Dimensions

Receiver　　　Emitter

Receiver

Emitter

Model Number

OBE40M-R200-S2EP-IO-V1-L
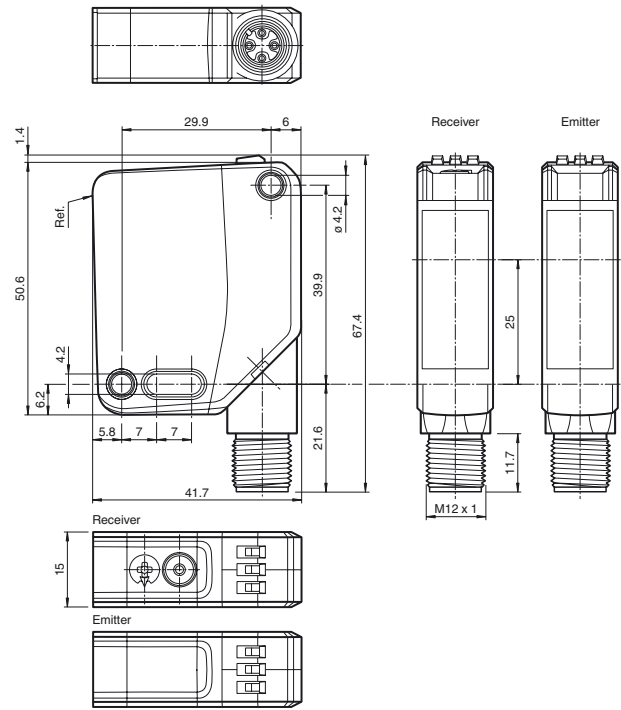
Laser thru-beam sensor

with 4-pin, M12 x 1 connector

Features

- Medium design with versatile mounting options
- DuraBeam Laser Sensors - durable and employable like an LED
- IO-link interface for service and process data
- Various frequencies for avoiding mutual interference (cross-talk immunity)
- Extended temperature range -40°C ... 60°C
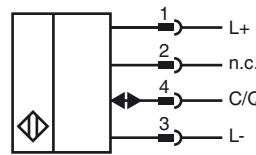- High degree of protection IP69K

Electrical connection emitter

Pin	Signal
1	L+
2	n.c.
4	C/Q
3	L-

Electrical connection receiver

Pin	Signal
1	L+
4	C/Q
2	$\overline{Q}$
3	L-

Product information

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.
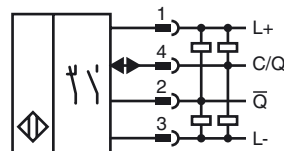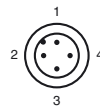
Pinout

Wire colors in accordance with EN 60947-5-2

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

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

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www.pepperl-fuchs.com　　　fa-info@us.pepperl-fuchs.com　　　fa-info@de.pepperl-fuchs.com　　　fa-info@sg.pepperl-fuchs.com　　　**PEPPERL+FUCHS**　　**1**

Indicators/operating means

Emitter
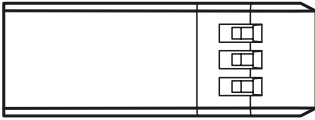
1	Operating indicator

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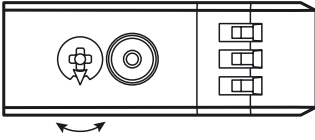
1	Sensitivity adjustment	
2	Light-on / dark-on changeover switch	
3	Operating indicator / dark on	
4	Signal indicator	
5	Operating indicator / light on	

Laserlabel

CLASS 1
LASER
PRODUCT

CLASS 1
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,
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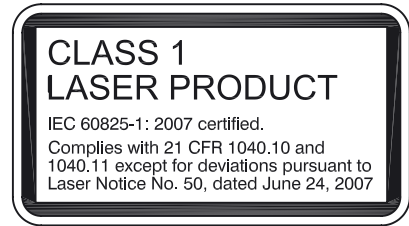
Accessories

IO-Link-Master02-USB
IO-Link master, supply via USB port or
separate power supply, LED indicators,
M12 plug for sensor connection

V1-G-2M-PUR
Female cordset, M12, 4-pin, PUR cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

OMH-MLV12-HWK
Mounting bracket for series MLV12
sensors

OMH-R200-01
Mounting aid for round steel ø 12 mm or
sheet 1.5 mm ... 3 mm

OMH-R20x-Quick-Mount
Quick mounting accessory

OMH-MLV12-HWG
Mounting bracket for series MLV12
sensors

Other suitable accessories can be found at
www.pepperl-fuchs.com

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

PEPPERL+FUCHS

Technical data

System components

Emitter	OBE40M-R200-S-IO-V1-L
Receiver	OBE40M-R200-2EP-IO-V1-L

General specifications

Effective detection range	0 ... 40 m
Threshold detection range	50 m
Light source	laser diode
Light type	modulated visible red light
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
Alignment aid	LED red (in receiver lens) illuminated constantly: beam is interrupted, flashes: reaching switching point, off: sufficient stability control
Diameter of the light spot	approx. 80 mm at a distance of 40 m
Angle of divergence	approx. 0.12 °
Ambient light limit	EN 60947-5-2 : 40000 Lux

Functional safety related parameters

$MTTF_d$	440 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	60 %

Indicators/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	Receiver: light/dark switch
Control elements	Receiver: sensitivity adjustment

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	Emitter: ≤ 13 mA Receiver: ≤ 15 mA at 24 V Operating voltage
Protection class		III

Interface

Interface type	IO-Link (via C/Q = pin 4)
Device profile	Identification and diagnosis Smart Sensor: Receiver: type 2.4 Emitter: -
Transfer rate	COM 2 (38.4 kBaud)
IO-Link Revision	1.1
Min. cycle time	2.3 ms
Process data witdh	Emitter: Process data input: 0 bit Process data output: 1 bit Receiver: Process data input: 2 bit Process data output: 2 bit
SIO mode support	yes
Device ID	Emitter: 0x111402 (1119234) Receiver: 0x111302 (1118978)
Compatible master port type	A

Input

Test input	emitter deactivation at +U_B

Output

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	≤ 1.5 V DC

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

Switching frequency	f	1250 Hz	
Response time		0.4 ms	
Conformity			
Communication interface		IEC 61131-9	
Product standard		EN 60947-5-2	
Laser safety		EN 60825-1:2014	
Ambient conditions			
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)	
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)	
Mechanical specifications			
Housing width		15 mm	
Housing height		50.6 mm	
Housing depth		41.7 mm	
Degree of protection		IP67 / IP69 / IP69K	
Connection		4-pin, M12 x 1 connector, 90° rotatable	
Material			
Housing		PC (Polycarbonate)	
Optical face		PMMA	
Mass		Emitter: approx. 37 g receiver: approx. 37 g	

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

Curves/Diagrams

Characteristic response curve

Relative received light strength
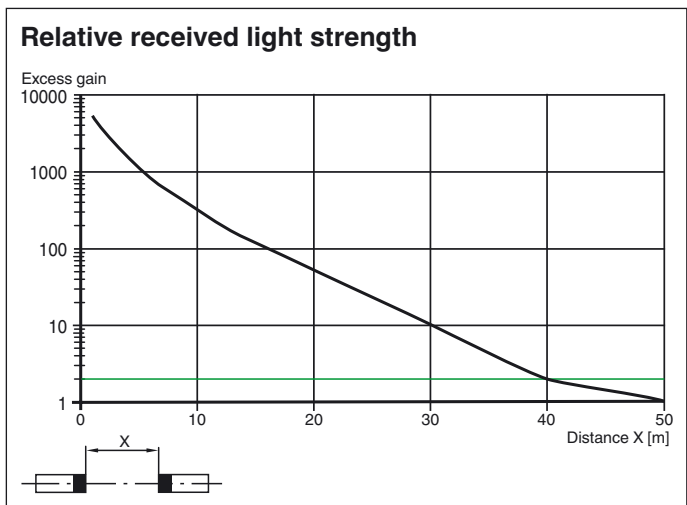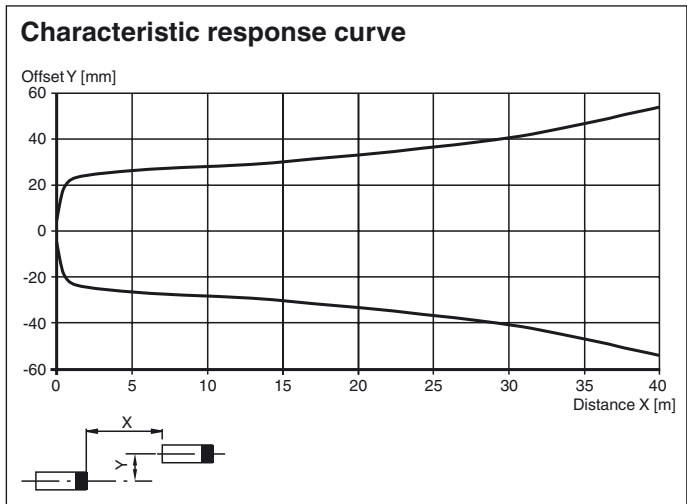
Functions and Operation

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.

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