IO-Link

Model Number

RL31-8-H-800-RT-IO/59/115/136

Background suppression sensor
with 2 m fixed cable

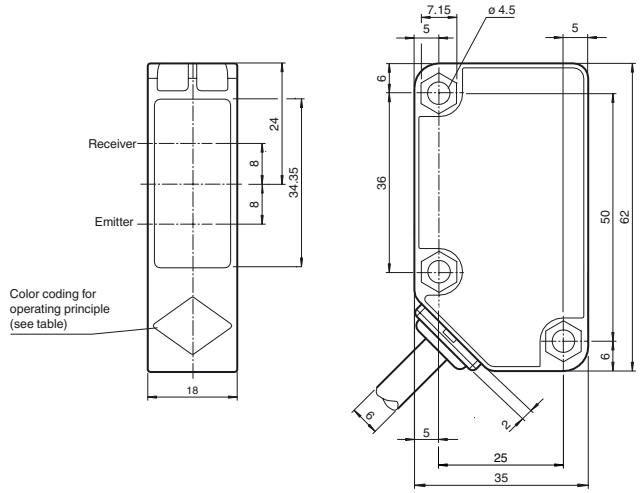
Features

- Measuring photoelectric sensor
- IO-link interface for service and process data
- PowerBeam transmitter LED
- Large adjustment range can be precisely defined
- Various operating modes available
- Low sensitivity to target color

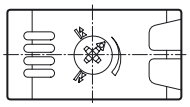
Product information

The measuring photoelectric sensor combines the benefits of the triangulation principle with the measuring functionality of a distance sensor. The integrated measuring principle enables a variety of switching functions in one device, a large sensing range up to 800 mm and a small BW/WB difference up to the final detection range.
The sensor is equipped with an IO-Link interface, through which the measuring principle is optimized to the requirements of the relevant application.

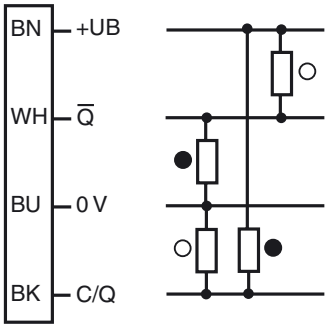
Dimensions



Operating principle	color
Retroreflective sensor with polarisation filter	green
Retroreflective sensor	blue
Diffusive mode sensor	white
Thru-beam sensor	grey
Diffusive mode sensor with background suppression	red

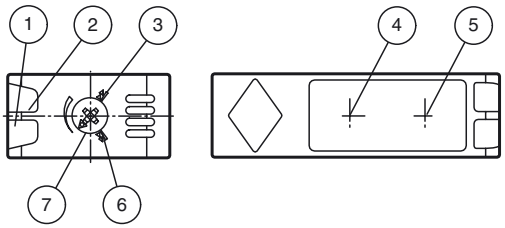


Electrical connection



○ = Light on
● = Dark on

Indicators/operating means



1	Operating display	green
2	Signal display	yellow
3	Page up	
4	Emitter	
5	Receiver	
6	Page down	
7	Sensing range adjuster	

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Technical data

General specifications		
Detection range		50 ... 800 mm
Detection range min.		50 ... 100 mm
Detection range max.		50 ... 800 mm
Adjustment range		100 ... 800 mm
Diagnosis range		100 ... 800 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
Black/White difference (6 %/90 %)		< 5 %
Diameter of the light spot		approx. 25 mm at a distance of 800 mm
Angle of divergence		approx. 2 °
Ambient light limit		20000 Lux
Functional safety related parameters		
$MTTF_d$		580 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operating display		LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function display		LED yellow ; ON: object inside the sensing range ; OFF: object outside the sensing range
Controls		Detection range adjuster
Parameterization display		IO link communication: green LED goes out briefly (f = 1 Hz)
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , class 2
Ripple		max. 10 %
No-load supply current	I_0	max. 25 mA at 24 V supply voltage
Interface		
Interface type		IO-Link
Protocol		IO link V1.0
Mode		COM 2 (38.4 kBaud)
Output		
Switching type		dark on
Signal output		2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Voltage drop	U_d	≤ 2 V DC
Switching frequency	f	200 Hz
Response time		2.5 ms
Ambient conditions		
Ambient temperature		-30 ... 55 °C (-22 ... 131 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Protection degree		IP67
Connection		2 m fixed cable , 4-wire
Material		
Housing		Polycarbonate
Optical face		PMMA
Mass		133 g
Compliance with standards and directives		
Directive conformity		
Standard conformity		
Product standard		EN 60947-5-2:2007 IEC 60947-5-2:2007
Approvals and certificates		
Protection class		II , rated insulation voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit basis insulation of input circuit according to EN 50178, rated insulation voltage 240 V AC
UL approval		cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval		Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

Accessories

PACTware 4.X

IODD Interpreter
Software for the integration of IODDs in a frame application (e. g. PACTware)

IO-Link-Master01-USB
IO-Link Master

IO-Link-Master-USB DTM
Communication DTM for use of IO-Link-Master

OMH-RL31-01
Mounting bracket

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-RL31-05
Mounting bracket with M10 threaded rod

OMH-RL31-06
Stainless steel mounting bracket with adjustable half clamp on the side

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

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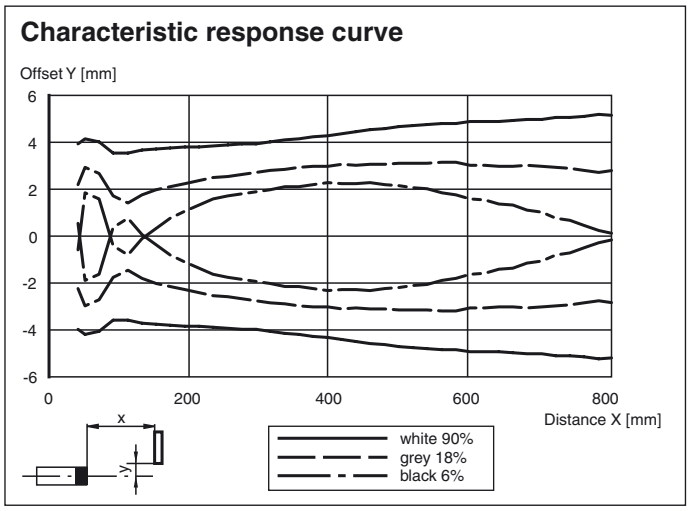
Curves/Diagrams



Setting information

Detection range adjustment:

The detection range can be adjusted between 100 mm and 800 mm via the rotary switch or IO-Link. For finer adjustment, the adjustable detection range is divided into several subranges which can be selected using Page Up/Down.

The value set with IO-Link is always assigned the current rotary switch configuration.

Setting using the rotary switch:

Increasing the detection range:
Turn the potentiometer to the right. If the desired detection range is not reached, turn the potentiometer to the right until it stops (Page Up). The green LED will flash briefly. Now set the desired detection range again.

Reducing the detection range:
Turn the potentiometer to the left. If the desired detection range is not reached, turn the potentiometer to the left until it stops (Page Down). The green LED will flash briefly. Now set the desired detection range again.

Example application: manually reduce detection range from 750 mm to 120 mm:

The potentiometer has a position as shown here, but works with a 750 mm detection range.

Now turn the potentiometer completely to the left until it stops (Page Down). The green LED will flash briefly.

Now set the detection range to 120 mm. If the desired detection range cannot be set, turn the potentiometer again to the left until it stops (Page Down) and repeat the procedure.

Setting via IO-Link interface

Setting different operating modes via IO-Link interface

The devices have an IO-Link interface as standard for diagnostic and parameterization tasks enabling optimum adaptation of the sensors to the application. In addition, four different operating modes can be set:

Background suppression operating mode (1 or 2 switching points):

- Detection of objects irrespective of type and color in a defined sensing range. Objects in the background are reliably suppressed
- Background suppression with 2 switching points

Background evaluation operating mode:

- Detection of objects irrespective of type and color against a defined background. Reliable detection of objects at close range

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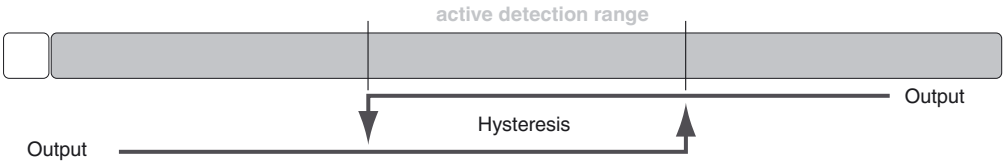
(detection range>=0mm). The background serves as reference

Window operation operating mode:

- Detection of objects irrespective of type and color in a defined sensing range. Reliable detection when leaving the defined sensing range.

Hysteresis operating mode:

- Detection of objects irrespective of type and color between a defined switch-on and switch-off point



To use the diagnostic and parameterization options, you will find the compatible IODD, and if required, the FDT base application PACTware in the download area at **www.pepperl-fuchs.com**.

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