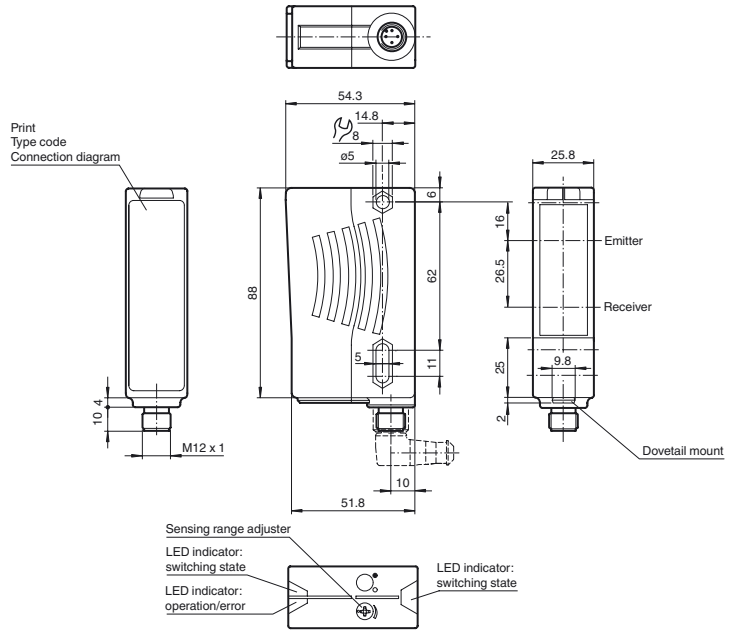## Dimensions



## Model Number

**RL28-8-H-400-RT-B3B/73c**

Background suppression sensor
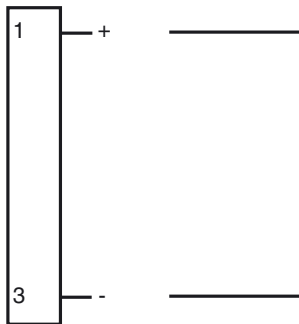with 4-pin, M12 x 1 plastic connector

## Features

- Sensor with AS interface according to Spec. 2.11

- 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, protection degree IP67

- Protection class II

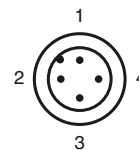## Electrical connection



○ = Light on
● = Dark on

## Pinout

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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 | LED |
| Light type | modulated visible red light , 660 nm |
| Black/White difference (6 %/90 %) | < 10  % |
| Diameter of the light spot | approx. 12 mm at a distance of 400 mm |
| Angle of divergence | Emitter 1.2°, <br> Receiver 2° |
| Ambient light limit | 50000 Lux |

### Functional safety related parameters

| | |
|---|---|
| $MTTF_d$ | 1480 a |
| Mission Time ($T_M$) | 20 a |
| Diagnostic Coverage (DC) | 60 % |

### Indicators/operating means

| | |
|---|---|
| Operating display | dual-LED green/red <br> green: AS-Interface voltage, normal operation <br> red: communication error or address 0 <br> red/green flashing: peripherie fault |
| Function display | 2 LEDs yellow <br> ON: object inside the scanning range <br> OFF: object outside the scanning range |

### Electrical specifications

| | | |
|---|---|---|
| Operating voltage | $U_B$ | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V |
| No-load supply current | $I_0$ | ≤ 40 mA |

### Input

| | |
|---|---|
| Test input | Data bit D2: <br> 0: emitter on <br> 1: emitter off |

### Output

| | | |
|---|---|---|
| Switching type | | light/dark on switchable via AS-i bus system |
| Signal output | | AS-Interface |
| Switching frequency | f | 250 Hz |
| Response time | | 2 ms |
| Timer function | | Impulsed off-delay IAB, 50 ms, switchable via AS-Interface |

### Ambient conditions

| | |
|---|---|
| Ambient temperature | -40 ... 60 °C (-40 ... 140 °F) |
| Storage temperature | -40 ... 75 °C (-40 ... 167 °F) |

### Mechanical specifications

| | |
|---|---|
| Protection degree | IP67 |
| Connection | connector M12 x 1, 4-pin |
| Material | |
|   Housing | Plastic ABS |
|   Optical face | plastic |
|   Connector | plastic |
| Mass | 70 g |

### Compliance with standards and directives

| | |
|---|---|
| Standard conformity | |
|   Product standard | EN 60947-5-2:2007 |
|   Standards | EN 50295 AS-i Complete Spec 2.11 |

### Approvals and certificates

| | |
|---|---|
| Protection class | II,  rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 |
| CCC approval | Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval. |

## Accessories

**VBP-HH1-V3.0-KIT**
AS-Interface Handheld with accessory

**VBP-HH1**
Handheld programming device

**OMH-05**
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

**OMH-07**
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

**OMH-21**
Mounting bracket

**OMH-22**
Mounting bracket

**OMH-MLV11-K**
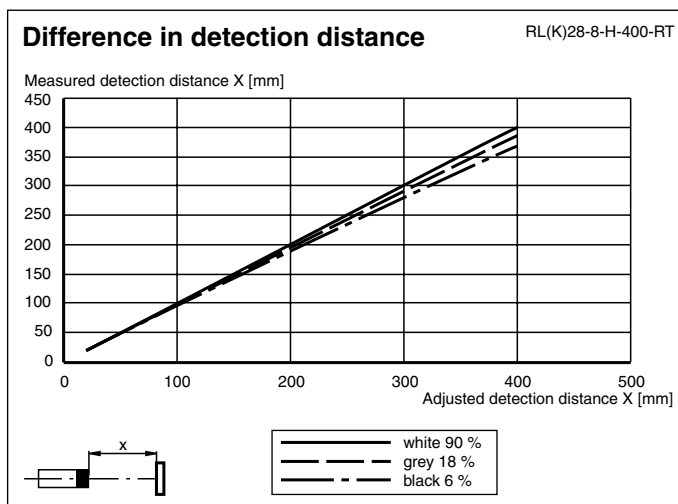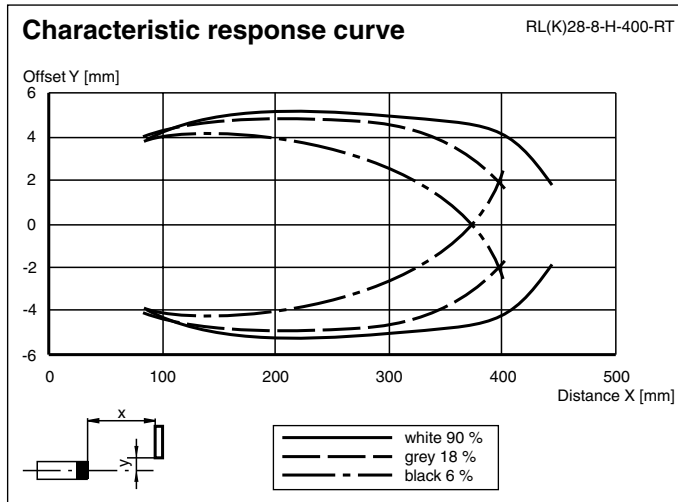dove tail mounting clamp

**OMH-RLK29**
Mounting bracket

**OMH-RLK29-HW**
Mounting bracket for rear wall mounting

**OMH-RL28-C**
Protective cover

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

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## Curves/Diagrams

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

Offset Y [mm]

Distance X [mm]

- white 90 %
- grey 18 %
- black 6 %

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

Measured detection distance X [mm]

Adjusted detection distance X [mm]

- white 90 %
- grey 18 %
- black 6 %

## AS-Interface programming

<F id="261">Addresspreset to 00, can be changed via Busmaster or programming devices

IO-Code 3
ID-Code A
ID2 1

- **Data bit**

  <F id="263">Bitfunction
  D0 Switch output (0=object detected, 1=no object detected) applies to P1=0
  D1 not used
  D2 Test function (0=emitter ON, 1=emitter OFF)
  D3 not used
- **Parameter bit**

  <F id="263">Bitfunction (1/0)
  P0 not used
  P1 Light/dark-changeover switch (0=DS, 1=HS)
  P2 Time function IAB, 50 ms (0=time ON, 1=time OFF)
  P3 not used

## 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.

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Subject to modifications without notice

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3

**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.