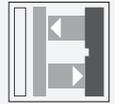




# Background suppression sensor

## RL28-8-H-400-FFP-RT/47/105

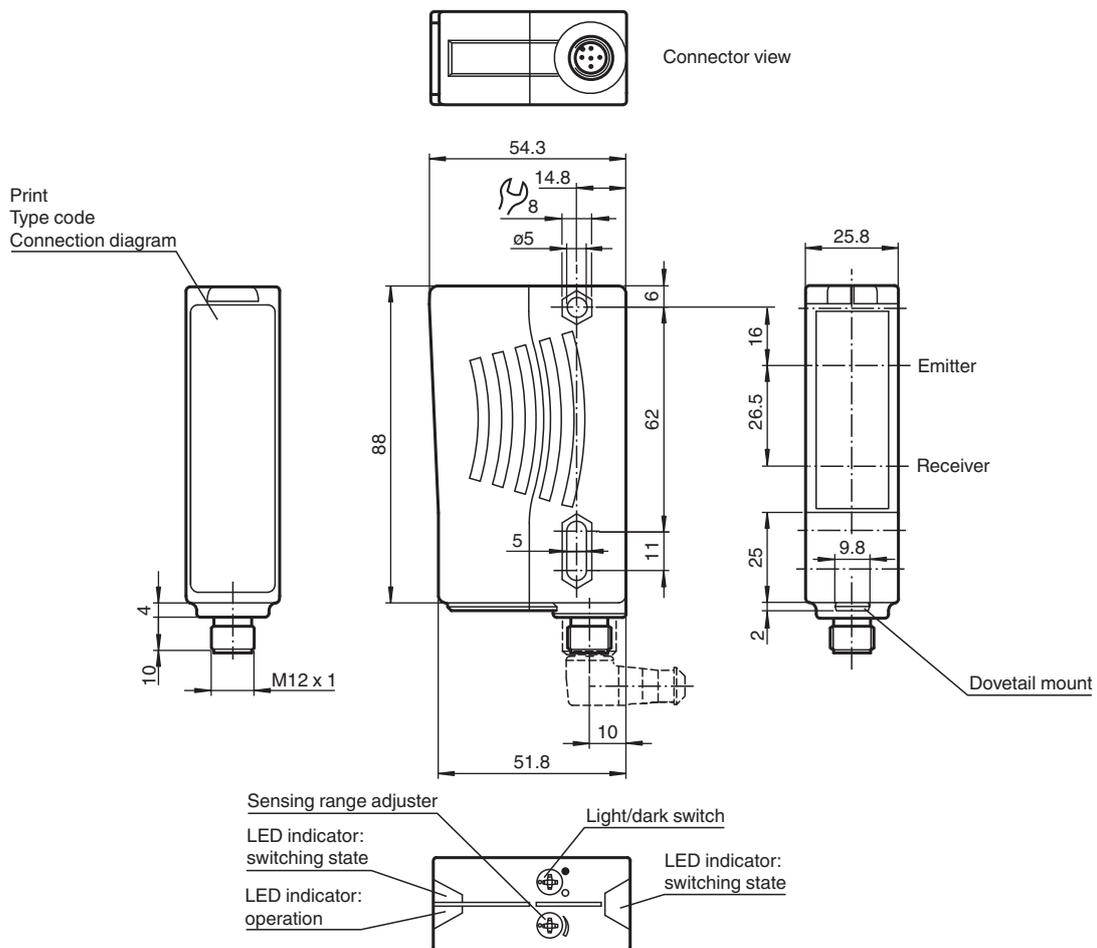


- Special range of application: Specialised fine positioning
- Ultra bright LEDs for power on and switching state
- Good alignability due to red transmission LED
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II

Background suppression sensor



### Dimensions



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

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## Technical Data

General specifications		
Detection range		20 ... 400 mm
Detection range min.		20 ... 150 mm
Detection range max.		20 ... 400 mm
Adjustment range		150 ... 400 mm
Background suppression		max. + 10 % of the upper limit of the detection range
Light source		LED
Light type		modulated visible red light , 660 nm
Black-white difference (6 %/90 %)		< 15 %
Diameter of the light spot		4 mm x 4 mm at a distance of 250 mm
Opening angle		Emitter 1.2° , Receiver 2°
Ambient light limit		50000 Lux
Functional safety related parameters		
MTTF <sub>d</sub>		720 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green
Function indicator		2 LEDs yellow ON: object inside the scanning range OFF: object outside the scanning range
Control elements		Sensing range adjuster , Light-on/dark-on changeover switch
Electrical specifications		
Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		10 %
No-load supply current	I <sub>0</sub>	≤ 40 mA
Output		
Switching type		light/dark on switchable
Signal output		2 PNP, complementary, short-circuit protected, reverse polarity protected , open collectors
Switching voltage		max. 30 V DC
Switching current		max. 200 mA
Switching frequency	f	250 Hz
Response time		2 ms
Conformity		
Product standard		EN 60947-5-2
Approvals and certificates		
Protection class		II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 60 °C (-40 ... 140 °F)
Mechanical specifications		
Housing width		25.8 mm
Housing height		88 mm
Housing depth		54.3 mm
Degree of protection		IP67
Connection		5-pin, M12 x 1 connector
Material		
Housing		Plastic ABS
Optical face		plastic
Connector		plastic
Mass		70 g

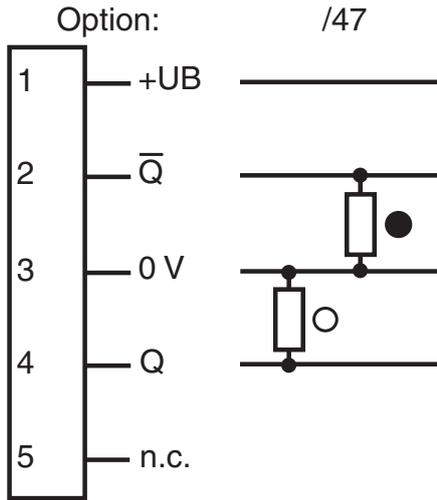
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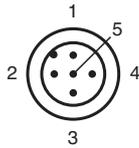
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**Connection Assignment**



○ = Light on  
● = Dark on

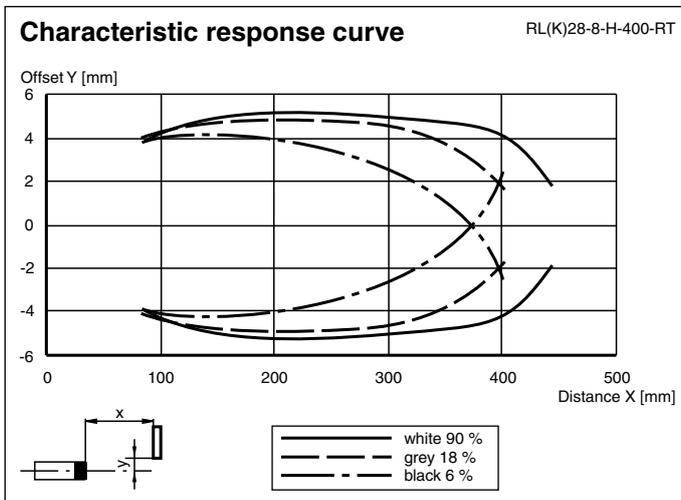
**Connection Assignment**



Wire colors in accordance with EN 60947-5-2

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

**Characteristic Curve**



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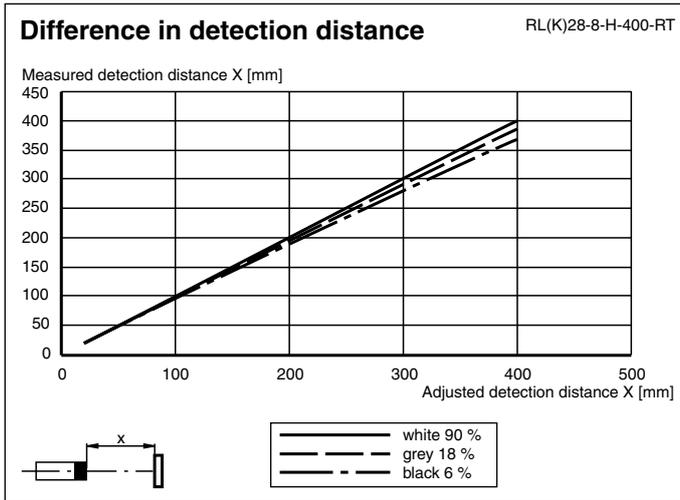
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Characteristic Curve



Application



Additional Information

**System Description**

The triangulation sensor with background suppression (BGS) contains both an emitter and a receiver in a single housing. Targeted blanking of objects outside the scanning range is made possible by a corresponding angle arrangement between emitter and receiver (2 receiver elements). The triangulation sensor (BGS) detects objects regardless of their surface structure, brightness and color, as well as the brightness of the background.

**Mounting**

The sensors can be mounted directly with fixing screws or by using a mounting bracket. Mounting brackets are available as accessories. Ensure that the surface is flat to avoid housing distortion during mounting and fixing. Secure nut and bolt with spring washers to prevent misalignment of the sensor.

**Adjusting the Sensor:** Apply the operating voltage to the sensor. The power indicator lights green.

Adjust the sensor to the background.

Yellow signal indicator permanently lights up: Use the sensing range adjuster to adjust the sensor to correct sensing range. Once the correct sensing range is set, the yellow signal indicator goes out.

**Commissioning**

**Check Object Detection:** Check as follows if the sensor detects objects as intended.

Position the object in the required sensing range of the sensor and align the light spot towards the object.

The yellow signal indicator is off. The indicator lights up only when the object is detected.

Troubleshooting: If the sensor does not respond as expected, change the sensing range setting until the signal indicator lights up during object detection.

**Maintenance**

**Cleaning:** Clean the optical interfaces of the sensor (e.g., lenses) at regular intervals.

**Maintenance:** Check the mounting fittings and the electrical connections regularly.

Accessories

	<p><b>OMH-05</b></p>	<p>Mounting aid for round steel <math>\varnothing</math> 12 mm or sheet 1.5 mm ... 3 mm</p>
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## Accessories

	<b>OMH-21</b>	Mounting bracket: mounting aid for sensors in the RL* series
	<b>OMH-22</b>	Mounting aid for RL* series
	<b>OMH-RLK29-HW</b>	Mounting bracket for rear wall mounting
	<b>OMH-RL28-C</b>	Weld slag cover model