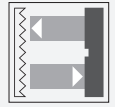# Retroreflective sensor with polarization filter

OBR15M-R200-2EP-IO_RND

- Medium design with versatile mounting options
- Extended temperature range
  -40 °C ... 60 °C
- High degree of protection IP69K
- IO-Link interface for service and process data

Retroreflective sensor with polarization filter

CE · UL LISTED · EAC · UKCA · 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
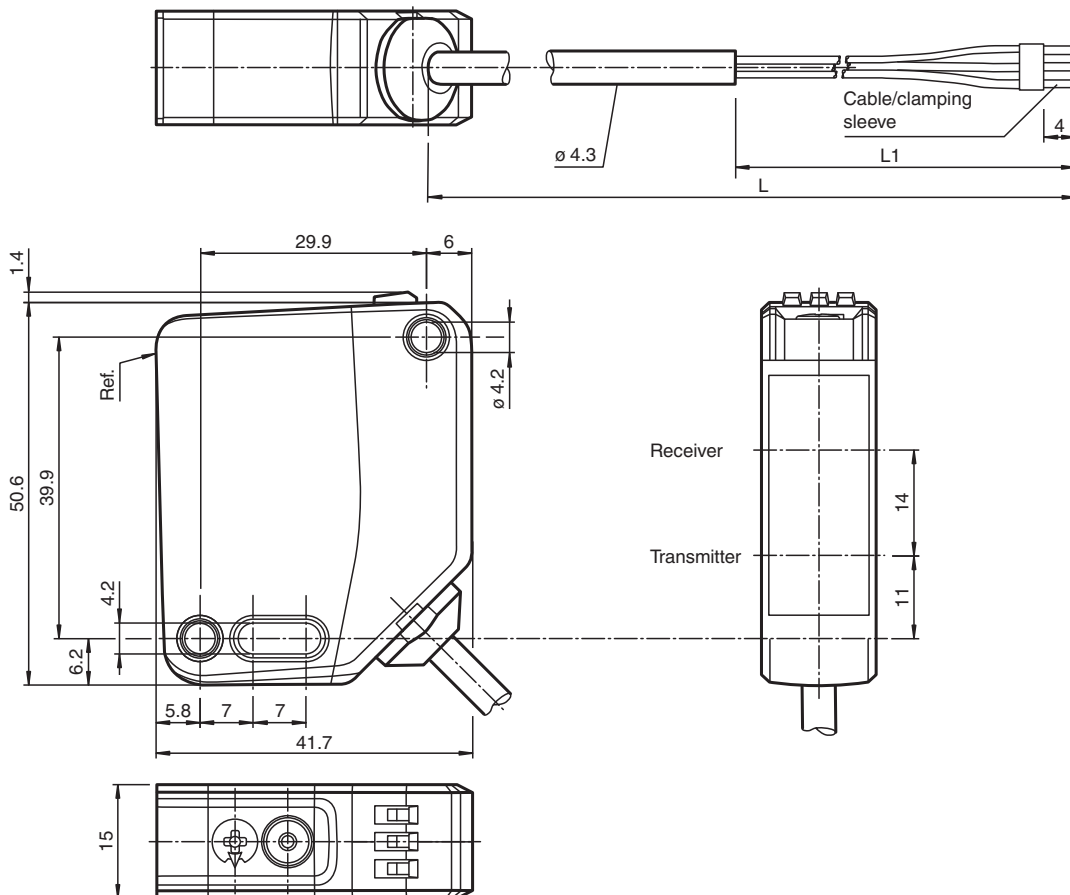
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

General specifications

Effective detection range		0 ... 15 m
Reflector distance		0.02 ... 15 m
Threshold detection range		18.5 m
Reference target		H85-2 reflector
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Polarization filter		yes
Diameter of the light spot		approx. 520 mm at a distance of 15 m
Opening angle		2 °
Ambient light limit		EN 60947-5-2 : 60000 Lux

Functional safety related parameters

$MTTF_d$		724 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %

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		Light-on/dark-on changeover switch
Control elements		sensitivity adjustment

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 18 mA at 24 V Operating voltage
Protection class		III

Interface

Interface type		IO-Link (via C/Q = BK)
IO-Link revision		1.1
Device profile		Identification and diagnosis Smart Sensor type 2.4
Device ID		0x111201 (1118721)
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

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - BK: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link /Q - WH: 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
Switching frequency	f	1000 Hz
Response time		0.5 ms

Conformity

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Technical Data

Communication interface	IEC 61131-9
Product standard	EN 60947-5-2
Approvals and certificates	
EAC conformity	TR CU 020/2011
UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1
CCC approval	CCC approval / marking not required for products rated ≤36 V
Ambient conditions	
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F) , fixed cable -20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains
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	5 m fixed cable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx.
Cable length	5 m

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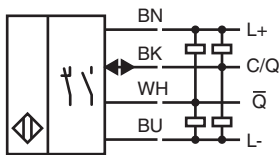
Assembly
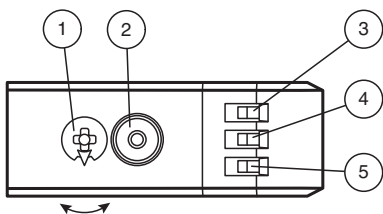
1	Sensitivity adjustment	
2	Light-on / dark-on changeover switch	
3	Operating indicator / dark on	GN
4	Signal indicator	YE
5	Operating indicator / light on	GN

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Characteristic Curve

Characteristic response curve

Offset Y [mm] vs Distance X [m]

Legend:
- H85-2
- C110-2
- H50
- VR10
- OFR100/100

Relative received light strength (typical)

Reflector type:

Reflector	Size	Range
H85-2	20 mm	18.5 m
C110-2	20 mm	18 m
H50	20 mm	13.5 m
VR10	25 mm	7 m
OFR-100/100	250 m	6.3 m

☐ Excess gain > 2
▨ Excess gain < 2

Excess gain vs Distance X [m]

Legend:
- H85-2
- C110-2
- H50
- VR10
- OFR-100/100
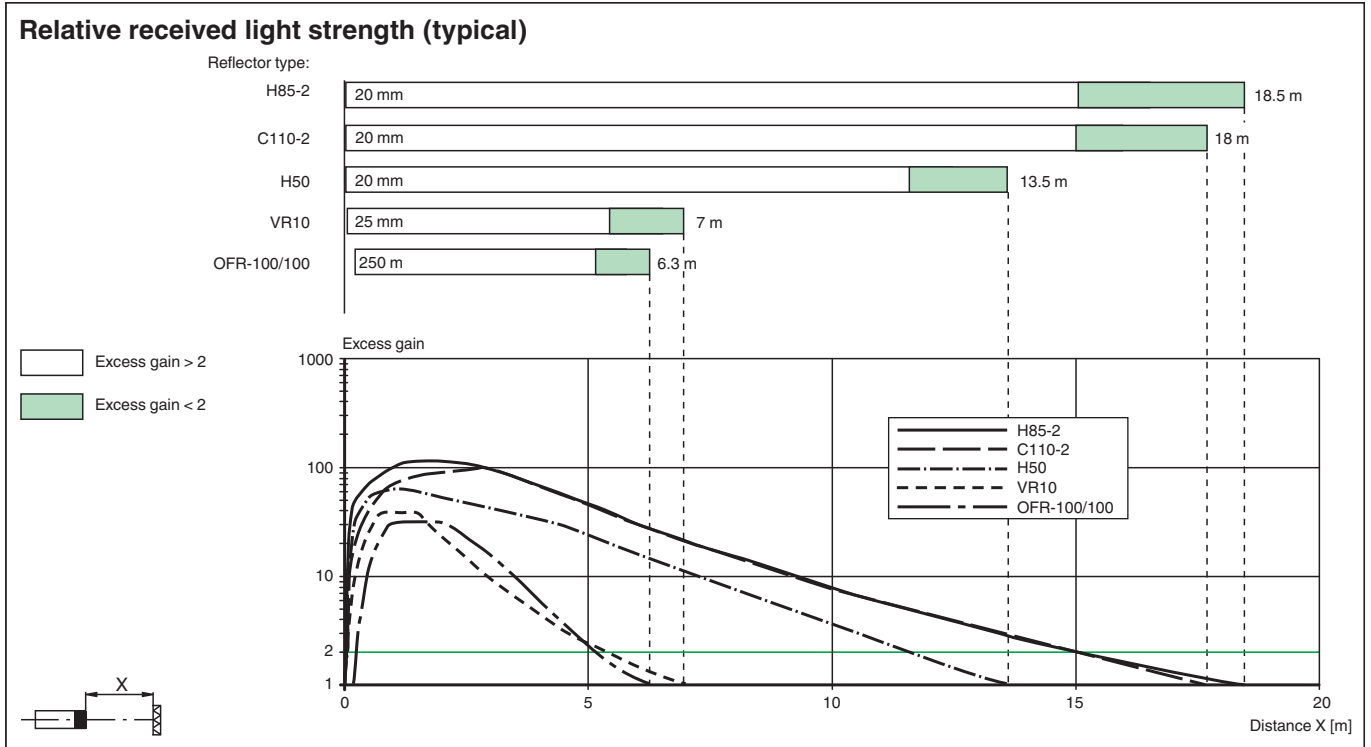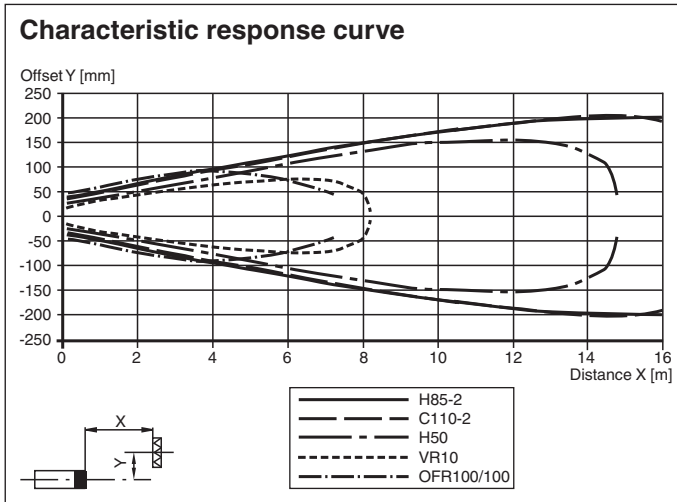
Commissioning

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.

Accessories

	REF-H50	Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap

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Accessories

	REF-VR10	Reflector, rectangular 60 mm x 19 mm, mounting holes
	OFR-100/100	Reflective tape 100 mm x 100 mm
	IO-Link-Master02-USB	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	REF-C110-2	Reflector, round ø 84 mm, central mounting hole
	REF-H85-2	Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes
	OMH-MLV12-HWG	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-MLV12-HWK	Mounting bracket for series MLV12 sensors
	OMH-R20x-Quick-Mount	Quick mounting accessory

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