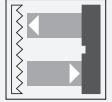




## Laser retroreflective sensor OBR25M-R200-2EP-IO-V15-L



- Medium design with versatile mounting options
- DuraBeam Laser Sensors - durable and employable like an LED
- Extended temperature range  
-40 °C ... 60 °C
- High degree of protection IP69K
- IO-Link interface for service and process data

### Laser retroreflective sensor



**IO-Link**

### Function

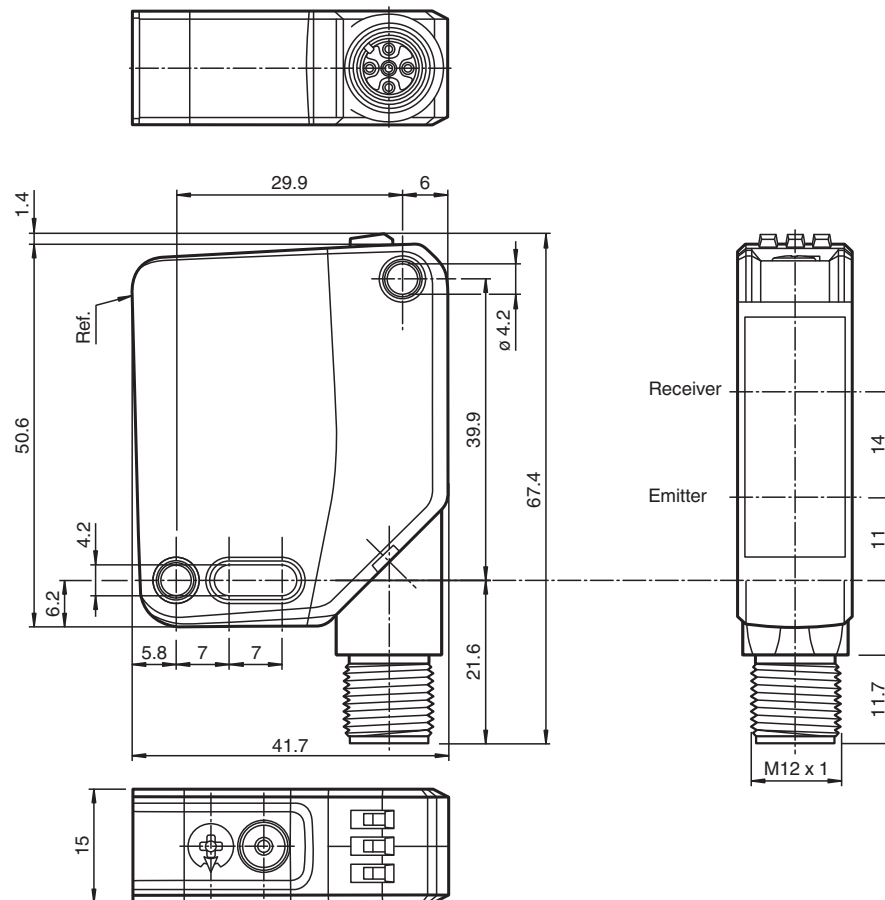
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

The entire series enables sensors to communicate via IO-Link.

The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

### Dimensions



## Technical Data

### General specifications

|                            |                                                       |
|----------------------------|-------------------------------------------------------|
| Effective detection range  | 0 ... 25 m                                            |
| Reflector distance         | 0.5 ... 25 m                                          |
| Threshold detection range  | 33 m                                                  |
| Reference target           | H85-2 reflector                                       |
| Light source               | laser diode                                           |
| Light type                 | modulated visible red light                           |
| Polarization filter        | yes                                                   |
| Laser nominal ratings      |                                                       |
| Note                       | LASER LIGHT , DO NOT STARE INTO BEAM                  |
| Laser class                | 1                                                     |
| Wave length                | 680 nm                                                |
| Beam divergence            | > 5 mrad d63 < 2 mm in the range of 250 mm ... 750 mm |
| Pulse length               | 1.6 µs                                                |
| Repetition rate            | max. 17.6 kHz                                         |
| max. pulse energy          | 9.6 nJ                                                |
| Diameter of the light spot | approx. 50 mm at a distance of 25 m                   |
| Opening angle              | approx. 0.1 °                                         |
| Ambient light limit        | EN 60947-5-2 : 60000 Lux                              |

### Functional safety related parameters

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 672 a |
| Mission Time (T <sub>M</sub> ) | 20 a  |
| Diagnostic Coverage (DC)       | 60 %  |

### Indicators/operating means

|                     |                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Operation indicator | LED green:<br>constantly on - power on<br>flashing (4Hz) - short circuit<br>flashing with short break (1 Hz) - IO-Link mode                |
| Function indicator  | Yellow LED:<br>Permanently lit - light path clear<br>Permanently off - object detected<br>Flashing (4 Hz) - insufficient operating reserve |
| Control elements    | Light-on/dark-on changeover switch                                                                                                         |
| Control elements    | sensitivity adjustment                                                                                                                     |

### Electrical specifications

|                        |                |                                   |
|------------------------|----------------|-----------------------------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC                    |
| Ripple                 |                | max. 10 %                         |
| No-load supply current | I <sub>0</sub> | < 15 mA at 24 V Operating voltage |
| Protection class       |                | III                               |

### Interface

|                             |                                                       |
|-----------------------------|-------------------------------------------------------|
| Interface type              | IO-Link ( via C/Q = pin 4 )                           |
| IO-Link revision            | 1.1                                                   |
| Device profile              | Identification and diagnosis<br>Smart Sensor type 2.4 |
| Device ID                   | 0x111204 (1118724)                                    |
| Transfer rate               | COM2 (38.4 kBit/s)                                    |
| Min. cycle time             | 2.3 ms                                                |
| Process data width          | Process data input 2 Bit<br>Process data output 2 Bit |
| SIO mode support            | yes                                                   |
| Compatible master port type | A                                                     |

### Input

|            |                                         |
|------------|-----------------------------------------|
| Test input | emitter deactivation at +U <sub>B</sub> |
|------------|-----------------------------------------|

### Output

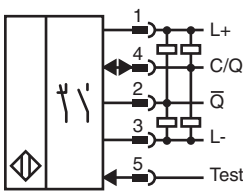
|                |                                                                                                                                                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switching type | The switching type of the sensor is adjustable. The default setting is:<br>C/Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link<br>/Q - Pin2: NPN normally closed / light-on, PNP normally open / dark-on |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Release date: 2023-05-09 Date of issue: 2023-05-09 Filename: 295670-100037\_eng.pdf

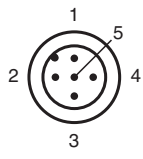
Technical Data

|                                   |                                                                                                          |                                                                                                                                      |
|-----------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Signal output                     | 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected, overvoltage protected |                                                                                                                                      |
| Switching voltage                 |                                                                                                          | max. 30 V DC                                                                                                                         |
| Switching current                 |                                                                                                          | max. 100 mA , resistive load                                                                                                         |
| Usage category                    |                                                                                                          | DC-12 and DC-13                                                                                                                      |
| Voltage drop                      | U <sub>d</sub>                                                                                           | ≤ 1.5 V DC                                                                                                                           |
| Switching frequency               | f                                                                                                        | 2000 Hz                                                                                                                              |
| Response time                     |                                                                                                          | 250 µs                                                                                                                               |
| <b>Conformity</b>                 |                                                                                                          |                                                                                                                                      |
| Communication interface           |                                                                                                          | IEC 61131-9                                                                                                                          |
| Product standard                  |                                                                                                          | EN 60947-5-2                                                                                                                         |
| Laser safety                      |                                                                                                          | EN 60825-1:2014                                                                                                                      |
| <b>Approvals and certificates</b> |                                                                                                          |                                                                                                                                      |
| UL approval                       |                                                                                                          | E87056 , cULus Listed , class 2 power supply , type rating 1                                                                         |
| 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 |
| <b>Ambient conditions</b>         |                                                                                                          |                                                                                                                                      |
| Ambient temperature               |                                                                                                          | -40 ... 60 °C (-40 ... 140 °F)                                                                                                       |
| Storage temperature               |                                                                                                          | -40 ... 70 °C (-40 ... 158 °F)                                                                                                       |
| <b>Mechanical specifications</b>  |                                                                                                          |                                                                                                                                      |
| Housing width                     |                                                                                                          | 15 mm                                                                                                                                |
| Housing height                    |                                                                                                          | 50.6 mm                                                                                                                              |
| Housing depth                     |                                                                                                          | 41.7 mm                                                                                                                              |
| Degree of protection              |                                                                                                          | IP67 / IP69 / IP69K                                                                                                                  |
| Connection                        |                                                                                                          | 5-pin, M12 x 1 connector, 90° rotatable                                                                                              |
| <b>Material</b>                   |                                                                                                          |                                                                                                                                      |
| Housing                           |                                                                                                          | PC (Polycarbonate)                                                                                                                   |
| Optical face                      |                                                                                                          | PMMA                                                                                                                                 |
| Mass                              |                                                                                                          | approx. 37 g                                                                                                                         |

Connection



Connection Assignment



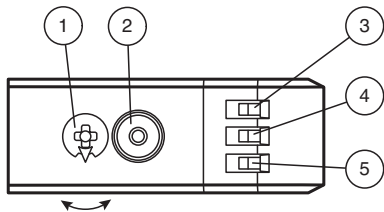
Release date: 2023-05-09 Date of issue: 2023-05-09 Filename: 295670-100037\_eng.pdf

Connection Assignment

Wire colors in accordance with EN 60947-5-2

|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |
| 5 | GY | (gray)  |

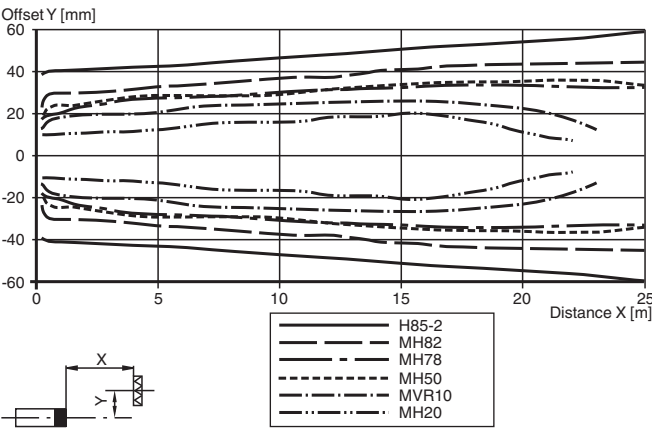
Assembly



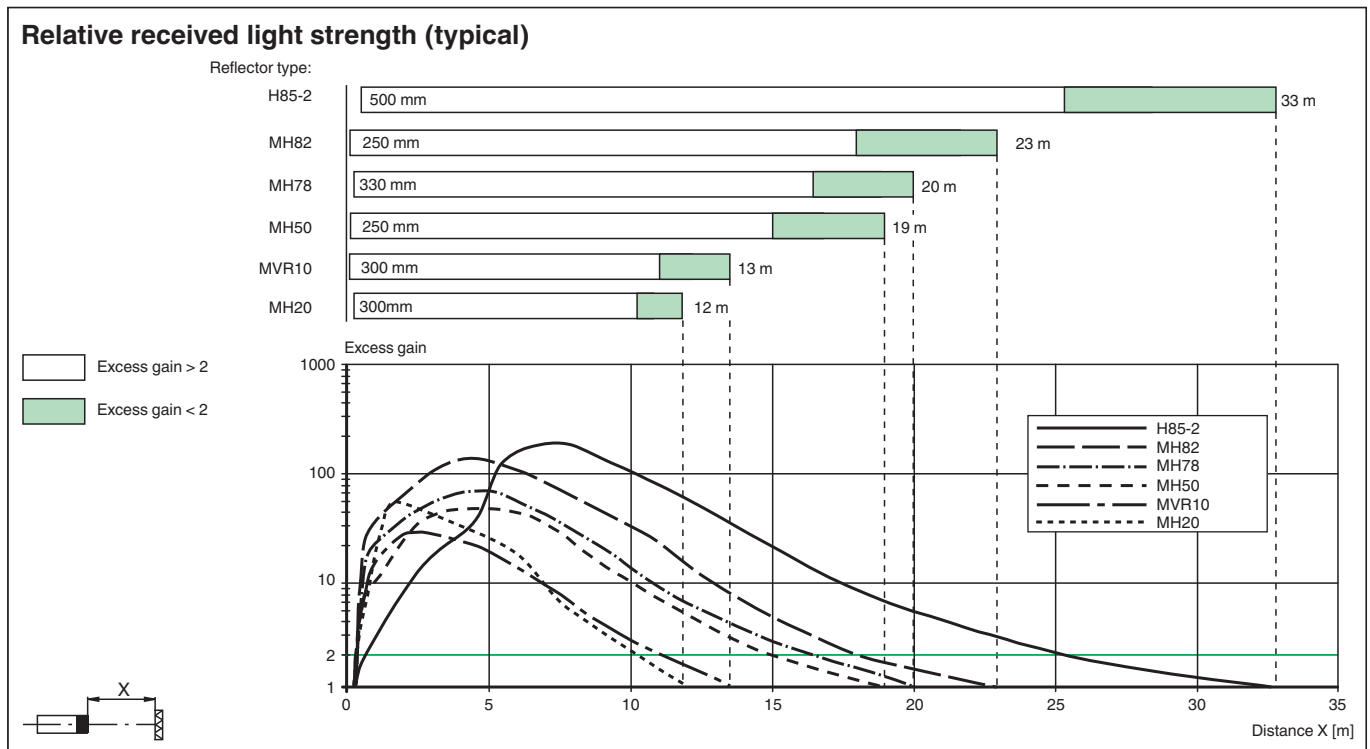
|   |                                      |    |
|---|--------------------------------------|----|
| 1 | Sensitivity adjustment               |    |
| 2 | Light-on / dark-on changeover switch |    |
| 3 | Operating indicator / dark on        | GN |
| 4 | Signal indicator                     | YE |
| 5 | Operating indicator / light on       | GN |

Characteristic Curve

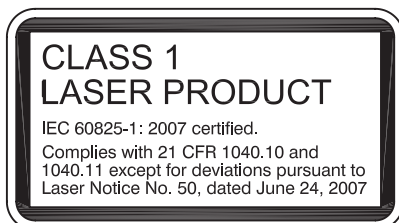
Characteristic response curve



## Characteristic Curve



## Safety Information



## Commissioning

To unlock the adjustment functions turn the sensing range / sensitivity adjuster for more than 180 degrees.

### Sensing Range / Sensitivity

Turn sensing range / sensitivity adjuster clockwise to increase sensing range / sensitivity.

Turn sensing range / sensitivity adjuster counter clockwise to decrease sensing range / sensitivity.

If the end of the adjustment range is reached, the signal indicator starts flashing with 8 Hz.

### Light-on / Dark-on Configuration

Press the light-on / dark-on changeover switch for more than 1 second (less than 4 seconds). The light-on / dark-on mode changes and the operating indicators are activated accordingly.

## Commissioning

If you press the light-on / dark-on changeover switch for more than 4 seconds, the light-on / dark-on mode changes back to the original setting. On release of the light-on / dark-on changeover switch the current state is activated.

### Restore Factory Settings

Press the light-on / dark-on changeover switch for more than 10 seconds (less than 30 seconds) until all LEDs turn off. On release of the light-on / dark-on changeover switch the signal indicator turns on. After 5 seconds the sensor resumes operation with factory default settings.

After 5 minutes of inactivity the sensing range / sensitivity adjustment is locked. In order to reactivate the sensing range / sensitivity adjustment, turn the sensing range / sensitivity adjuster for more than 180 degrees.

## Accessories

|                                                                                     |                             |                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------|
|    | <b>V15-W-2M-PUR</b>         | Female cordset single-ended M12 angled A-coded, 5-pin, PUR cable grey                       |
|    | <b>V15-G-2M-PUR</b>         | Female cordset single-ended M12 straight A-coded, 5-pin, PUR cable grey                     |
|    | <b>REF-H85-2</b>            | Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes                                    |
|    | <b>REF-C110-2</b>           | Reflector, round ø 84 mm, central mounting hole                                             |
|    | <b>REF-H50</b>              | Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap                          |
|    | <b>REF-VR10</b>             | Reflector, rectangular 60 mm x 19 mm, mounting holes                                        |
|  | <b>OFR-100/100</b>          | Reflective tape 100 mm x 100 mm                                                             |
|  | <b>REF-MH82</b>             | Reflector with Micro-structure, rectangular 82 mm x 60 mm, mounting holes                   |
|  | <b>REF-MH78</b>             | Reflector with Micro-structure, hexagonal 78 mm x 61 mm, mounting holes                     |
|  | <b>REF-MH50</b>             | Reflector with Micro-structure, rectangular 50.9 mm x 50.9 mm, mounting holes, fixing strap |
|  | <b>REF-MVR10</b>            | Reflector with Micro-structure, rectangular 60 mm x 19 mm, mounting holes                   |
|  | <b>REF-MH20</b>             | Reflector with Micro-structure, rectangular 32 mm x 20 mm, mounting holes                   |
|  | <b>V1-G-2M-PUR</b>          | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey                     |
|  | <b>V1-W-2M-PUR</b>          | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey                       |
|  | <b>OMH-MLV12-HWG</b>        | Mounting bracket for series MLV12 sensors                                                   |
|  | <b>OMH-R200-01</b>          | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm                               |
|  | <b>OMH-MLV12-HWK</b>        | Mounting bracket for series MLV12 sensors                                                   |
|  | <b>OMH-R20x-Quick-Mount</b> | Quick mounting accessory                                                                    |

Release date: 2023-05-09 Date of issue: 2023-05-09 Filename: 295670-100037\_eng.pdf

## Accessories

|                                                                                    |                             |                                                                                                              |
|------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------|
|   | <b>ICE2-8IOL-G65L-V1D</b>   | EtherNet/IP IO-Link master with 8 inputs/outputs                                                             |
|   | <b>ICE3-8IOL-G65L-V1D</b>   | PROFINET IO IO-Link master with 8 inputs/outputs                                                             |
|   | <b>ICE2-8IOL-K45S-RJ45</b>  | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal                                   |
|   | <b>ICE3-8IOL-K45P-RJ45</b>  | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals                                |
|   | <b>ICE3-8IOL-K45S-RJ45</b>  | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal                                   |
|   | <b>IO-Link-Master02-USB</b> | IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection |
|   | <b>ICE1-8IOL-G30L-V1D</b>   | Ethernet IO-Link module with 8 inputs/outputs                                                                |
|   | <b>ICE1-8IOL-G60L-V1D</b>   | Ethernet IO-Link module with 8 inputs/outputs                                                                |
|  | <b>ICE2-8IOL-K45P-RJ45</b>  | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors                               |