

Thru-beam sensor (pair) OBE10M-R3-SE2-0,2M-V31-L



- Ultra-small housing design
- DuraBeam Laser Sensors durable and employable like an LED
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front

Laser thru-beam sensor, ultra-small design with M3 mounting, very high 10 m detection range, PNP output, 200 mm fixed cable with plug M8, 4-pin



Function

The R3 series nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new options. The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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Dimensions

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

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Technical Data

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| Signal output1 PNP output, short-circuit protected, reverse polarity protected, open collectorSwitching voltagemax. 30 V DCSwitching currentmax. 50 mA, resistive loadVoltage dropUd< 1.5 V DC | Output | | |
| Switching voltagemax. 30 V DCSwitching currentimax. 50 mA, resistive loadVoltage dropU_d≤ 1.5 V DCSwitching frequencyfapprox. 2 kHzResponse time250 μsConformityProduct standardEN 60947-5-2Laser safetyEN 60825-1:2007Approvals and certificatesTR CU 020/2011UL approvalE87056, cULus Recognized, Class 2 Power SourceCCC approvalGCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Switching type | | NO contact |
| Switching currentmax. 50 mA, resistive loadWoltage dropUd ≤ 1.5 V DCSwitching frequencyfapprox. 2 kHzResponse time $250 \ \mu s$ ConformityProduct standardEN 60947-5-2Laser safetydEN 60925-1:2007Approvals and certificatesEAC conformityTR CU 020/2011UL approvalE87056, cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤ 36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Signal output | | 1 PNP output, short-circuit protected, reverse polarity protected, open collector |
| Voltage dropUd≤ 1.5 V DCSwitching frequencyfapprox.2 kHzResponse time250 μsConformityProduct standardEN 60947-5-2Laser safetyImage: Standard StandardApprovals and certificatesEN 60947-5-2EAC conformityImage: Standard Standard StandardUL approvalTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalImage: Standard Standar | Switching voltage | | max. 30 V DC |
| Switching frequencyfapprox. 2 kHzResponse time250 μsConformityProduct standardEN 60947-5-2Laser safety6EN 60825-1:2007Approvals and certificatesEAC conformityITR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalGCCC approval / marking not required for products rated ≤36 VFDA approvalLEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Switching current | | max. 50 mA , resistive load |
| Response time250 μsConformityProduct standardEN 60947-5-2Laser safetyEN 60825-1:2007Approvals and certificatesEAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Voltage drop | U_{d} | ≤ 1.5 V DC |
| ConformityProduct standardEN 60947-5-2Laser safetyEN 60825-1:2007Approvals and certificatesEAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated <36 V | Switching frequency | f | approx. 2 kHz |
| Product standardEN 60947-5-2Laser safetyEN 60825-1:2007Approvals and certificatesTR CU 020/2011EAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Response time | | 250 μs |
| Laser safetyEN 60825-1:2007Approvals and certificatesEAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Conformity | | |
| Approvals and certificates EAC conformity TR CU 020/2011 UL approval E87056 , cULus Recognized, Class 2 Power Source CCC approval CCC approval / marking not required for products rated <36 V | Product standard | | EN 60947-5-2 |
| EAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Laser safety | | EN 60825-1:2007 |
| EAC conformityTR CU 020/2011UL approvalE87056 , cULus Recognized, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VFDA approvalIEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | Approvals and certificates | | |
| CCC approval CCC approval / marking not required for products rated ≤36 V FDA approval IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | EAC conformity | | TR CU 020/2011 |
| CCC approval CCC approval / marking not required for products rated ≤36 V FDA approval IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | • | | E87056 , cULus Recognized, Class 2 Power Source |
| FDA approval IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 | | | |
| Ambient conditions | | | IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations |
| | Ambient conditions | | |

 Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Release date: 2022-08-25 Date of issue: 2022-08-25 Filename: 282080_eng.pdf

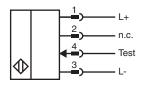
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

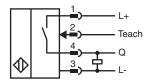


Technical Data

| Ambient temperature | -20 60 °C (-4 140 °F) |
|---------------------------|---|
| Storage temperature | -30 70 °C (-22 158 °F) |
| Mechanical specifications | |
| Housing width | 7.5 mm |
| Housing height | 26 mm |
| Housing depth | 13.8 mm |
| Degree of protection | IP67 |
| Connection | 200 mm fixed cable with 4-pin, M8x1 connector |
| Material | |
| Housing | PC/ABS and TPU |
| Optical face | glass |
| Cable | PUR |
| Mass | approx. 10 g per sensor |
| Cable length | 200 mm |

Connection





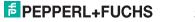
Connection Assignment



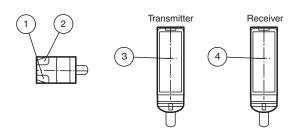
Wire colors in accordance with EN 60947-5-2

| 1 | BN | (brown) |
|---|----|---------|
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

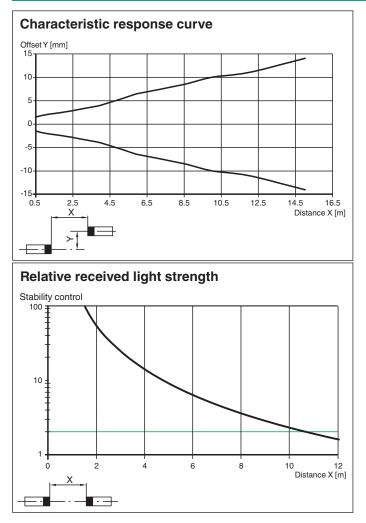


Assembly



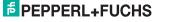
| 1 | Operating display green | |
|---|-------------------------|--|
| 2 | Signal display yellow | |
| 3 | Emitter | |
| 4 | Receiver | |

Characteristic Curve



Release date: 2022-08-25 Date of issue: 2022-08-25 Filename: 282080_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"



Safety Information



LASER PRODUCT IEC 60825-1: 2007 certified. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Accessories

| \sum | V31-WM-2M-PUR | Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey |
|---|---------------|--|
| · • • • • • • • • • • • • • • • • • • • | MH-R3-01 | Mounting aid for sensors from the R3 series, mounting bracket |
| c) • • • • • 11 | MH-R3-02 | Mounting aid for sensors from the R3 series, mounting bracket |
| 00011 | MH-R3-03 | Mounting aid for sensors from the R3 series, mounting bracket |
| 2 2 2 2 2 1 1 | MH-R3-04 | Mounting aid for sensors from the R3 series, mounting bracket |

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

5

Teach-In

The thru-beam sensor enables the switching points to be taught in for optimum adaptation to specific applications. This eliminates the need for additional components such as apertures.

The sensitivity of the thru-beam sensor can be adjusted using three Teach-in methods:

Position Teach

When using this Teach-in method, the following settings are made on the thru-beam sensor:

- · The gain is set to an optimum value
- · The signal threshold is set to a minimum



Recommended application:

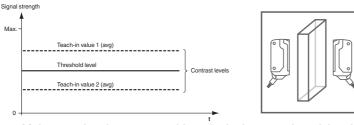
This method enables minuscule particles in the beam path to be detected, and provides exceptional positioning accuracy. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.

- 1. Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver.
- The green and yellow LED indicators flash simultaneously at 2.5 Hz
- 2. Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash alternately at 2.5 Hz

3. The end of the Teach-in process is indicated when the green LED indicator lights up static and yellow LED blinks. **Two-Point Teach-In**

When using this Teach-in method, the following settings are made on the thru-beam sensor:

- The gain is set to an optimum value
- · The signal threshold is set in the center between the two taught signal values



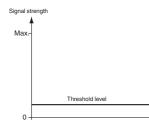
- 1. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.
- 2. Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver.
- The green and yellow LED indicators flash simultaneously at 2.5 Hz
- 3. Position the object in the beam path.
- 4. Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash alternately at 2.5 Hz

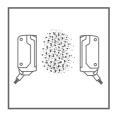
5. The end of the Teach-in process is indicated when the green LED indicator lights up static.

Maximum Teach-In

When using this Teach-in method, the following settings are made on the thru-beam sensor:

- · The gain is set to a maximum
- · The signal threshold is set to a minimum





Recommended application:

Enables an object to be detected with a high excess gain. This can be useful if there is severe environmental contamination or to achieve long operating times.

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Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.

- 6. Cover the receiver or transmitter.
- 7. Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver.

The green and yellow LED indicators flash simultaneously at 2.5 Hz

- 8. Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver.
- The green and yellow LED indicators flash alternately at 2.5 Hz
- 9. The end of the Teach-in process is indicated when the green LED indicator lights up static.