# Retroreflective sensor

RLK28-55-Z/31/116
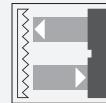
- Universal series with highly versatile fields of use
- Resistant against noise: reliable operation under all conditions
- Programmable time function GAN, GAB, IAB, as well as GAN-GAB and GAN-IAB as double function
- Version with red light
- Version with relay output

Retroreflective sensor with polarization filter

CE □ c(UL)us CCC UKCA

Function

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.

Application

- Object tracking in material handling, and the packaging sector
- Material flow monitoring
- Bin occupancy check in storage technology
- Fine positioning in high-bay warehouses
- Presence and height monitoring on pallet conveyors
- Single-beam protection for automatic industrial gates and elevator doors
- Protection at automatic gates

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

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Dimensions

Indicator of detection range for Off delay and one shot

DIP-switch

Name plate

Indicator of detection range for On delay

Relay NO
Relay NC
Relay center contact
12 ... 240 V AC/DC
12 ... 240 V AC/DC

BK
WH
GY
GN
YE
BU
PK
BN

DIP-switch

ON OFF

4
3
2
1

65.5
26
ø5
8
6
16
17.8
88
62
11
5
25
2
63

25.8

Transmitter

Receiver

9.6

Dovetail mount

Light/dark switch

LED-switch status

LED-switch status

LED-operating display

Sensitivity adjuster

Technical Data

General specifications

Effective detection range	0 ... 17 m
Reflector distance	0.05 ... 17 m
Threshold detection range	21 m
Reference target	H85-2 reflector
Light source	LED
Light type	modulated visible red light
Polarization filter	yes
Diameter of the light spot	approx. 290 mm at a distance of 17 m
Opening angle	emitter 1.2° receiver 2°
Ambient light limit	80000 Lux

Functional safety related parameters

$MTTF_d$	600 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green
Function indicator	2 LEDs yellow, light up when light beam is free, flash when falling short of the stability control, off when light beam is interrupted
Control elements	sensitivity adjustment (Adjustment to < 25% of the effective operating range) , Light-on/dark-on changeover switch

Electrical specifications

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Technical Data

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
Timer function		ON delay (GAN), OFF delay (GAB), one shot (IAB), ON delay-one shot (GAN-IAB), ON delay-OFF delay (GAN-GAB), programmable adjustment interval 0.1 ... 10 s
Conformity		
Product standard		EN 60947-5-2
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		E87056 , 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)
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		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		112 g

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Connection Assignment

Option:

8 (BK)	NO
7 (WH)	NC
6 (GY)	C
5 (GY)	C
4 (BU)	~/0 V
3 (BU)	
2 (BN)	~/+UB
1 (BN)	

12V ... 240 V AC/DC
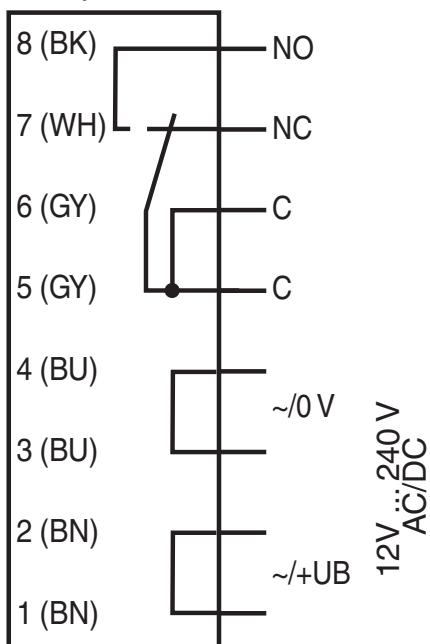
The relay-functions "NC" and "NO" bear on the switching mode "Dark-ON". This complies to the default setting of the light/dark switch (factory setting).

Characteristic Curve

Characteristic response curve

Offset Y [mm]

Distance X [m]

——	H85-2
– – –	C110-2
–·–·–	H60
- - - -	H160
–··–··–	OFR-100/100

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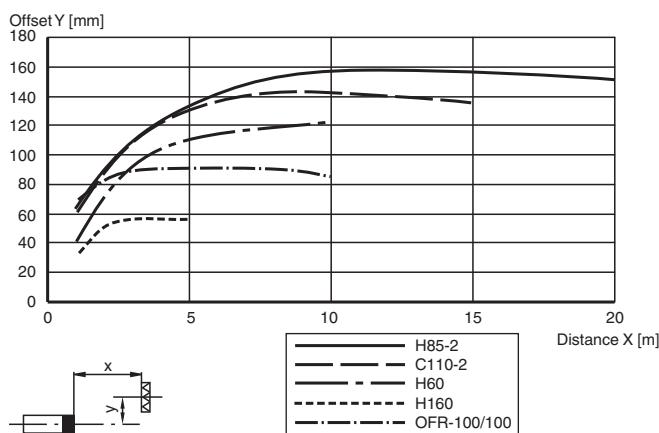
Characteristic Curve

Relative received light strength

Reflector type:

H85-2	50 mm	21 m
C110-2	50 mm	14 m
H60	50 mm	12 m
F2000 (Foil, 100 mm x 100 mm) OFR-100/100	250 mm	10 m
H160	50 mm	5 m

☐ Stability control > 3

🟩 Stability control < 3

Stability control

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

Distance X [m]
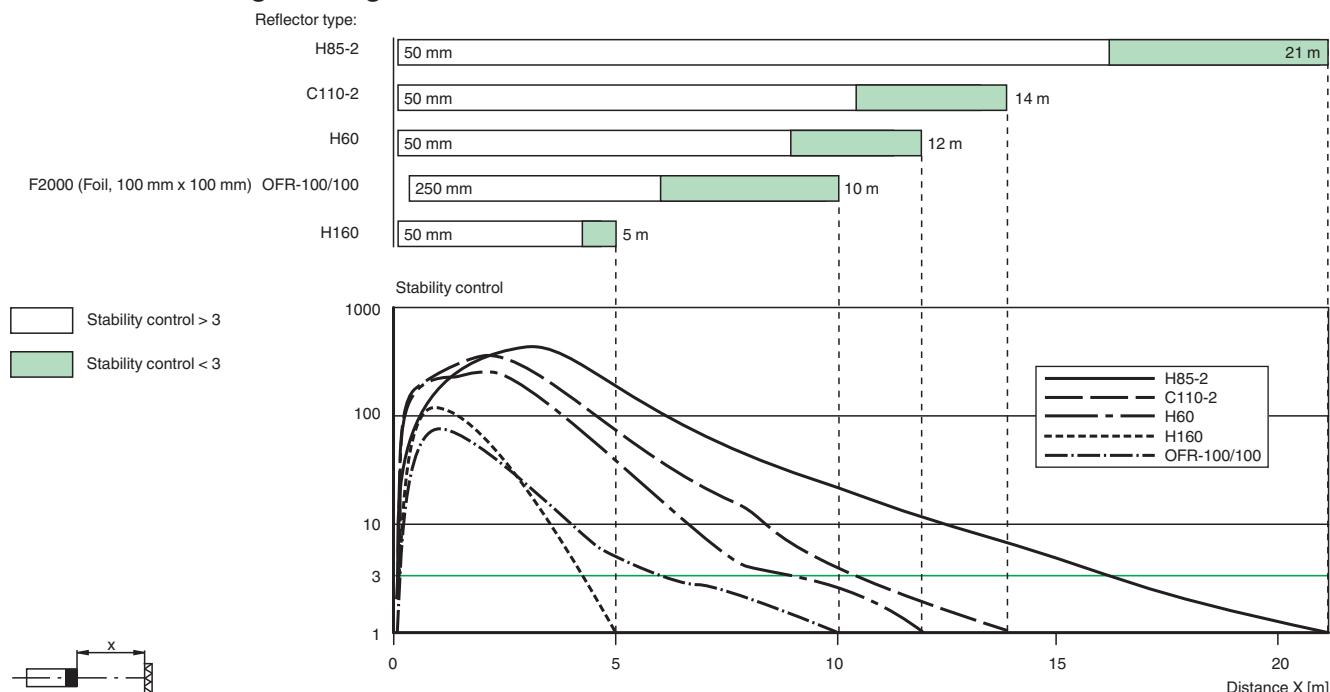
Application
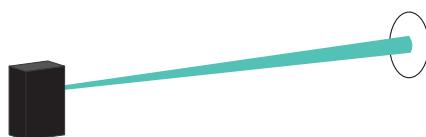
Accessories

	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	Mounting bracket
	OMH-RLK29-HW	Mounting bracket for rear wall mounting

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Accessories

	OMH-RL28-C	Weld slag cover model

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Timer functions

Timer function	Switching type		Receiver exposed Receiver dark
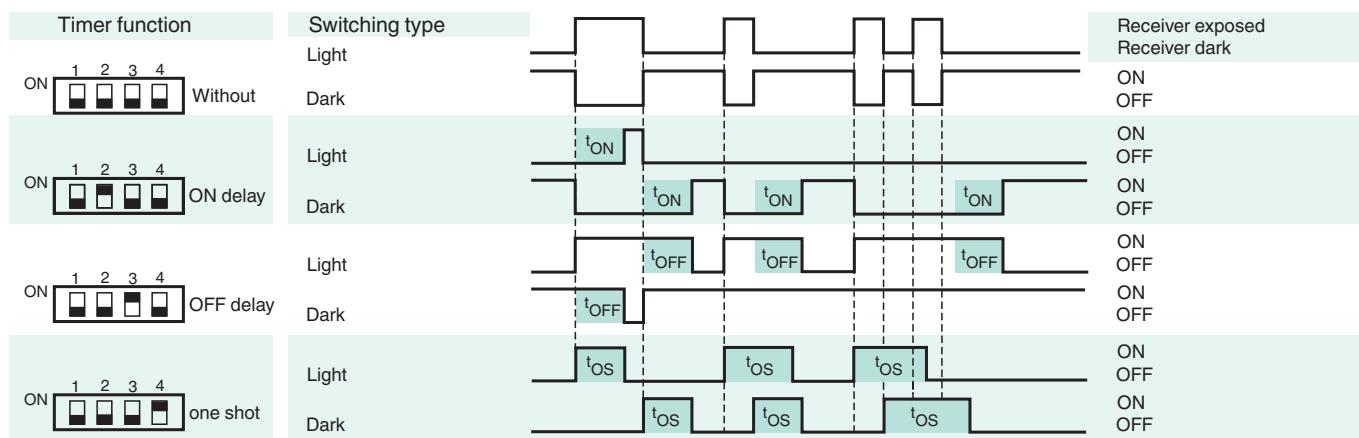
Time t_{ON}, t_{OFF} and t_{OS} are adjustable from 0.1 to 10 seconds.
The Light-/Dark-Switch (Left, outer switch) is shown in the "Dark ON" position.

Type	Description	Notes
-Z	OFF delay timer	Adjustable time interval (0.1 s - 10 s)
	one shot timer	
	ON delay timer	
	ON delay timer / OFF delay timer	
	ON delay timer / one shot timer	

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