



## 2-D LiDAR Sensor OBD30M-R2000-4EP-V1V17-1L



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

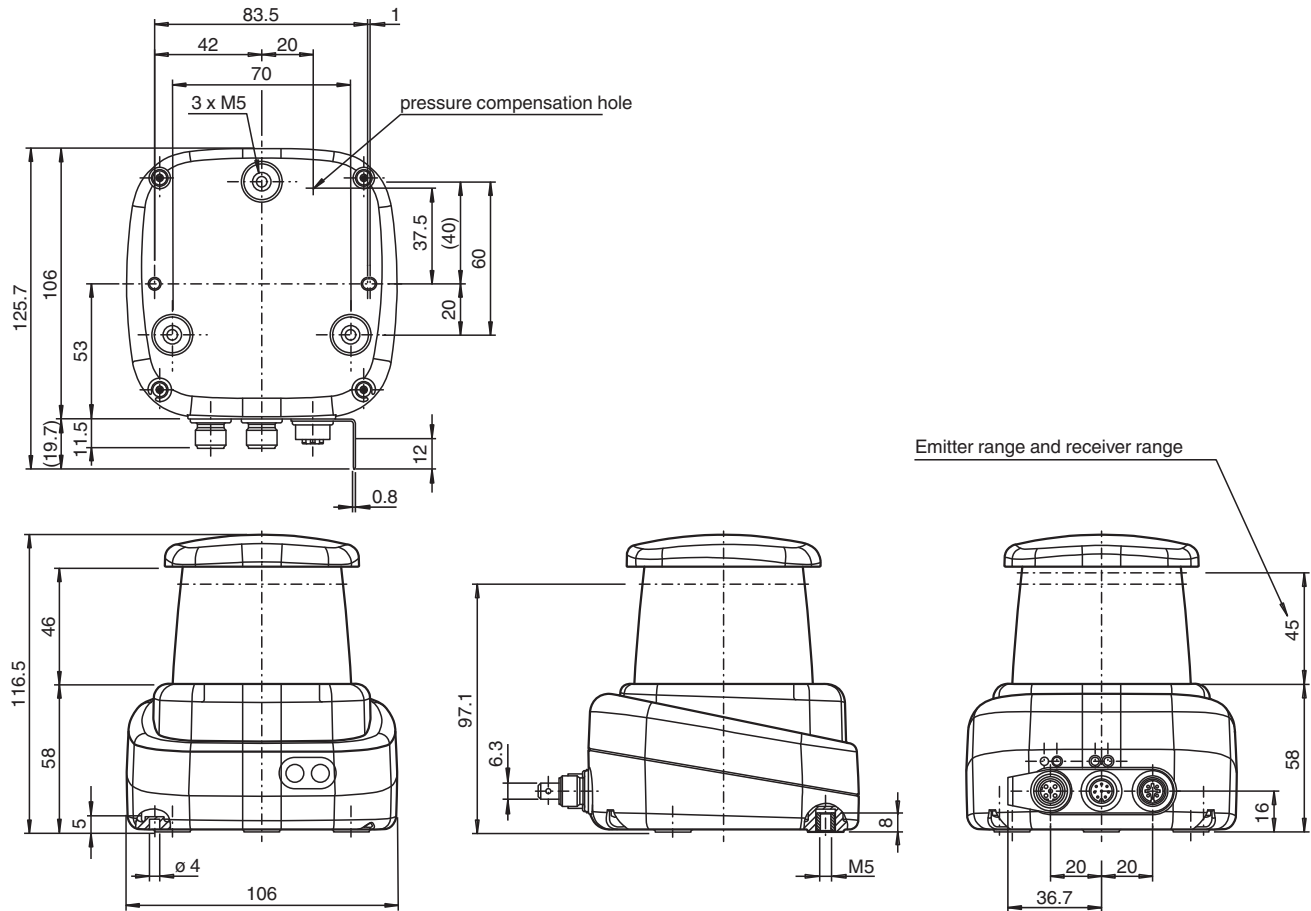
R2000 Detection, 2-D LiDAR sensor for precise field monitoring, measuring range to object up to 30 m with three M12 x 1 connector plugs



### 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



Technical Data

|                                      |                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------|
| General specifications               |                                                                                                       |
| Measurement range                    | 0.1 ... 10 m (bk 10%)<br>0,1 ... 30 m (wh 90 %)<br>0,1 ... 30 m (reflector)<br>Min. reflectivity 2.5% |
| Light source                         | laser diode                                                                                           |
| Light type                           | modulated infrared light                                                                              |
| Laser 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                  | 80000 Lux                                                                                             |
| Functional safety related parameters |                                                                                                       |
| MTTF <sub>d</sub>                    | 75 a                                                                                                  |
| Mission Time (T <sub>M</sub> )       | 20 a                                                                                                  |

## Technical Data

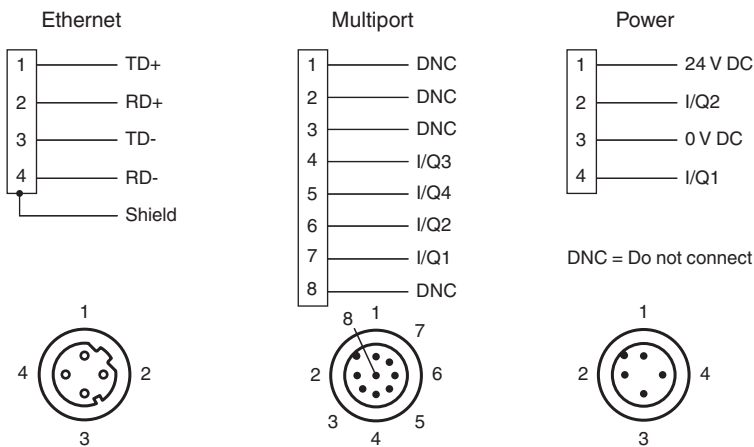
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|-------------------------------------------------|-------|------------------------------------------------------------------------------------------|
| Diagnostic Coverage (DC)                        |       | 0 %                                                                                      |
| <b>Indicators/operating means</b>               |       |                                                                                          |
| 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                                                                    |
| <b>Electrical specifications</b>                |       |                                                                                          |
| Operating voltage                               | $U_B$ | 10 ... 30 V DC                                                                           |
| Ripple                                          |       | 10 % within the supply tolerance                                                         |
| No-load supply current                          | $I_0$ | $\leq 400 \text{ mA} / 24 \text{ V DC}$                                                  |
| Power consumption                               | $P_0$ | $< 10 \text{ W}$                                                                         |
| Time delay before availability                  | $t_v$ | $< 40 \text{ s}$                                                                         |
| <b>Integrated application</b>                   |       |                                                                                          |
| Application                                     |       | Field monitoring                                                                         |
| Number of fields                                |       | 4                                                                                        |
| Response time                                   |       | 30 ms + 1 Scan duration                                                                  |
| Detectable object shape                         |       | Almost any                                                                               |
| Object size                                     |       | $> 1 \text{ mm}$                                                                         |
| Linking fields                                  |       | Up to 4 x 3 levels                                                                       |
| <b>Interface</b>                                |       |                                                                                          |
| Interface type                                  |       | 4 x switching inputs/outputs (selectable)                                                |
| <b>Input/Output</b>                             |       |                                                                                          |
| Input/output type                               |       | 4 Inputs/Outputs , Independently configurable , short circuit/reverse polarity protected |
| <b>Input</b>                                    |       |                                                                                          |
| Switching threshold                             |       | low: $U_e < 5 \text{ V}$ ,<br>high: $U_e > 10 \text{ V}$                                 |
| <b>Output</b>                                   |       |                                                                                          |
| Switching threshold                             |       | low: $U_a < 1 \text{ V}$ ,<br>high: $U_a > U_b - 2 \text{ V}$                            |
| Switching current                               |       | 100 mA per output                                                                        |
| <b>Conformity</b>                               |       |                                                                                          |
| Laser safety                                    |       | EN 60825-1:2014                                                                          |
| <b>Compliance with standards and directives</b> |       |                                                                                          |
| Standard conformity                             |       |                                                                                          |
| Product standard                                |       | IEC 61000-6-2                                                                            |
| Shock and impact resistance                     |       | EN 60068-2-6 EN 60068-2-27                                                               |
| <b>Measurement accuracy</b>                     |       |                                                                                          |
| Measuring speed                                 |       | 54000 measurements per second                                                            |
| Angle resolution                                |       | 0,071°; 0,15°; 0,2°                                                                      |
| Repeat accuracy                                 |       | $< 12 \text{ mm}$                                                                        |
| <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 $\leq 36 \text{ V}$               |
| <b>Ambient conditions</b>                       |       |                                                                                          |
| Ambient temperature                             |       | -10 ... 50 °C (14 ... 122 °F)                                                            |
| Storage temperature                             |       | -20 ... 70 °C (-4 ... 158 °F)                                                            |
| Relative humidity                               |       | 95 % , no moisture condensation                                                          |
| <b>Mechanical specifications</b>                |       |                                                                                          |
| Degree of protection                            |       | IP65                                                                                     |

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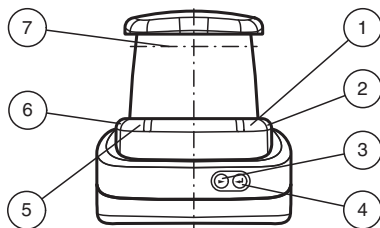
Technical Data

|              |                                                                                                                                    |        |
|--------------|------------------------------------------------------------------------------------------------------------------------------------|--------|
| 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



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        |        |

Safety Information



**Laser Class 1 Information**  
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.