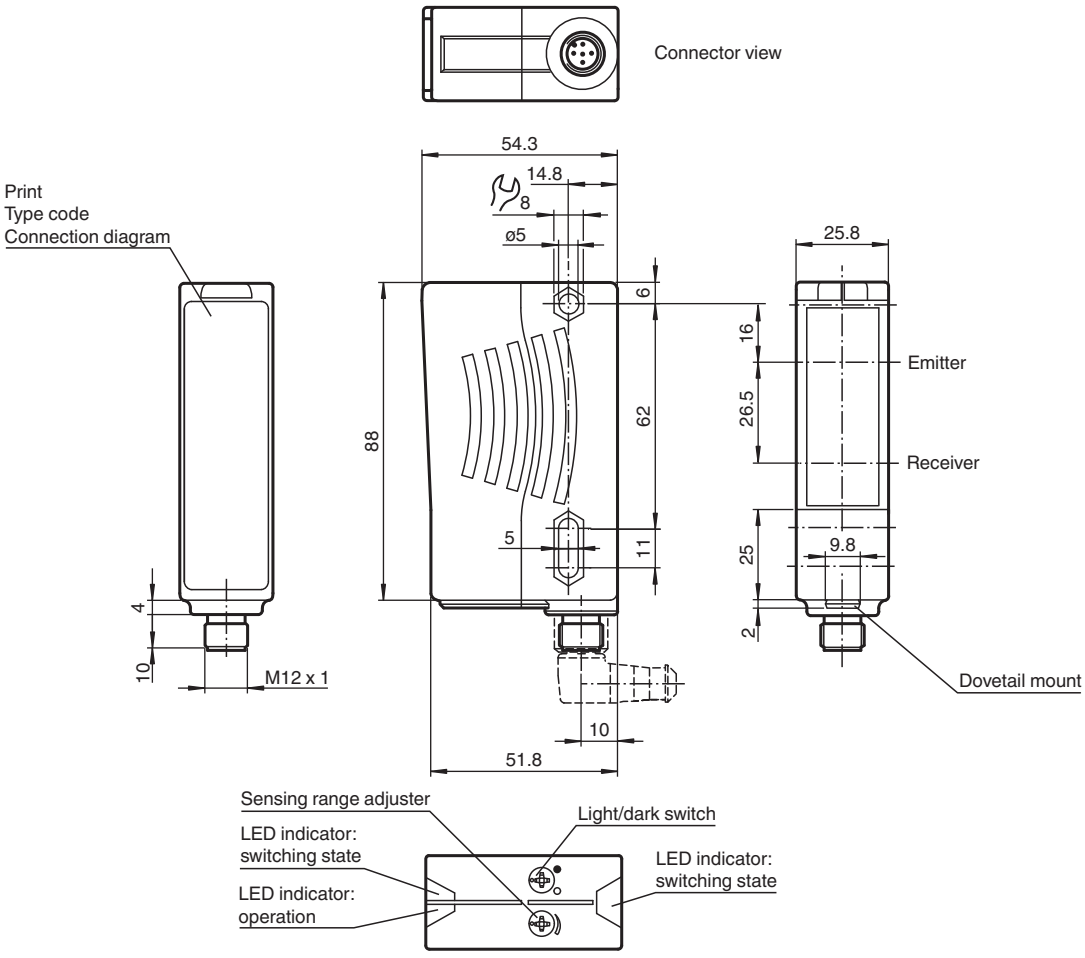
# Background suppression sensor

## RL28-8-H-2000-IR/105/110

- 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

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## Technical Data

| | | |
|---|---|---|
| **General specifications** | | |
| Detection range | | 20 ... 2000 mm |
| Detection range min. | | 20 ... 200 mm |
| Detection range max. | | 20 ... 2000 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 %) | | < 40 % |
| Diameter of the light spot | | approx. 70 mm at a distance of 2000 mm |
| Opening angle | | transmitter 2°<br>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<br>ON: object inside the scanning range<br>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 | | 1 push-pull (4 in 1) output, short-circuit protected, reverse polarity protected |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 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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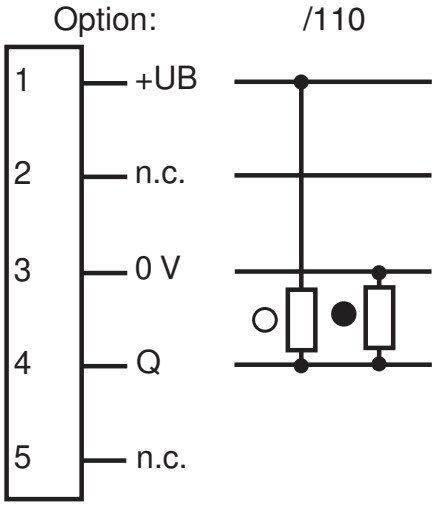
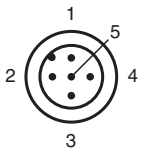
## Connection Assignment




○ = Light on
● = Dark on

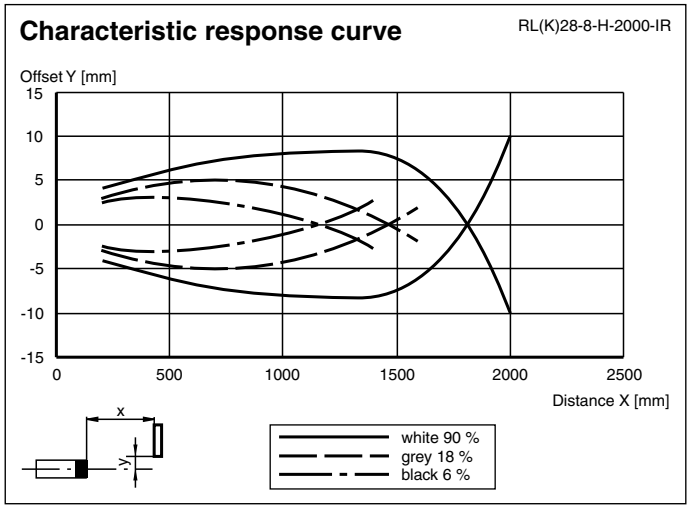
## Connection Assignment




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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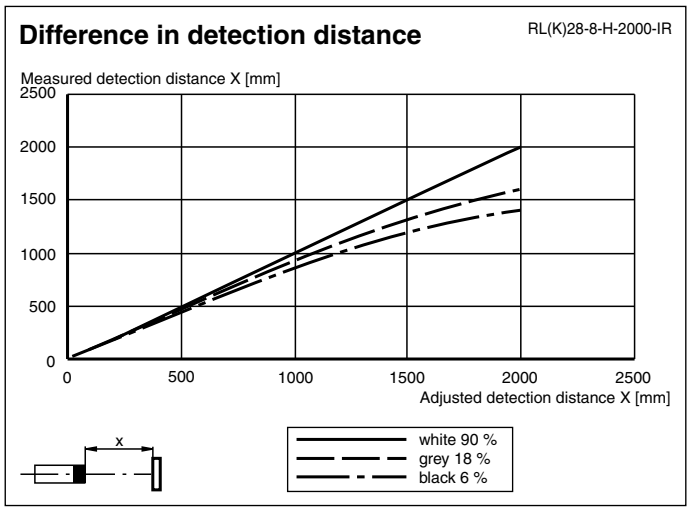


## Application

## 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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