Dimensions

DIP-switch
ON OFF

Connector view

Time adjuster for Off delay and one shot

DIP-switch

Time adjuster for On delay

Internal connection

Internal connection

65.5

26

ø5

8

6

16

88

62

26.5

25.8

Transmitter

Receiver

25

5

11

2

63

9

M12 x 1

9.6

Dovetail mount

LED indicator: switching state

Light/dark switch

LED indicator: switching state

LED indicator: operation
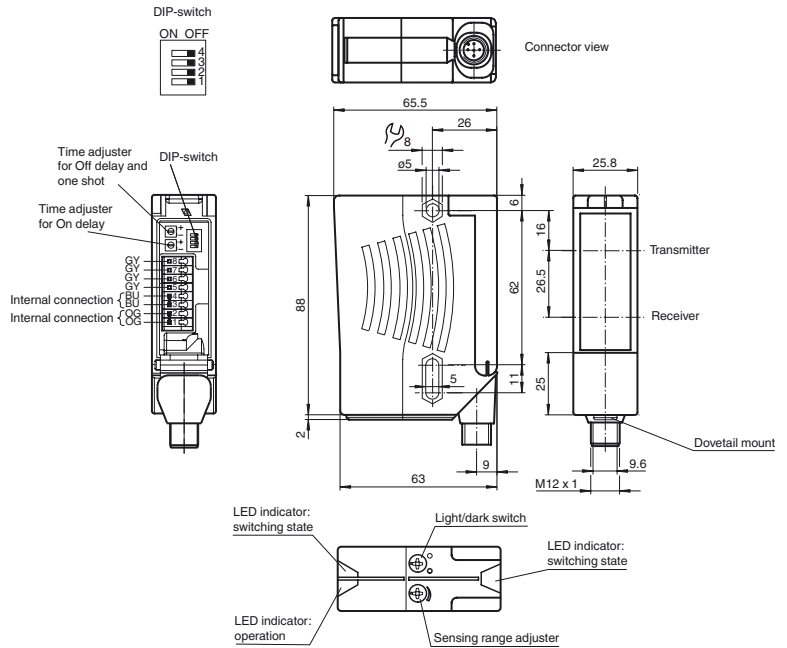
Sensing range adjuster

Model Number

RL28-8-H-400-IR-Z/110/112

Background suppression sensor

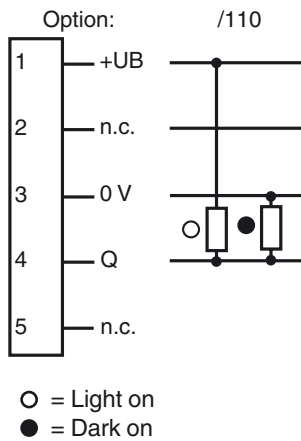with metal connector M12; 5-pin, 90° convertible

Features

- Ultra bright LEDs for power on and switching state

- Minimal black/white difference through the infrared transmission LED

- Programmable time function GAN, GAB, IAB and GAN-IAB as double function

- Powerful push-pull output

- Not sensitive to ambient light, even with energy saving lamps

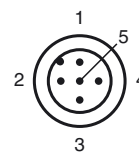- Waterproof, protection degree IP67

- Protection class II

Electrical connection

Option: /110

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

○ = Light on
● = Dark on

Pinout

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Release date: 2011-12-21 10:34   Date of issue: 2011-12-21   116652_eng.xml

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
Angle of divergence	transmitter 2° receiver 2°
Ambient light limit	50000 Lux

Functional safety related parameters

$MTTF_d$	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
Controls	Light/Dark switch
Controls	Detection range adjuster

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 (selectable, light/dark switching is only activated if the receiver has 'dark on' selected.)
Signal output		1 push-pull 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
Timer function		ON delay (GAN), OFF delay (GAB), one shot (IAB), ON delay-one shot (GAN-IAB), programmable adjustment interval 0.02 s ... 1 s

Ambient conditions

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

Mechanical specifications

Protection degree	IP67
Connection	5-pin, M12 x 1 connector, 90° rotatable
Material	
Housing	Plastic ABS
Optical face	plastic
Connector	metal
Mass	approx. 100 g

Compliance with standards and directives

Standard conformity	
Product standard	EN 60947-5-2:2007

Approvals and certificates

UL approval	cULus
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

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

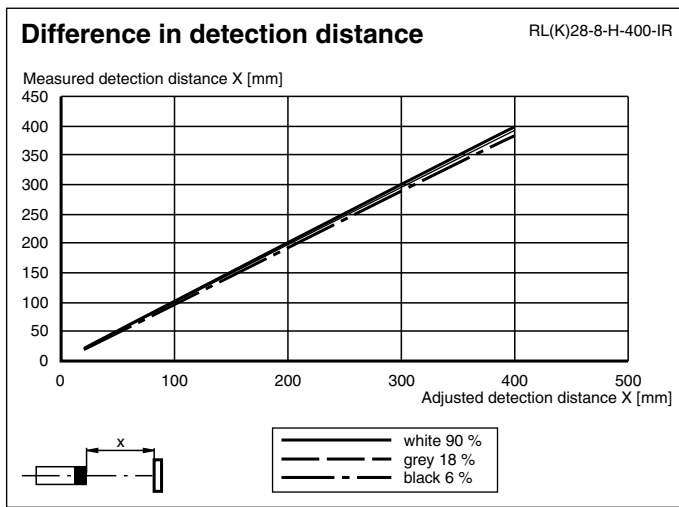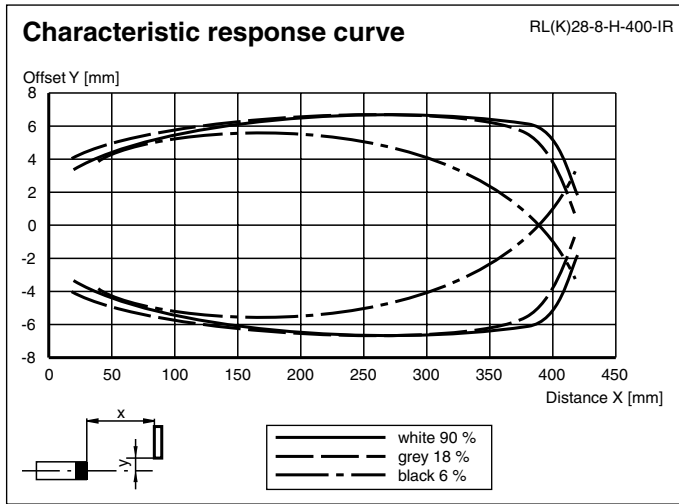**OMH-RLK29**
Mounting bracket

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

Curves/Diagrams

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

Offset Y [mm]

Distance X [mm]

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

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 %

Timer functions

Timer function	Switching type		Receiver exposed Receiver dark
ON 1 2 3 4 Without	Light		ON
	Dark		OFF
ON 1 2 3 4 ON delay	Light	t_{ON}	ON / OFF
	Dark	t_{ON} t_{ON} t_{ON}	ON / OFF
ON 1 2 3 4 OFF delay	Light	t_{OFF} t_{OFF} t_{OFF}	ON / OFF
	Dark	t_{OFF}	ON / OFF
ON 1 2 3 4 one shot	Light	t_{OS} t_{OS} t_{OS}	ON / OFF
	Dark	t_{OS} t_{OS} t_{OS}	ON / OFF

Time t_{ON}, t_{OFF} and t_{OS} are adjustable from 0.02 to 1 seconds.
The Light-/Dark-Switch (Left, outer switch) is shown in the "Dark ON" position.

Type	Description	Notes
-Z	OFF delay timer	Adjustable time interval (0.02 s - 10 s)
	one shot timer	
	ON delay timer	
	ON delay timer / OFF delay timer	
	ON delay timer / one shot timer	

116652_eng.xml
Date of issue: 2011-12-21
Release date: 2011-12-21 10:34

Subject to modifications without notice
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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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