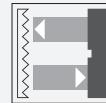




## Laser retroreflective sensor OBR25M-R201-2EP-IO-V1-L



- 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

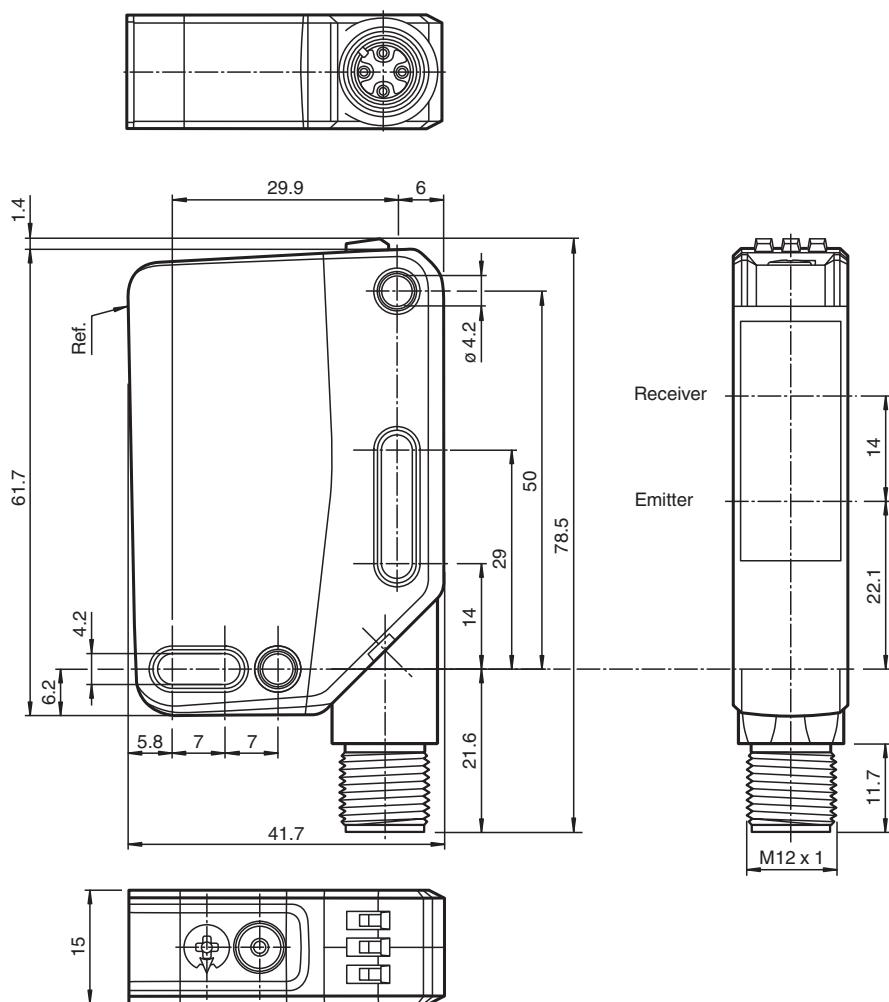
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

Release date: 2025-01-17 Date of issue: 2025-01-17 Filename: 295670-100088\_eng.pdf

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 $\mu$ s
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
<b>Functional safety related parameters</b>	
MTTF <sub>d</sub>	672 a

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

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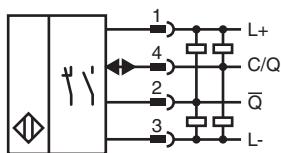
## Technical Data

Mission Time ( $T_M$ )	20 a
Diagnostic Coverage (DC)	0 %
<b>Indicators/operating means</b>	
Operation indicator	LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode
Function indicator	Yellow LED: Permanently lit - light path clear Permanently off - object detected Flashing (4 Hz) - insufficient operating reserve
Control elements	Light-on/dark-on changeover switch
Control elements	sensitivity adjustment
<b>Electrical specifications</b>	
Operating voltage	$U_B$ 10 ... 30 V DC
Ripple	max. 10 %
No-load supply current	$I_0$ < 15 mA at 24 V Operating voltage
Protection class	III
<b>Interface</b>	
Interface type	IO-Link ( via C/Q = pin 4 )
IO-Link revision	1.1
Device profile	Identification and diagnosis Smart Sensor type 2.4
Device ID	0x111212 (1118738)
Transfer rate	COM2 (38.4 kBit/s)
Min. cycle time	2.3 ms
Process data width	Process data input 2 Bit Process data output 2 Bit
SIO mode support	yes
Compatible master port type	A
<b>Output</b>	
Switching type	The switching type of the sensor is adjustable. The default setting is: C/Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally open / dark-on
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	$U_d$ $\leq$ 1.5 V DC
Switching frequency	$f$ 2000 Hz
Response time	250 $\mu$ s
<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 $\leq$ 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	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP67 / IP69 / IP69K

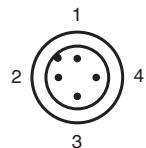
## Technical Data

Connection	4-pin, M12 x 1 connector, 90° rotatable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 47 g
Dimensions	
Height	61.7 mm
Width	15 mm
Depth	41.7 mm

## Connection Assignment



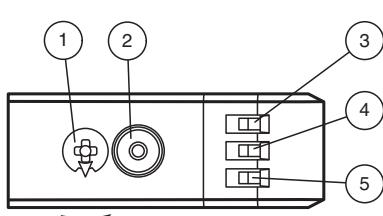
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

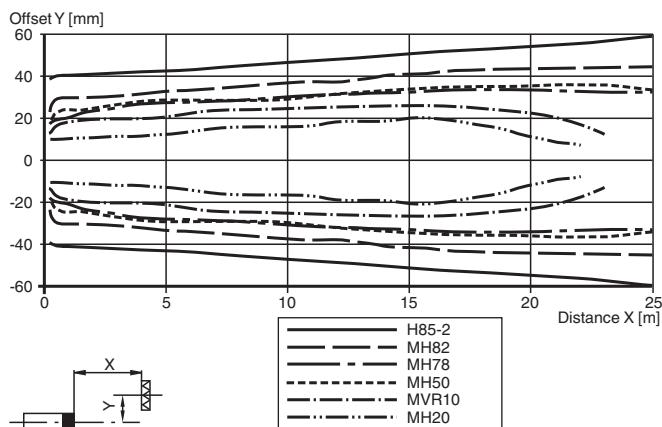
## Assembly



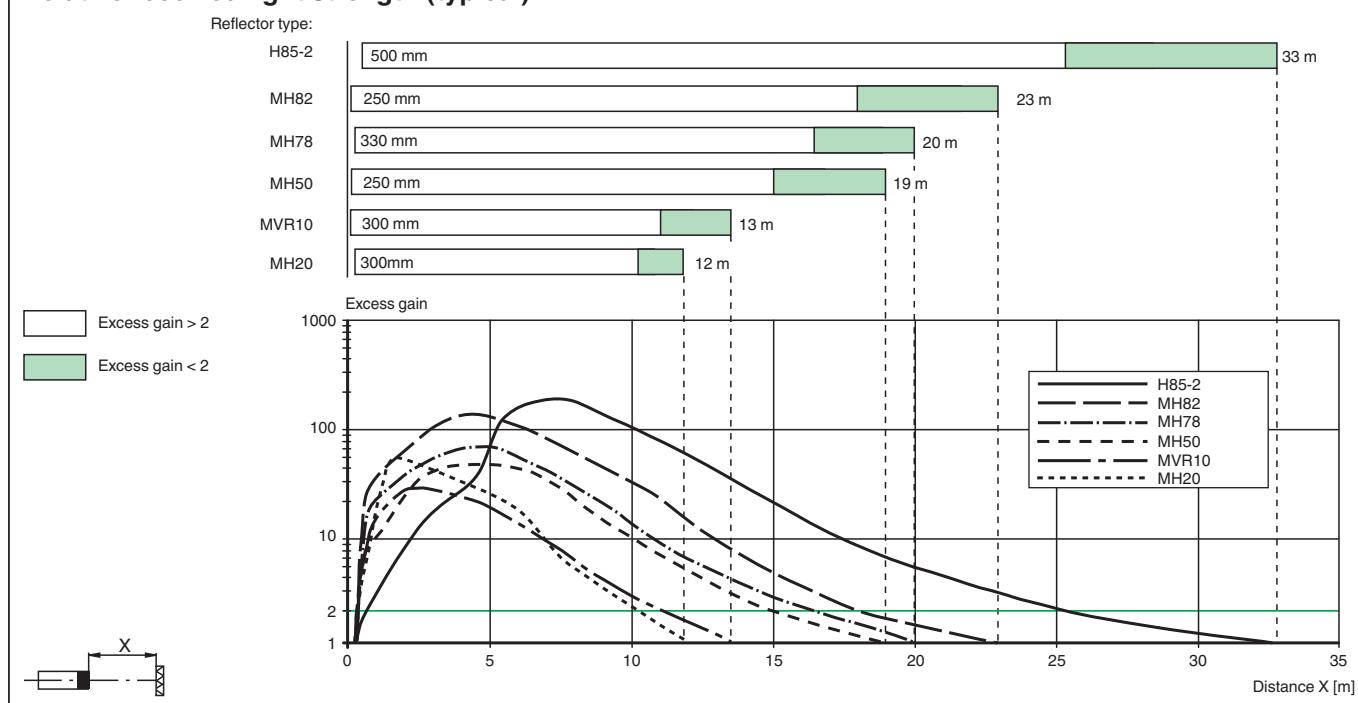
1	Sensitivity adjustment	
2	Light-on / dark-on changeover switch	
3	Operating indicator / dark on	GN
4	Signal indicator	YE
5	Operating indicator / light on	GN

## Characteristic Curve

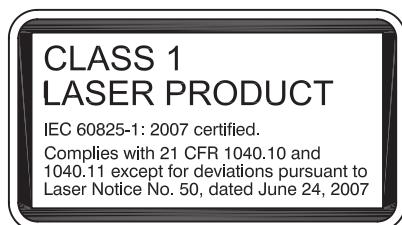
### Characteristic response curve



### Relative received light strength (typical)



## 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.

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.