 Hz, 30 Hz   |
| Scanning angle                       |                | 360°  |
| Diameter of the light spot           |                | 25 mm x 105 mm at 10 m  |
| Ambient light limit                  |                | 50000 Lux   |
| Functional safety related parameters |                |   |
| MTTF <sub>d</sub>                    |                | 75 a  |
| Mission Time (T <sub>M</sub> )       |                | 20 a  |
| Diagnostic Coverage (DC)             |                | 0 %   |
| Indicators/operating means           |                |   |
| Operation indicator                  |                | LED green   |
| Data flow indicator                  |                | LED yellow: active ethernet<br>LED green: Ethernet link   |
| Function indicator                   |                | LED red: fault<br>LED yellow: Q1 + Q2   |
| Control elements                     |                | 2 Button  |
| Parameterization indicator           |                | 24 x 252 pixels , red   |
| Electrical specifications            |                |   |
| Operating voltage                    | U <sub>B</sub> | 10 ... 30 V DC  |
| Ripple                               |                | 10 % within the supply tolerance  |
| No-load supply current               | I <sub>0</sub> | ≤ 400 mA / 24 V DC  |
| Power consumption                    | P <sub>0</sub> | < 10 W  |
| Time delay before availability       | t <sub>v</sub> | < 40 s  |
| Integrated application               |                |   |
| Application                          |                | Field monitoring  |
| Number of fields                     |                | 4   |
| Response time                        |                | 30 ms + 1 Scan duration   |
| Detectable object shape              |                | Almost any  |
| Object size                          |                | > 1 mm  |
| Linking fields                       |                | Up to 4 x 3 levels  |
| Interface                            |                |   |
| Interface type                       |                | 4 x switching inputs/outputs (selectable)   |
| Input/Output                         |                |   |
| Input/output type                    |                | 4 Inputs/Outputs , Independently configurable , short circuit/reverse polarity protected                      |
| Input                                |                |   |
| Switching threshold                  |                | low: U <sub>e</sub> < 5 V,<br>high: U <sub>e</sub> > 10 V   |
| Output                               |                |   |
| Switching threshold                  |                | low: U <sub>a</sub> < 1 V,<br>high: U <sub>a</sub> > U <sub>b</sub> - 2 V                                     |
| Switching current                    |                | 100 mA per output   |

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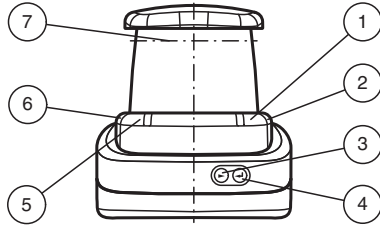
|                                   |   |
|-----------------------------------|---|
| <b>Conformity</b>                 |   |
| Product standard                  | IEC 61000-6-2   |
| Shock resistance                  | EN 60068-2-27   |
| Vibration resistance              | EN 60068-2-6  |
| Laser safety                      | EN 60825-1:2014   |
| <b>Measurement accuracy</b>       |   |
| Measuring speed                   | 54000 measurements per second   |
| Angle resolution                  | 0,071°; 0,15°; 0,2°   |
| Repeat accuracy                   | < 12 mm   |
| <b>Approvals and certificates</b> |   |
| Protection class                  | III (operating voltage 50 V)  |
| UL approval                       | cULus Listed, Class 2 Power Source, Type 1 enclosure  |
| CCC approval                      | CCC approval / marking not required for products rated ≤36 V  |
| FDA approval                      | IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice 56, dated May 8, 2019. |
| <b>Ambient conditions</b>         |   |
| Ambient temperature               | -30 ... 50 °C (-22 ... 122 °F)  |
| Storage temperature               | -40 ... 70 °C (-40 ... 158 °F)  |
| Relative humidity                 | 95 % , no moisture condensation   |
| <b>Mechanical specifications</b>  |   |
| Degree of protection              | IP67  |
| Connection                        | 4-pin, M12x1 connector, standard (supply) ,<br>8-pin, M12x1 connector, A-coded (MultiPort) ,<br>4-pin, M12x1 socket, D-coded (LAN)                          |
| Material                          |   |
| Housing                           | ABS + PC + Aluminum   |
| Optical face                      | PMMA  |
| Mass                              | approx. 0.8 kg  |
| Dimensions                        |   |
| Height                            | 116.5 mm  |
| Width                             | 106 mm  |
| Length                            | 106 mm  |

**Connection Assignment**



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## Assembly



|   |                     |        |
|---|---------------------|--------|
| 1 | Operating status    | green  |
| 2 | Fault indication    | red    |
| 3 | Menu button         |        |
| 4 | Menu button         |        |
| 5 | Q2 signal indicator | yellow |
| 6 | Q1 signal indicator | yellow |
| 7 | Laser outlet        |        |