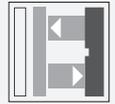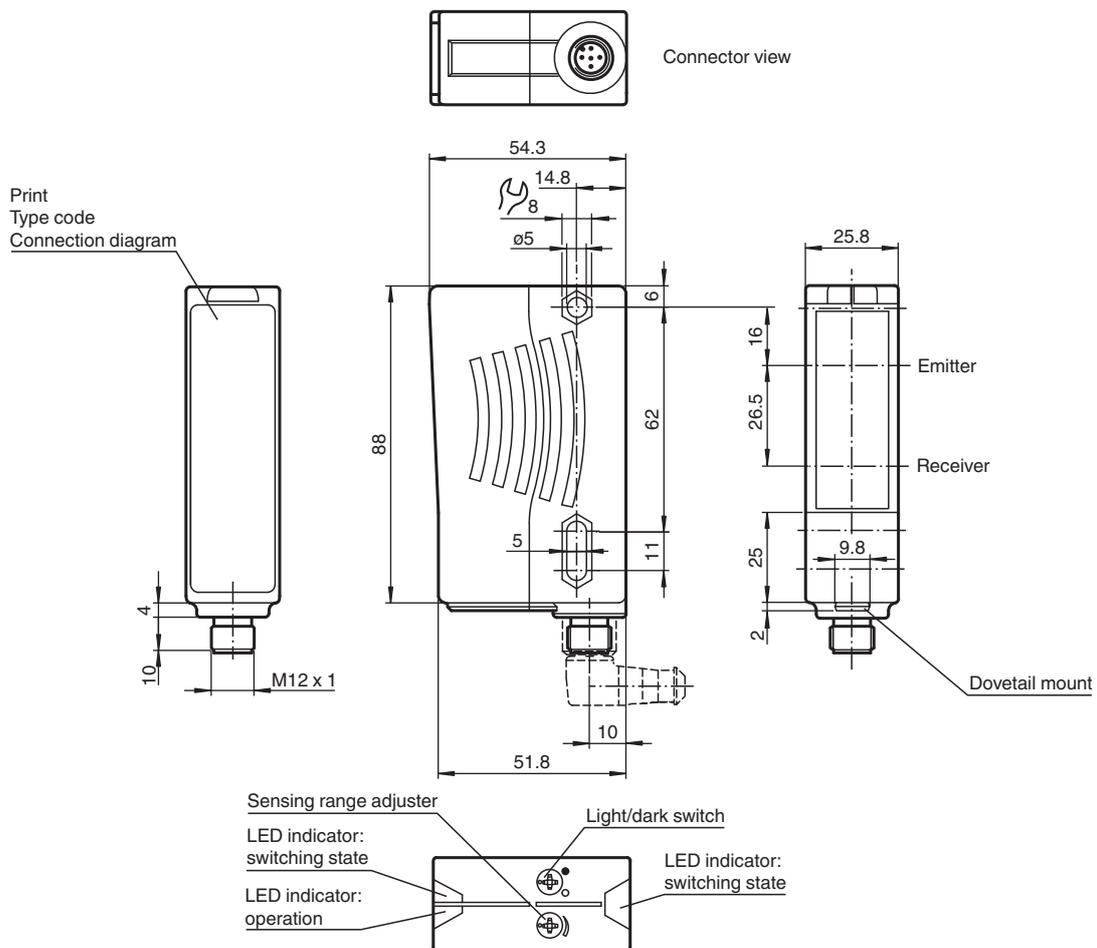# Background suppression sensor
RL28-8-H-400-IR/47/105

- Ultra bright LEDs for power on and switching state
- Minimal black-white difference through the infrared transmission LED
- Not sensitive to ambient light, even with energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II

Background suppression sensor

Dimensions

Connector view

Print
Type code
Connection diagram

54.3
14.8
8
ø5
6
62
88
5
11
51.8
10
4
10
M12 x 1

25.8
16
26.5
25
2
9.8

Emitter

Receiver

Dovetail mount

Sensing range adjuster
Light/dark switch
LED indicator: switching state
LED indicator: switching state
LED indicator: operation

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
Background suppression		max. + 10 % of the upper limit of the detection range
Light source		IRED
Light type		modulated infrared light , 880 nm
Black-white difference (6 %/90 %)		< 5 %
Diameter of the light spot		approx. 14 mm at a distance of 400 mm
Opening angle		transmitter 2° receiver 2°
Ambient light limit		50000 Lux

Functional safety related parameters

$MTTF_d$		720 a
Mission Time (T_M)		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_B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I_0	≤ 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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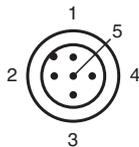Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com
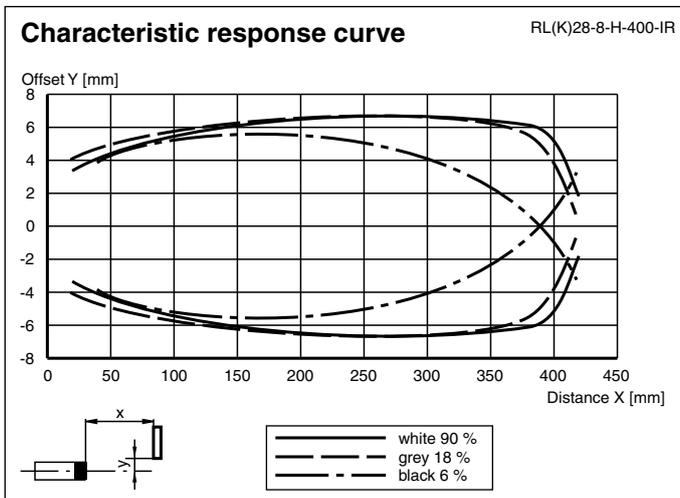
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Connection Assignment

Option: /47

1	+UB
2	$\overline{Q}$
3	0 V
4	Q
5	n.c.
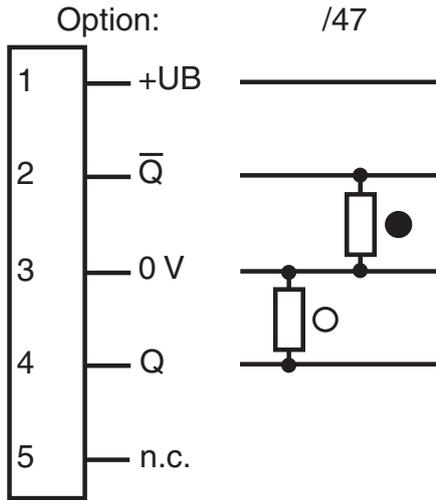
○ = Light on
● = Dark on

Connection Assignment

```
      1
    5
2        4
      3
```

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

Characteristic response curve   RL(K)28-8-H-400-IR

Offset Y [mm]

Distance X [mm]

white 90 %
grey 18 %
black 6 %

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

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Characteristic Curve

Difference in detection distance   RL(K)28-8-H-400-IR

Measured detection distance X [mm]

Adjusted detection distance X [mm]

——— ———	white 90 %
— — —	grey 18 %
—·—·—	black 6 %
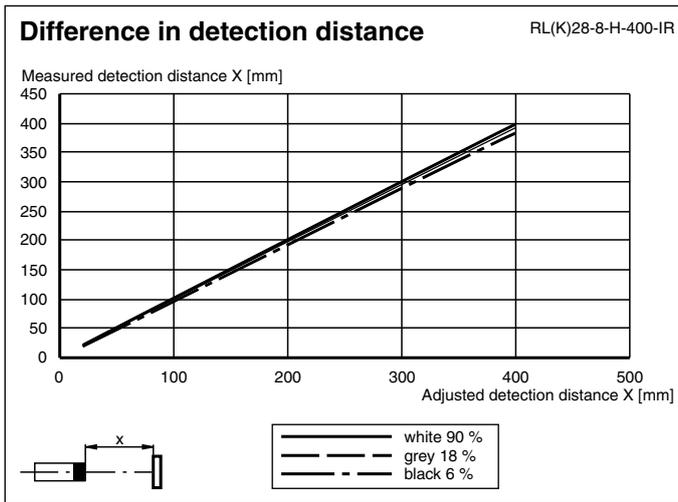
Application

Accessories

	OMH-05	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	OMH-21	Mounting bracket: mounting aid for sensors in the RL* series
	OMH-22	Mounting aid for RL* series
	OMH-RLK29-HW	Mounting bracket for rear wall mounting
	OMH-RL28-C	Weld slag cover model

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Additional information

Intended use:

The transmitter and receiver are located in the same housing for direct detection sensors with background masking. Marking of objects outside the detection range is achieved by arranging the angle between the transmitter and receiver (2 receiver elements).

Objects are detected independently of their surface structures, brightness and colour, as well as the brightness of the background.

Mounting instructions:

The sensors can be fastened directly with fixing screws or with a support bracket (not included with delivery).

The surface underneath must be flat to prevent the housing from moving when it is tightened into position. We recommend securing the nut and screw in place with spring washers to prevent the sensor from going out of adjustment.

Adjustment:

After the operating voltage is applied, the LED is lit green.

Align the sensor to the background. If the yellow LED is lit, the detection range should be reduced with the detection range adjuster until the yellow LED goes out.

Object direction:

Place the object to be detected at the desired maximum detection range and align the light spot to it. If the object is detected, the yellow LED lights up.

If it does not light up, the detection range must be adjusted on the potentiometer until it lights up when an object is detected.

Cleaning:

We recommend cleaning the optical surface and checking the screwed connection and other connections at regular intervals.

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