

# Laser retroreflective sensor OBR25M-R200-2EP-IO-0,3M-V31-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

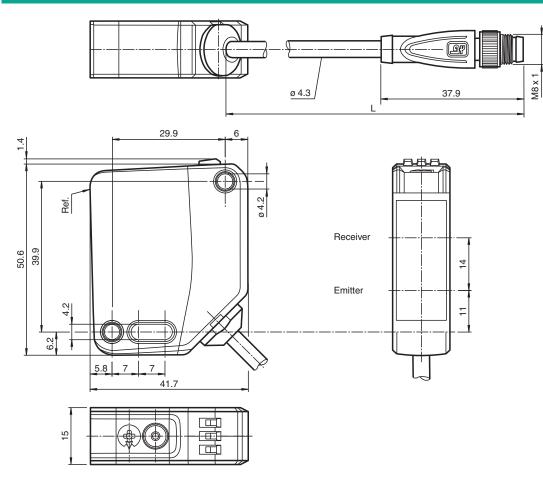
# 🙈 😧 IO-Link

#### **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**



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### **Technical Data**

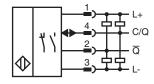
		0.05
Effective detection range		0 25 m
Reflector distance		0.5 25 m
Threshold detection range		33 m
Reference target		H85-2 reflector
Light source		laser diode
Light type		modulated visible red light
Polarization filter		yes
Laser nominal ratings		
Note		LASER LIGHT , DO NOT STARE INTO BEAM
Laser class		1
Wave length		680 nm
Beam divergence		$> 5$ mrad d63 $< 2$ mm in the range of 250 mm $\dots$ 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)		0 %
ndicators/operating means		
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
Electrical specifications		
Operating voltage	UB	10 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>0</sub>	< 15 mA at 24 V Operating voltage
Protection class	-0	
nterface		
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		0x111202 (1118722)
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
Dutput		
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

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Technical Data			
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	
Conformity			
Communication interface		IEC 61131-9	
Product standard		EN 60947-5-2	
Laser safety		EN 60825-1:2014	
Approvals and certificates			
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 60825-1:2014 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.	
Ambient conditions			
Ambient temperature		-40 60 °C (-40 140 °F) , cable, fixed installation -20 60 °C (-4 140 °F) , movable cable not appropriate for conveyor chains	
Storage temperature		-40 70 °C (-40 158 °F)	
Mechanical specifications			
Degree of protection		IP67 / IP69 / IP69K	
Connection		fixed cable 300 mm with M8 x 1 male connector; 4-pin	
Material			
Housing		PC (Polycarbonate)	
Optical face		PMMA	
Mass		approx. 41 g	
Dimensions			
Height		50.6 mm	
Width		15 mm	
Depth		41.7 mm	
Cable length		0.3 m	

# **Connection Assignment**



# **Connection Assignment**



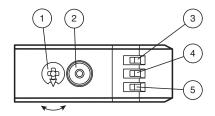
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

#### **Connection Assignment**

Wire colors in accordance with EN 60947-5-2

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

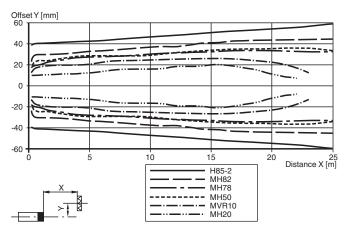
# Assembly



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

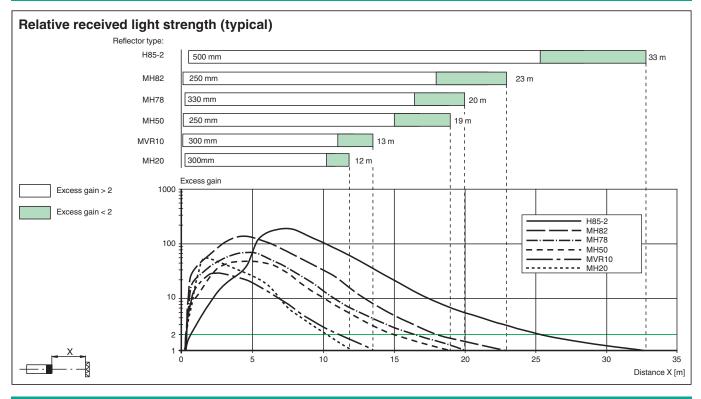


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#### **Characteristic Curve**



### **Safety Information**



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

CLASS 1 ASER 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

# Commissioning

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

#### Sensing Range / Sensitivity

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- 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.

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information" Pepperl+Fuchs Group USA: +1 330 486 0001 Germany: +49 621 776 1111

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#### 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.

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

