Model Number

RL28-8-H-2000-IR/49/105
Background suppression sensor with 5-pin, M12 x 1 plastic connector

Features

- 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, protection class IP67
- Protection class II

Dimensions

Electrical connection

Option: /49

1  +UB
2  Q2
3  0 V
4  Q1
5  n.c.

○ = Light on
● = Dark on
## Technical data

### General specifications
- **Detection range**: 20 ... 2000 mm
- **Detection range min.**: 20 ... 200 mm
- **Detection range max.**: 20 ... 2000 mm
- **Light source**: IRED, 880 nm
- **Black/White difference (6 %/90 %)**: < 40 %
- **Approvals**: CE, cULus
- **Background suppression**: max. + 10 % of the upper limit of the detection range
- **Light type**: infrared, modulated light
- **Diameter of the light spot**: approx. 70 mm at a distance of 2000 mm
- **Angle of divergence**: transmitter 2°, receiver 2°
- **Ambient light limit**: 50000 Lux

### Functional safety related parameters
- **MTTFd**: 1130 a
- **Mission Time (T_M)**: 20 a
- **Diagnostic Coverage (DC)**: 0 %

### Indicators/operating means
- **Operating display**: LED green
- **Function display**: 2 LEDs yellow
  - on: object inside the scanning range
  - off: object outside the scanning range
- **Operating elements**: Light/dark switch
- **Operating elements**: Detection range adjuster

### Electrical specifications
- **Operating voltage** $U_B$: 10 ... 30 V DC
- **Protection class**: II , rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1
- **Ripple**: 10 %
- **No-load supply current** $I_0$: ≤ 40 mA

### Output
- **Switching type**: Light/dark ON, switchable
- **Signal output**: 1 rpm, 1 pnp synchronised-switching, short-circuit proof, protected against reverse polarity, open collectors
- **Switching voltage**: max. 30 V DC
- **Switching current**: max. 200 mA
- **Switching frequency** $f$: 250 Hz
- **Response time**: 2 ms

### Standard conformity
- **Standards**: EN 60947-5-2

### Ambient conditions
- **Ambient temperature**: -40 ... 60 °C (233 ... 333 K)
- **Storage temperature**: -40 ... 75 °C (233 ... 348 K)

### Mechanical specifications
- **Protection degree**: IP67
- **Connection**: plastic connector M12 x 1, 5-pin
- **Material**: Housing Plastic ABS
- **Optical face**: plastic
- **Mass**: 70 g

### Curves/Diagrams

**Difference in detection distance**

![Difference in detection distance graph](image)

**Measured detection distance X [mm]**

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

**Adjusted detection distance X [mm]**

0 500 1000 1500 2000

2500 2000 1500 1000 500 0
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.

Additional information

![Characteristic response curve](image-url)