## Dimensions

Model Number

RLK28-54-G/31/116

Retroreflective sensor

with terminal compartment

Features

- Detects transparent objects, i.e., clear glass, PET and transparent films
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- Ultra bright LEDs for power on, weak signal indication and switching state
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II
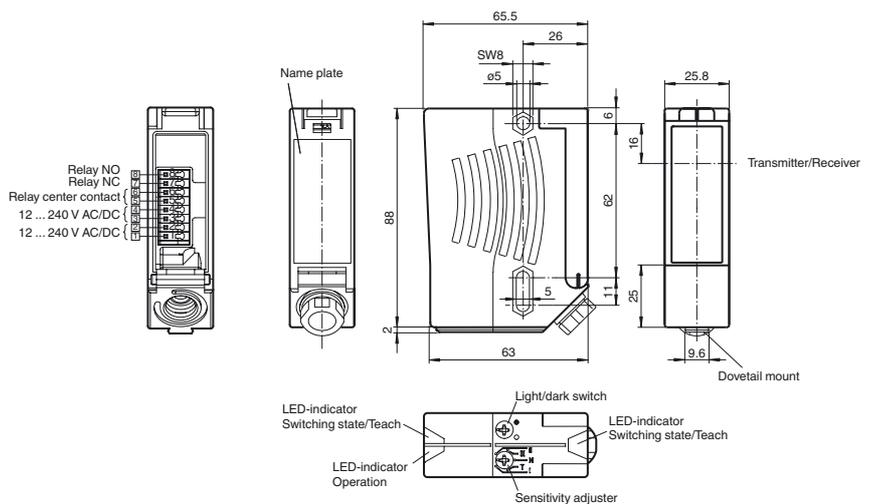
Electrical connection

Option:
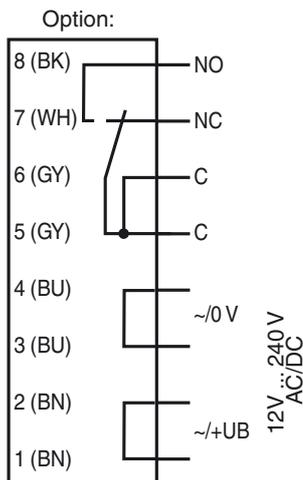
The relay-functions "NC" and "NO" bear on the switching mode "Light-ON". This complies to the default setting of the light/dark switch, located on top of the housing (factory setting).

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

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

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Technical data

General specifications

Effective detection range	0 ... 5.6 m
Reflector distance	0 ... 5.6 m
Threshold detection range	7 m
Reference target	H85-2 reflector
Light source	LED
Light type	modulated visible red light , 660 nm
Polarization filter	yes
Diameter of the light spot	approx. 90 mm at a distance of 5.6 m
Angle of divergence	Emitter: 1 ° Receiver: 1.2 °
Ambient light limit	50000 Lux

Functional safety related parameters

$MTTF_d$	790 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green
Function indicator	2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode
Control elements	rotary switch for light/dark, 5-step switch for contrast recognition adjustment
Contrast detection levels	10 % - clean, water filled PET bottles 18 % - clear glass bottles 40 % - colored glass or opaque materials adjustable due to Teach-In switch

Electrical specifications

Operating voltage	U_B	12 ... 240 V AC/DC
Power consumption	P_0	≤ 3.5 VA

Output

Switching type		light/dark on switchable
Signal output		Relay, 1 alternator
Switching voltage		max. 250 V AC/DC
Switching current		max. 2 A
Switching power		DC: max. 50 W AC: max. 500 VA
Switching frequency	f	25 Hz
Response time		20 ms

Conformity

Product standard	EN 60947-5-2

Ambient conditions

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

Mechanical specifications

Housing width	25.8 mm
Housing height	88 mm
Housing depth	65.5 mm
Degree of protection	IP67
Connection	terminal compartment with 8 spring-loaded terminals for wire cross section 0.5 ... 1.5 mm^2, insulation stripping 7.5 ... 8.5 mm, M16 x 1.5 cable gland
Material	
Housing	Plastic ABS
Optical face	Plastic pane
Mass	100 g

Approvals and certificates

Protection class	II, rated insulation voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit insulated from control circuit in accordance with IEC 61140. Caution! The protection class 2 is only valid when the terminal compartment is closed.
UL approval	cULus Listed **Caution:** This equipment is considered as open-type equipment. It must be mounted within an enclosure, that is suitably designed for protection against internal fire and personal injury resulting from accessibility to live parts according UL 508.
CCC approval	Certified by China Compulsory Certification (CCC)

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
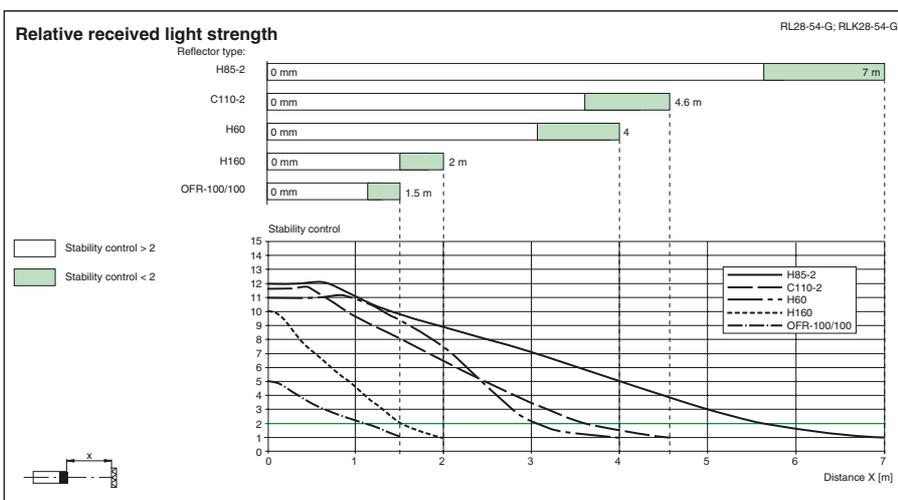Mounting bracket

OMH-RLK29-HW
Mounting bracket for rear wall mounting

OMH-RL28-C
Weld slag cover model

Suitable reflectors and cable sockets can be found in the Internet

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Germany: +49 621 776 4411
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fa-info@sg.pepperl-fuchs.com

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Curves/Diagrams

Characteristic response curve   RL28-54-G; RLK28-54-G

Offset Y [mm]

Legend:
- H85-2
- C110-2
- H60
- H160
- OFR-100/100

Distance X [m]

Relative received light strength   RL28-54-G; RLK28-54-G

Reflector type:
- H85-2: 0 mm — 7 m
- C110-2: 0 mm — 4.6 m
- H60: 0 mm — 4
- H160: 0 mm — 2 m
- OFR-100/100: 0 mm — 1.5 m

☐ Stability control > 2
▨ Stability control < 2

Stability control

Legend:
- H85-2
- C110-2
- H60
- H160
- OFR-100/100

Distance X [m]

TEACH-IN

- **Switch position "N" (standard operation):**
  LEDs are lit when the light beam is unobstructed, they flash quickly (approx. 4 Hz) when the value falls short of the function reserve and they go out when the beam is interrupted.
- **Switch position "T" (Teach-in mode):**
  After 1 s, the LED flashes slowly (approx. 1.5 Hz). The sensor is now ready to be set for a specific contrast detection value via the mechanical switch (pos. I, II or III).
- **Switch positions "I", "II" and "III" (contrast detection mode)**
  Contrast recognition values: I for 10 %, II for 18 %, III for 40 %
  1. LED permanently lit: light path unobstructed
  2. LED off: element to be sensed detected
  3. LED flashes rapidly: detection failure, excessive soiling, function reserve too low.
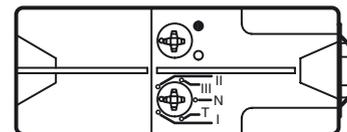
You need not turning the switch into T-position again, when changing the contrast recognition value during operation. For sensor operation in contrast recognition mode, the stability control value must be at least 2.5 (see curve relative received light strength).

Additional information

Mounting instructions:

The sensor is held in place by two pass-through drill holes for M5. The surface underneath must be flat to prevent the housing from moving when it is tightened into position. We recommend securing the nuts in place with spring screws to prevent the sensor from going out of adjustment.
Outdoor mounting:
The sensors must be protected from shock and splashed water. It may be necessary to provide a covering.

Adjustment:

Align the unit to the reflector in the "N" switch setting. The yellow LED must be lit constantly. Move the switch to the "T" setting and wait for about 1 sec. until the yellow LED starts flashing slowly.
Move the switch to the setting for the desired contrast detection level: "I" for 10%, "II" for 18%, "III" for 40%.

Contrast detection levels:

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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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The output becomes inactive if dirt and dust make it impossible to readjust the setting. In this case the yellow LED will flash quickly.
If dirt and dust continue to accumulate, detection of slight contrasts can no longer be guaranteed.

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