Dimensions

Connector view

Print
Type code
Connection diagram

Emitter

Receiver

Dovetail mount

Sensing range adjuster

LED indicator: switching state

LED indicator: operation

Light/dark switch

LED indicator: switching state

Model Number

RL28-8-H-2000-IR/47/105/106

Background suppression sensor
with 5-pin, M12 x 1 plastic connector

Features

- Universal series with highly versatile fields of use

- Resistant against noise: reliable operation under all conditions

- Minimal black-white difference through the infrared transmission LED

- Version with heated front panel

Product information

The series 28 family of sensors can be universally used. It has a large range of models that allows it to be integrated into any automation environment. The sensors are contained in sturdy water resistant plastic housings with multiple fastening options and scratch resistant optical cover. Features such as a timer function, and functions including a light/ dark switch, sensitivity adjuster and highly visible status LEDs make for less effort on the part of the user and streamline installation, setup and operation. Just about any task associated with positioning, moving, conveying and monitoring can be accomplished with these sensors.

Electrical connection

Option: /47

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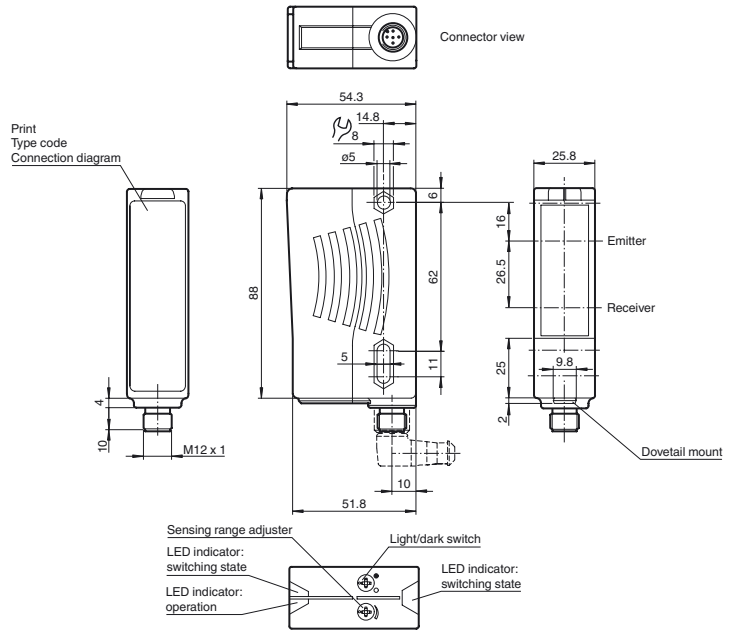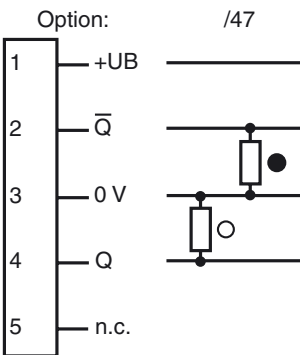
○ = Light on
● = Dark on

Pinout
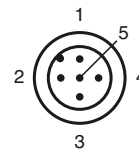
Indicators/operating means
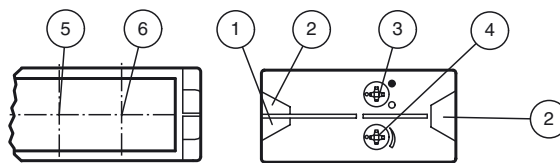
1	Operating display green
2	Switch state yellow
3	Bright/dark switch
4	Detection range adjuster
5	Receiver
6	Emitter

Pepperl+Fuchs Group   USA: +1 330 486 0001   Germany: +49 621 776 4411   Singapore: +65 6779 9091
www.pepperl-fuchs.com   fa-info@us.pepperl-fuchs.com   fa-info@de.pepperl-fuchs.com   fa-info@sg.pepperl-fuchs.com

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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
Angle of divergence	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	Detection range adjuster , Light/Dark switch

Electrical specifications

Operating voltage	U_B	24 V DC ± 20 %
Ripple		10 %
No-load supply current	I_0	≤ 75 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

Ambient conditions

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

Mechanical specifications

Degree of protection	IP67
Connection	5-pin, M12 x 1 connector
Material	
Housing	Plastic ABS
Optical face	Plastic pane
Mass	70 g
Note	Heated lens

Compliance with standards and directives

Directive conformity	
EMC Directive 2004/108/EC	EN 60947-5-2:2007 + A1:2012
Standard conformity	
Product standard	EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012
Standards	UL 60947-5-2: 2014 EN 62471:2008

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

Accessories

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
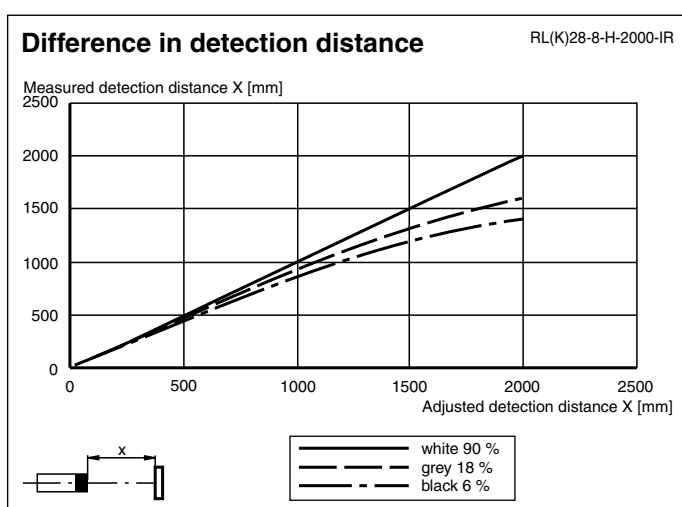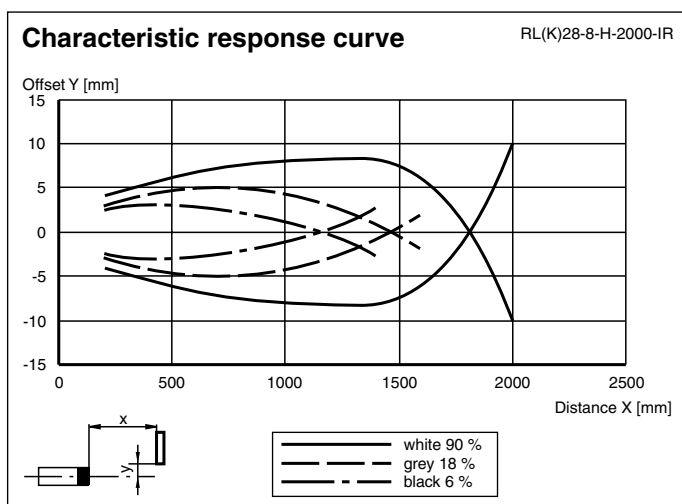
OMH-MLV11-K
dove tail mounting clamp

OMH-RLK29-HW
Mounting bracket for rear wall mounting

OMH-RL28-C
Weld slag cover model

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

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

Pepperl+Fuchs Group | USA: +1 330 486 0001 | Germany: +49 621 776 4411 | Singapore: +65 6779 9091
www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com

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Curves/Diagrams

Characteristic response curve
RL(K)28-8-H-2000-IR

Offset Y [mm]

Distance X [mm]

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

Difference in detection distance
RL(K)28-8-H-2000-IR

Measured detection distance X [mm]

Adjusted detection distance X [mm]

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

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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