

# Retroreflective sensor OBR15M-R201-A5-IO-V31



- 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



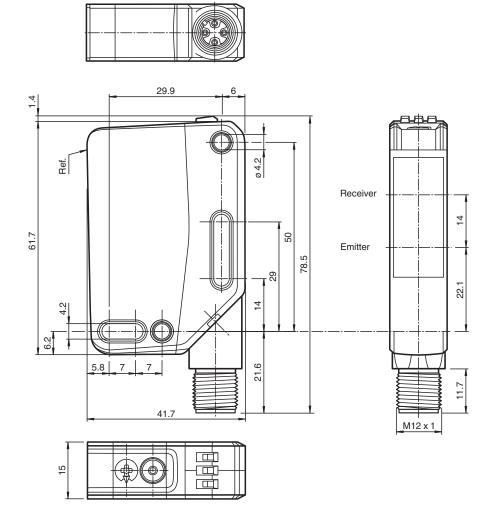
#### **Function**

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 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 <sub>d</sub>	724 a
Mission Time (T <sub>M</sub> )	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

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

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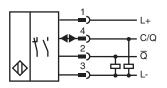
Switching type       The switching type of the sensor is adjustable. The default setting is:         C/Q - Pin4: PNP normally open / dark-on, IO-Link       IO-Link         Signal output       2 PNP outputs, short-circuit-Proof, reverse polarity protection, surge-proof         Switching voltage       max. 30 V DC         Switching current       max. 100 mA, resistive load         Usage category       DC-12 and DC-13         Voltage drop       Ud       ≤ 1.5 V DC         Switching frequency       f       1000 Hz         Response time       0.5 ms       000 Hz         Conformity       EIC 61131-9       Product standard         Product standard       EIS 60947-5-2       EIS 056, cULus Listed , class 2 power supply , type rating 1         CCC approval       CC Capproval / marking not required for products rated ≤36 V         Ambient temperature       -40 60 °C (-40 140 °F)         Storage temperature       -40 70 °C (-40 158 °F)	Technical Data		
Control elementsesensitivity adjustmentElectrical specificationsUOperating voltageUNo-load supply currentIuInterfaceIIIInterface SpecificationsIIIInterface SpecificationsIIIDevice profileIIIDevice DIIIIDevice DIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Function indicator		Permanently lit - light path clear Permanently off - object detected
Electrical specificationsUOperating voltageU1030 VDCRipplemax. 10 %Ne-load supply currentI1Protection classIIIInterfaceIIIInterface typeIO-Link (via C/G = pin 4)I-O-Link rovisonII-O-Link rovisonIDevice profileIO-Link (via C/G = pin 4)I-O-Link rovisonIDevice IDIO-Link rovisonDevice IDIO-Link rovisonMin. cycle lineIO-Link rovisonMin. cycle lineIO-Link rovisonMin. cycle lineIO-Link rovisonNic. cycle lineIO-Link rovisonNic. cycle lineIO-Link rovisonSiO mode supportIO-Sease data input 2 Bit Process data input 2 Bit Process data input 2 Bit Process data input 2 Bit 	Control elements		Light-on/dark-on changeover switch
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Benice ID         Smart Sensor type 2.4           Device ID         0x111217 (1118743)           Transfer rate         COM2 (88 4 KBivs)           Min. cycle time         2.3 ms           Process data input 2 Bit         Process data input 2 Bit           SIO mode support         A           Output         EnviceName           Singla output         The switching type of the sensor is adjustable. The default setting is: C/O-Prid: PNP normally Open / drach, N. O-Link           Singla output         2 PNP outputs, short-circuit-proof, reverse polarity protection, surge-proof           Switching voltage         max. 30 V DC           Switching voltage         max. 30 V DC           Switching voltage         max. 30 V DC           Switching requency         f           Voltag eforp         U           Voltag etorp         U           Switching frequency         f           Voltag etorp         So Sons           Contormity         EN 60947-52           Approval         EN 60947-52           Approval         EN 60947-52           Approval         EN 60947-52           Approval         CC Ca approval / marking not required for products rated s38 V           Ut approval         EN 60947-52           Approval			
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Min. cycle time         2.3 ms           Process data width         Process data input 2 Bit           SIO mode support         yes           Compatible master port type         A           Output         Sio mode support           Switching type         The switching type of the sensor is adjustable. The default setting is: C/O - Pin4: PNP normally oppen / dark-on, IO-Link C/O - Pin4: PNP normally oppen / dark-on, IO-Link Signal output           Signal output         2 PNP outputs, short-circuit-proof, reverse polarity protection, surge-proof           Switching voltage         max. 30 V DC           Switching urent         Imax. 30 v DC           Usage category         DC-12 and DC-13           Voltage drop         Ug         < 1.5 V DC			
Process data width         Process data input 2 Bit Process data output 2 Bit           SUC mode support         A           Compatible master port type         A           Switching type         The switching type of the sensor is adjustable. The default setting is: C/C - Pin4: PNP normally open / dark-on, IO-Link /G - Pin2: PNP normally obed / light-on           Switching voltage         The switching type of the sensor is adjustable. The default setting is: C/C - Pin4: PNP normally obed / light-on           Switching voltage         ax. 100 mA , resistive load           Switching voltage         max. 30 V DC           Switching requency         DC-12 and DC-13           Voltage drop         Ua           Voltage forp         Ua           Switching frequency         f           Product standard         EC 61131-9           Communication interface         IEC 61131-9           Product standard         EN 60947-5-2           Approval         EN 60947-5-2           Approval         Ca poroval / marking not required for product stated ≤36 V           Ambient conditions         Pro - 40 70 °C (-40 140 °F)           Storage temperature         - 40 70 °C (-40 140 °F)           Ambient conditions         15 mm           Housing width         15 mm           Housing height         61.			
Process data oùtput 2 Bit           SiO mode support         yes           Compatible master port type         A           Output         The switching type of the sent of sadjustable. The default setting is:	Min. cycle time		2.3 ms
Compatible master port type     A       Output       Switching type     C/G - Pin4: PNP normally open / dark-on, 10-Link /0 - Pin4: PNP normally open / dark-on, 10-C (-40 140 °F)       Mousing height     15 rm       Housing width     15 rm       Housing height     61.7 rm       Housing depth     41.7 rm       Housing depth     41.7 rm       Housing depth     PC (Polycarbonate)       Housing depth     PC (Polycarbonate)       Housing depth     PC (Polycarbonate)	Process data width		
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Switching type     The switching type of the sensor is adjustable. The default setting is: C/O = Pin4: PNP normally open / dark-on, IO-Link Normally open / dark-on, IO-Link Normally open / dark-on, IO-Link Switching output           Signal output         2 PNP outputs, short-circuit-proof, reverse polarity protection, surge-proof           Switching outrent         max. 30 V DC           Switching current         max. 100 mA , resistive load           Usage category         DC-12 and DC-13           Voltage drop         Ud         ≤ 1.5 V DC           Switching frequency         f         1000 Hz           Response time         0.5 ms           Communication interface         ElE C 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         E87056, cULus Listed , class 2 power supply, type rating 1           CC capproval         c2 capproval / marking not required for products rated ≤36 V           Ambient conditions         -40 60 °C (-40 140 °F)           Storage temperature         -40 60 °C (-40 140 °F)           Housing width         15 mm           Housing height         61.7 mm           Housing depth         15 m           Housing depth         41.7 mm           Housing depth         167 / IP69 / IP69K           Connection <td>Compatible master port type</td> <td></td> <td>A</td>	Compatible master port type		A
C/Q - Pir4: PNP normally open / draft-on, IO-Link         Signal output       Image: Signal output         Signal output       max. 30 V DC         Switching outrent       Image: Signal output         Switching outrent       Image: Signal output         Voltage drop       DC-12 and DC-13         Switching frequency       f         Switching frequency       f         Response time       Image: Signal output         Communication interface       Image: Signal output         Product standard       ES 0566, cULus Listed , class 2 power supply, type rating 1         Cocc approval       Image: Signal output         Ambient temperature       e40 60 °C (-40 140 °F)         Storage temperature       Image: Signal output         Housing width       Image: Signal output         Housing width       Image: Signal output         Housing width       Image: Signal output         Housing depth       Image: Signal output         Housing width       Image: Signal output         Housing depth       Image: Signal output         Image: Signal output	Output		
Switching voltage         max. 30 V DC           Switching current         max. 100 mA, resistive load           Usage category         DC-12 and DC-13           Voltage drop         Ud         ≤ 1.5 V DC           Switching frequency         f         1000 Hz           Response time         0.5 ms           Conformity         IEC 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         IEC 6200 (CC approval / marking not required for products rated ≤36 V           CCC 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         -40 70 °C (-40 158 °F)           Mechanical specifications         -40 70 °C (-40 158 °F)           Housing width         15 mm           Housing width         15 mm           Housing depth         41.7 mm           Poer (Pof / IP69 / IP6	Switching type		C/Q - Pin4: PNP normally open / dark-on, IO-Link
Switching currentImax. 100 mA, resistive loadUsage categoryDC-12 and DC-13Voltage dropUa $\leq 1.5$ V DCSwitching frequencyf1000 HzResponse timeG0.5 msConformityCommunication interfaceIEC 61131-9Product standardEN 60947-5-2Approvals and certificatesUL approvalE87056, cULus Listed, class 2 power supply, type rating 1CCC approvalCCC approval / marking not required for products rated $\leq 36$ VAmbient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Housing widthI5 mmHousing depth41.7 mmDegree of protectionGIPG7 / IPG9 / IPG9KConnection-4pin, M8 x 1 connector, 90° rotatableMaterialPC (Polycarbonate)Optical facePMMA	Signal output		2 PNP outputs, short-circuit-proof, reverse polarity protection, surge-proof
Usage category         DC-12 and DC-13           Voltage drop         Ud         ≤ 1.5 V DC           Switching frequency         f         1000 Hz           Response time         0.5 ms           Conformity         5           Communication interface         6           Product standard         EN 60947-5-2           Approvals and certificates         E87056, cULus Listed, class 2 power supply, type rating 1           CCC 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         -40 60 °C (-40 140 °F)           Storage temperature         -40 70 °C (-40 158 °F)           Housing height         51 mm           Housing depth         15 mm           Housing depth         51 mm           Degree of protection         1967 / IP69 / IP69 K           Connection         4-pin, M8 x 1 connector, 90° rotatable           Material         Material           Housing         PC (Polycarbonate)	Switching voltage		max. 30 V DC
Noting error         Ud         ≤ 1.5 V DC           Switching frequency         f         1000 Hz           Response time         0.5 ms           Conformity         E           Communication interface         IEC 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         E           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         -40 60 °C (-40 140 °F)           Storage temperature         -40 70 °C (-40 158 °F)           Housing height         15 mm           Housing height         61.7 mm           Housing depth         41.7 mm           Degree of protection         IP67 / IP69 / IP69K           Connection         4-pin, M8 x 1 connector, 90° rotatable           Material         I           Housing         PC (Polycarbonate)           PC (Polycarbonate)         PMMA	Switching current		max. 100 mA , resistive load
Switching frequency         f         1000 Hz           Response time         0.5 ms           Conformity         IEC 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         E87056 , cULus Listed , class 2 power supply , type rating 1           CCC approval         CCC approval / marking not required for products rated ≤36 V           Ambient conditions         -40 60 °C (-40 140 °F)           Storage temperature         -40 70 °C (-40 158 °F)           Mechanical specifications         -40 70 °C (-40 158 °F)           Housing width         15 mm           Housing depth         61.7 mm           Degree of protection         IP67 / IP69 / IP69K           Connection         4-pin, M8 x 1 connector, 90° rotatable           Material         PC (Polycarbonate)           Mousing         PC (Polycarbonate)	Usage category		DC-12 and DC-13
Response time       0.5 ms         Conformity       IEC 61131-9         Product standard       EN 60947-5-2         Approvals and certificates       EN 60947-5-2         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       -40 60 °C (-40 140 °F)         Storage temperature       -40 70 °C (-40 158 °F)         Mechanical specifications       -41.7 mm         Housing width       15 mm         Housing depth       41.7 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       4-pin, M8 x 1 connector, 90° rotatable         Material       PC (Polycarbonate)         Mousing       PC (Polycarbonate)	Voltage drop	U <sub>d</sub>	≤ 1.5 V DC
Conformity         Communication interface         IEC 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         EN 60947-5-2           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         -40 60 °C (-40 140 °F)           Storage temperature         -40 70 °C (-40 158 °F)           Mechanical specifications         -40 70 °C (-40 158 °F)           Housing width         15 mm           Housing depth         41.7 mm           Degree of protection         EIP67 / IP69 / IP69K           Connection         4-pin, M8 x 1 connector, 90° rotatable           Material         60           Housing         PC (Polycarbonate)           PO (Polycarbonate)         PMMA	Switching frequency	f	1000 Hz
Communication interface         IEC 61131-9           Product standard         EN 60947-5-2           Approvals and certificates         E87056, cULus Listed, class 2 power supply, type rating 1           UL approval         E87056, cULus Listed, class 2 power supply, type rating 1           CCC approval         CC approval / marking not required for products rated ≤36 V           Ambient conditions         -40 60 °C (-40 140 °F)           Storage temperature         -40 70 °C (-40 140 °F)           Mechanical specifications         -40 70 °C (-40 140 °F)           Housing width         15 mm           Housing height         61.7 mm           Pogree of protection         61.7 mm           Degree of protection         IP67 / IP69 / IP69K           Connection         4-pin, M8 x 1 connector, 90° rotatable           Material         61           Housing         PC (Polycarbonate)           Optical face         PMMA	Response time		0.5 ms
Product standard       EN 60947-5-2         Approvals and certificates       E87056, cULus Listed, class 2 power supply, type rating 1         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       -40 60 °C (-40 140 °F)         Storage temperature       -40 70 °C (-40 158 °F)         Mechanical specifications       -40 70 °C (-40 158 °F)         Housing width       15 mm         Housing depth       61.7 mm         Housing depth       41.7 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       4-pin, M8 x 1 connector, 90° rotatable         Material       PC (Polycarbonate)         Pousing       PC (Polycarbonate)	Conformity		
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	Communication interface		IEC 61131-9
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       -40 60 °C (-40 140 °F)         Ambient temperature       -40 70 °C (-40 158 °F)         Mechanical specifications       -40 70 °C (-40 158 °F)         Housing width       15 mm         Housing depth       61.7 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       4-pin, M8 x 1 connector, 90° rotatable         Material       PC (Polycarbonate)         Pousing       PC (Polycarbonate)         Optical face       PMMA	Product standard		EN 60947-5-2
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       -40 60 °C (-40 140 °F)         Ambient temperature       -40 70 °C (-40 158 °F)         Mechanical specifications       -40 70 °C (-40 158 °F)         Housing width       15 mm         Housing depth       61.7 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       4-pin, M8 x 1 connector, 90° rotatable         Material       PC (Polycarbonate)         Pousing       PC (Polycarbonate)         Optical face       PMMA	Approvals and certificates		
CCC approval       CCC approval / marking not required for products rated ≤36 V         Ambient conditions       -40 60 °C (-40 140 °F)         Ambient temperature       -40 70 °C (-40 158 °F)         Storage temperature       -40 70 °C (-40 158 °F)         Mechanical specifications			E87056 , cULus Listed , class 2 power supply , type rating 1
Ambient conditionsAmbient temperature-40 60 °C (-40 140 °F)Storage temperature-40 70 °C (-40 158 °F)Mechanical specificationsHousing width15 mmHousing height61.7 mmHousing depth41.7 mmDegree of protectionIP67 / IP69 / IP69KConnection4-pin, M8 x 1 connector, 90° rotatableMaterialPC (Polycarbonate)HousingPC (Polycarbonate)			
Storage temperature     -40 70 °C (-40 158 °F)       Mechanical specifications     -40 70 °C (-40 158 °F)       Housing width     15 mm       Housing height     61.7 mm       Housing depth     41.7 mm       Degree of protection     IP67 / IP69 / IP69K       Connection     4-pin, M8 x 1 connector, 90° rotatable       Material     PC (Polycarbonate)       PD (polycarbonate)     PMMA			
Mechanical specifications         Housing width       15 mm         Housing height       61.7 mm         Housing depth       41.7 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       4-pin, M8 x 1 connector, 90° rotatable         Material       PC (Polycarbonate)         Optical face       PMMA	Ambient temperature		-40 60 °C (-40 140 °F)
Housing width15 mmHousing height61.7 mmHousing depth41.7 mmDegree of protectionIP67 / IP69 / IP69KConnection4-pin, M8 x 1 connector, 90° rotatableMaterialIHousingPC (Polycarbonate)Optical facePMMA			-40 70 °C (-40 158 °F)
Housing height61.7 mmHousing depth41.7 mmDegree of protectionIP67 / IP69 / IP69 KConnection4-pin, M8 x 1 connector, 90° rotatableMaterialPC (Polycarbonate)HousingPC (Polycarbonate)Optical facePMMA	Mechanical specifications		
Housing depth     41.7 mm       Degree of protection     IP67 / IP69 / IP69K       Connection     4-pin, M8 x 1 connector, 90° rotatable       Material     PC (Polycarbonate)       Housing     PC (Polycarbonate)       Optical face     PMMA			
Degree of protection     IP67 / IP69 / IP69K       Connection     4-pin, M8 x 1 connector, 90° rotatable       Material     PC (Polycarbonate)       Housing     PC (Polycarbonate)       Optical face     PMMA			
Connection     4-pin, M8 x 1 connector, 90° rotatable       Material     PC (Polycarbonate)       Housing     PC (Polycarbonate)       Optical face     PMMA	Housing depth		41.7 mm
Material     PC (Polycarbonate)       Optical face     PMMA	Degree of protection		IP67 / IP69 / IP69K
Housing     PC (Polycarbonate)       Optical face     PMMA	Connection		4-pin, M8 x 1 connector, 90° rotatable
Optical face PMMA	Material		
	Housing		PC (Polycarbonate)
Mass approx. 47 g	Optical face		PMMA
	Mass		approx. 47 g

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

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#### Connection



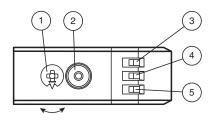
# **Connection Assignment**



Wire colors in accordance with EN 60947-5-2

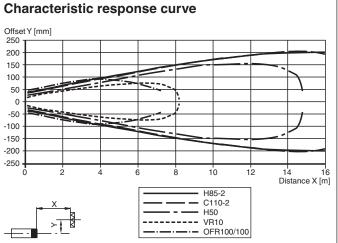
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

# 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**

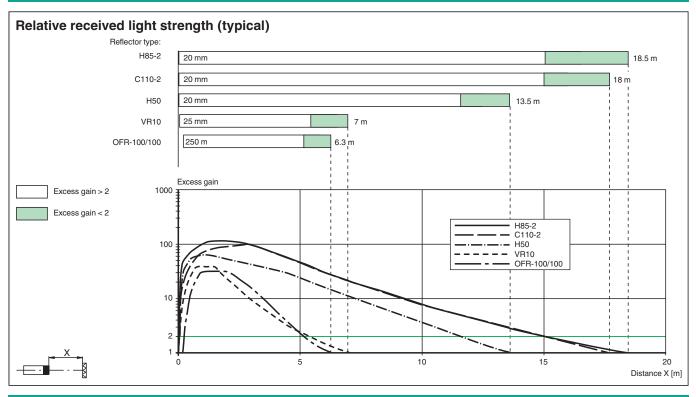


Refer to "General Notes Relating to Pepperl+Fuchs Product Information"



#### Retroreflective sensor

### **Characteristic Curve**



## 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.

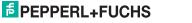
If you press the light-on / dark-on changeover switch for more than 4 seconds, the light-on / dark-on mode changes back to the original setting. On release of the light-on / dark-on changeover switch the current state is activated.

**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.

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	REF-H50	Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap
2 3	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

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



# Accessories V1-W-2M-PUR Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey **6** / V1-G-2M-PUR Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey OMH-RL31-02 Mounting bracket narrow OMH-RL31-03 Mounting bracket narrow OMH-RL31-04 Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm OMH-RL31-07 Mounting bracket including adjustment OMH-RL31-08 Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm OMH-R20x-Quick-Mount Quick mounting accessory

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

