



# Background suppression sensor

## RL28-8-H-2000-IR-Z/110/116

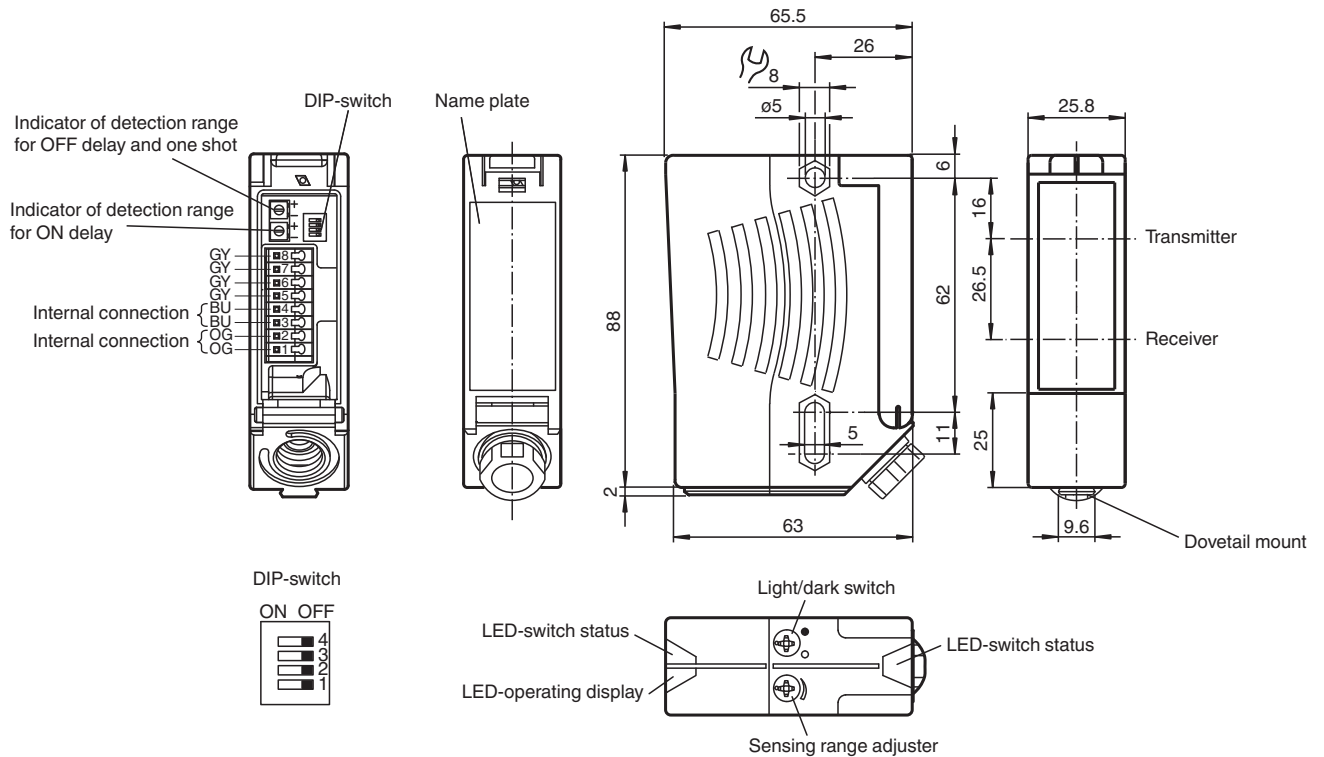


- Ultra bright LEDs for power on and switching state
- Minimal black-white difference through the infrared transmission LED
- Programmable time function GAN, GAB, IAB and GAN-IAB as double function
- Not sensitive to ambient light, even with energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II

Background suppression sensor



### Dimensions



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

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## Technical Data

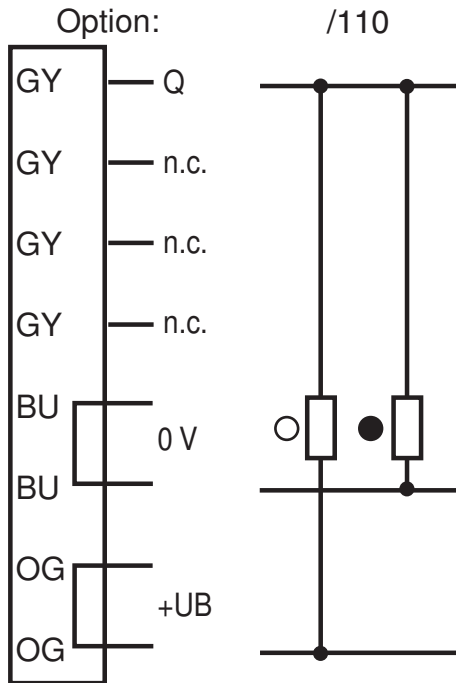
General specifications		
Detection range		20 ... 2000 mm
Detection range min.		20 ... 200 mm
Detection range max.		20 ... 2000 mm
Background suppression		max. + 10 % of the upper limit of the detection range
Light source		IRED
Light type		modulated infrared light , 880 nm
Black-white difference (6 %/90 %)		< 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 <sub>d</sub>		720 a
Mission Time (T <sub>M</sub> )		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		Sensing range adjuster , Light-on/dark-on changeover switch
Electrical specifications		
Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		10 %
No-load supply current	I <sub>0</sub>	≤ 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 (4 in 1) 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), ON delay-OFF delay (GAN-GAB), programmable adjustment interval 0.02 s ... 1 s
Conformity		
Product standard		EN 60947-5-2
Approvals and certificates		
EAC conformity		TR CU 020/2011
Protection class		II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Caution! The protection class 2 is only valid when the terminal compartment is closed.
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
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 <sup>2</sup> , insulation stripping 7.5 ... 8.5 mm, M16 x 1.5 cable gland
Material		

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**Technical Data**

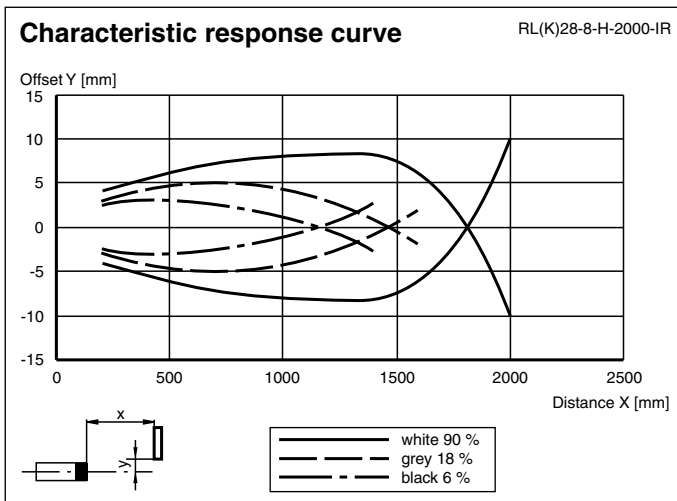
Housing	Plastic ABS
Optical face	plastic
Mass	112 g

**Connection Assignment**



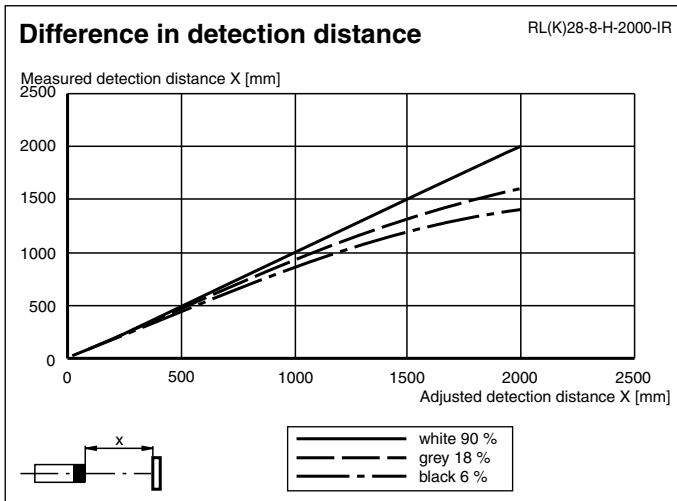
- = Light on
- = Dark on

**Characteristic Curve**



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## Characteristic Curve



## Application



Mounting

Zeitfunktionen  
Fonctions de temporisation  
Funzioni di temporizzazione

Timer functions  
Funciones de tiempo

Zeitfunktion	Schaltungsart	Empfänger belichtet Empfänger dunkel
ON  Ohne	Hell Dunkel	EIN AUS
ON  GAN	Hell Dunkel	EIN AUS EIN AUS
ON  GAB	Hell Dunkel	EIN AUS EIN AUS
ON  IAB	Hell Dunkel	EIN AUS EIN AUS

Die Zeit  $t_{AN}$ ,  $t_{AB}$  und  $t_{IAB}$  sind von 0,02 - 1 Sekunde einstellbar.  
Der H/D-Schalter (Schalter links außen) ist in Stellung Dunkelschaltung dargestellt.

Timer function	Switching type	Receiver exposed Receiver dark
ON  Without	Light Dark	ON OFF
ON  ON delay	Light Dark	ON OFF ON OFF
ON  OFF delay	Light Dark	ON OFF ON OFF
ON  one shot	Light Dark	ON OFF 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.

Fonction de temporisation	Mode de commutation	Récepteur éclairé Récepteur non éclairé
ON  sans	clair foncé	activé désactivé
ON  GAN	clair foncé	activé désactivé activé désactivé
ON  GAB	clair foncé	activé désactivé activé désactivé
ON  IAB	clair foncé	activé désactivé activé désactivé

Les temps  $t_{AN}$ ,  $t_{AB}$  et  $t_{IAB}$  sont réglables de 0,02 ... 1 s.  
Le commutateur H/D (commutateur à l'extrême gauche) est représenté en position commutation obscur.

Función de tiempo	Modo de conmutación	Receptor recibiendo luz Receptor oscuro
ON  Sin	Claro Oscuro	ON OFF
ON  GAN	Claro Oscuro	ON OFF ON OFF
ON  GAB	Claro Oscuro	ON OFF ON OFF
ON  IAB	Claro Oscuro	ON OFF ON OFF







El tiempo  $t_{AN}$ ,  $t_{AB}$  y  $t_{IAB}$  es ajustable entre 0,02 y 1 segundos.  
El conmutador H/D (conmutador exterior izquierdo) está representado en posición de reducción de la luz.

Funzione tempo	Modo di commutazione	Ricevitore illuminato Ricevitore scuro
ON  Senza	Chiario Scuro	Un Disattivo
ON  GAN	Chiario Scuro	Un Disattivo Un Disattivo
ON  GAB	Chiario Scuro	Un Disattivo Un Disattivo
ON  IAB	Chiario Scuro	Un Disattivo Un Disattivo

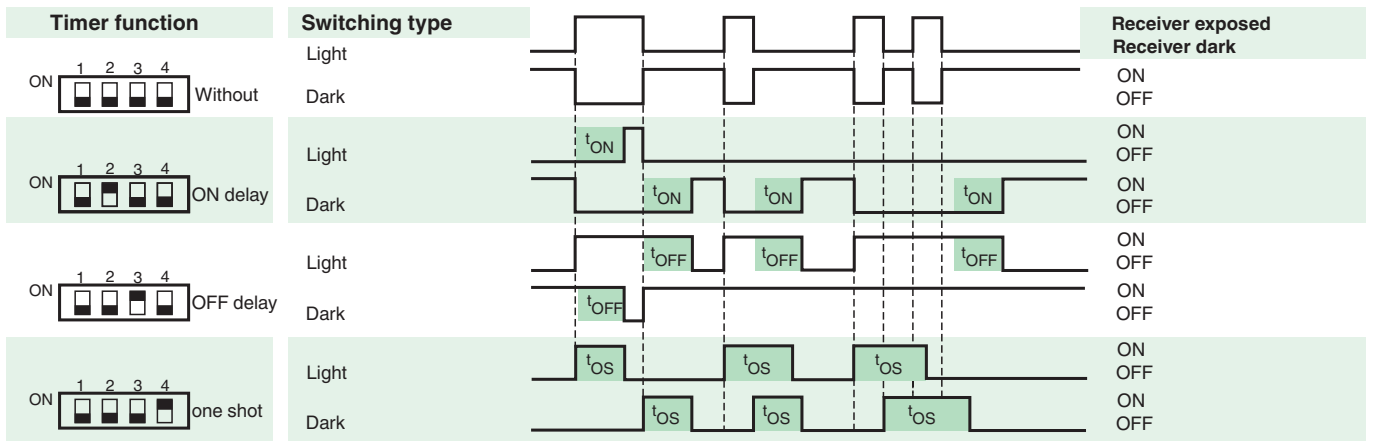
i tempi  $t_{AN}$ ,  $t_{AB}$  e  $t_{IAB}$  sono regolabili tra 0,02 s e 1 s.  
L'interruttore chiaro/scuro (interruttore sul lato esterno sinistro) è rappresentato in posizione di azionamento in scuro.

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## Accessories

	<b>OMH-05</b>	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	<b>OMH-21</b>	Mounting bracket: mounting aid for sensors in the RL* series
	<b>OMH-22</b>	Mounting aid for RL* series
	<b>OMH-RLK29</b>	Mounting bracket
	<b>OMH-RLK29-HW</b>	Mounting bracket for rear wall mounting
	<b>OMH-RL28-C</b>	Weld slag cover model

**Timer functions**



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 - 1 s)
	one shot timer	
	ON delay timer	
	ON delay timer / OFF delay timer	
	ON delay timer / one shot timer	

**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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