Thru-beam sensor (pair)
LA28/LK28-Z-F1/31/116

- Universal series with highly versatile fields of use
- Resistant against noise: reliable operation under all conditions
- Highly visible LED as alignment aid in receiver optics
- Programmable time function GAN, GAB, IAB as well as GAN-IAB and GAN-GAB as double function
- Version with red light
- Version with relay output
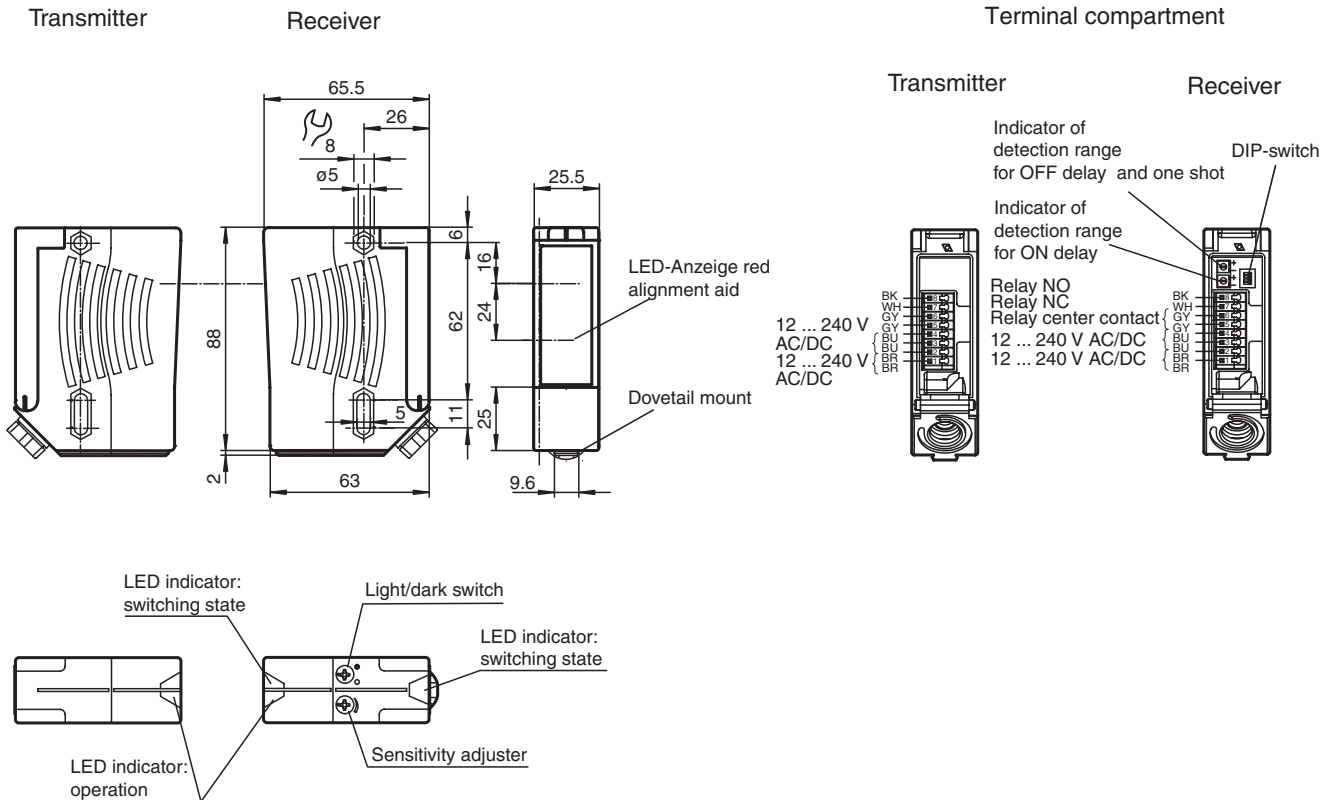
Thru-beam sensor

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
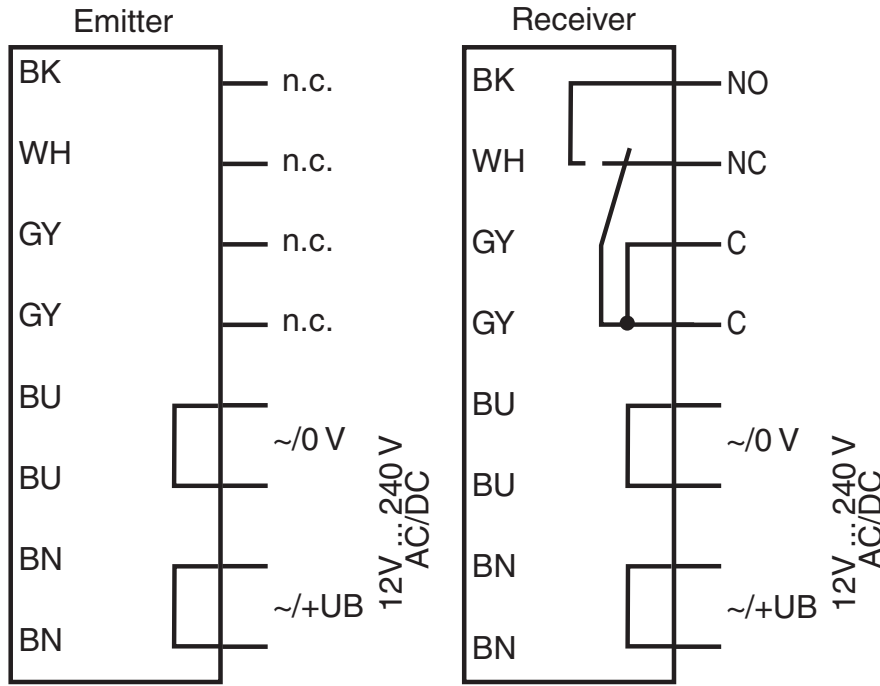- Protection at automatic gates

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

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Dimensions

Transmitter   Receiver   Terminal compartment

65.5
26
8
ø5
25.5
88
6
16
62
24
5
11
25
2
63
9.6

LED-Anzeige red
alignment aid

Dovetail mount

Transmitter

Indicator of
detection range
for OFF delay and one shot

Indicator of
detection range
for ON delay

Receiver

DIP-switch

BK
WH
GY
BU
BR
12 ... 240 V AC/DC
12 ... 240 V AC/DC

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

BK
WH
GY
BU
BR

LED indicator:
switching state

Light/dark switch

LED indicator:
switching state

Sensitivity adjuster

LED indicator:
operation

Technical Data

System components	
System components	
Emitter	LA28-F1/116
Receiver	LK28-Z-F1/31/116
General specifications	
Effective detection range	0 ... 65 m
Threshold detection range	90 m
Light source	LED
Light type	modulated visible red light
Alignment aid	LED red (in receiver lens) illuminated constantly: beam is interrupted, flashes: reaching switching point, off: sufficient stability control
Transmitter frequency	F1 = 25 kHz
Diameter of the light spot	approx. 1.3 m at 65 m
Opening angle	Emitter 1.2°, Receiver 5°
Ambient light limit	50000 Lux
Functional safety related parameters	
$MTTF_d$	490 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %
Indicators/operating means	
Operation indicator	LED green

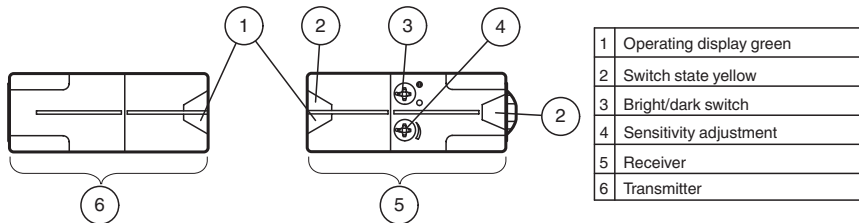Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 134124_eng.pdf

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Technical Data

Function indicator		LED yellow: 1. LED lit constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point
Control elements		sensitivity adjustment (Adjustment to < 25% of the effective operating range) , Light-on/dark-on changeover 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 . (selectable, light/dark switching is only activated if the receiver has 'dark on' selected.)
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-OFF delay (GAN-GAB), programmable adjustment range 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		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		200 g (emitter and receiver)

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Connection Assignment

Emitter

BK	— n.c.
WH	— n.c.
GY	— n.c.
GY	— n.c.
BU	
BU	~/0 V
BN	
BN	~/+UB

12V ... 240 V AC/DC

Receiver

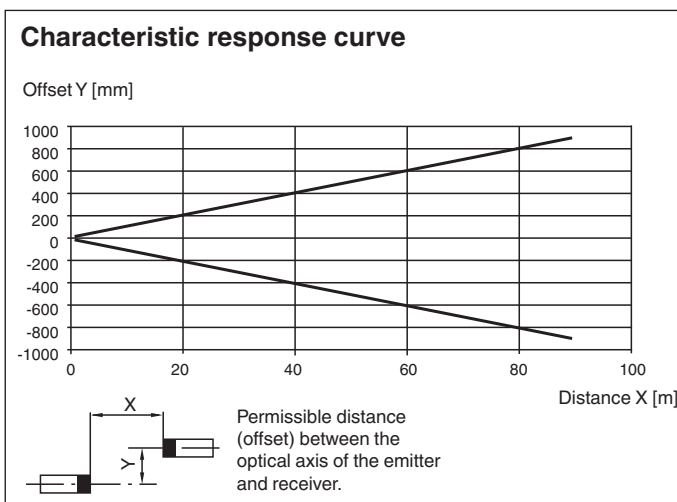| BK | — NO |
WH	— NC
GY	— C
GY	— C
BU	
BU	~/0 V
BN	
BN	~/+UB

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).
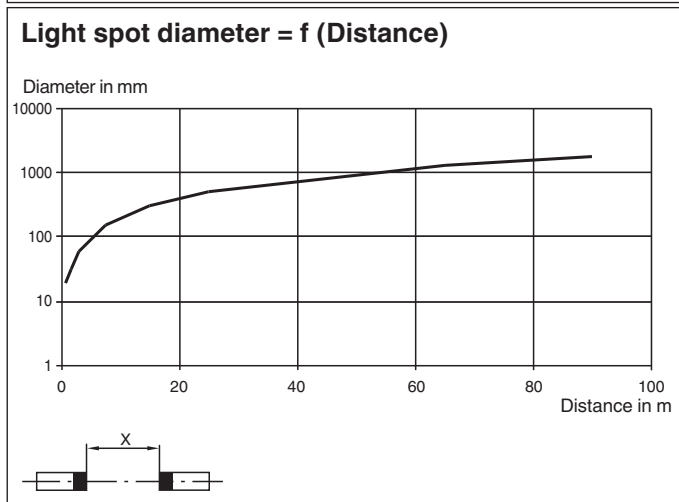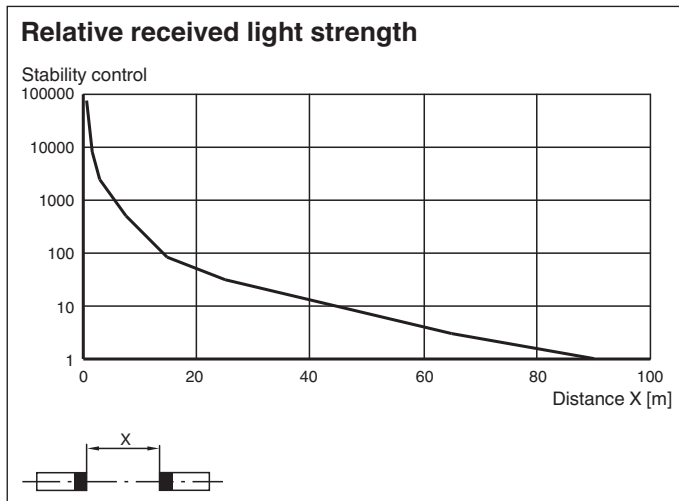
Assembly

1	Operating display green
2	Switch state yellow
3	Bright/dark switch
4	Sensitivity adjustment
5	Receiver
6	Transmitter

Characteristic Curve

Characteristic response curve

Offset Y [mm]

Distance X [m]

Permissible distance (offset) between the optical axis of the emitter and receiver.

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Characteristic Curve

Relative received light strength

Stability control

Distance X [m]

Light spot diameter = f (Distance)

Diameter in mm

Distance in 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

Accessories

	OMH-22	Mounting aid for RL* series
	OMH-RLK29	Mounting bracket
	OMH-RLK29-HW	Mounting bracket for rear wall mounting
	OMH-RL28-C	Weld slag cover model

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

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Timer functions

Timer function	Switching type		Receiver exposed Receiver dark
ON 1 2 3 4 Without	Light		ON OFF
	Dark		ON 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
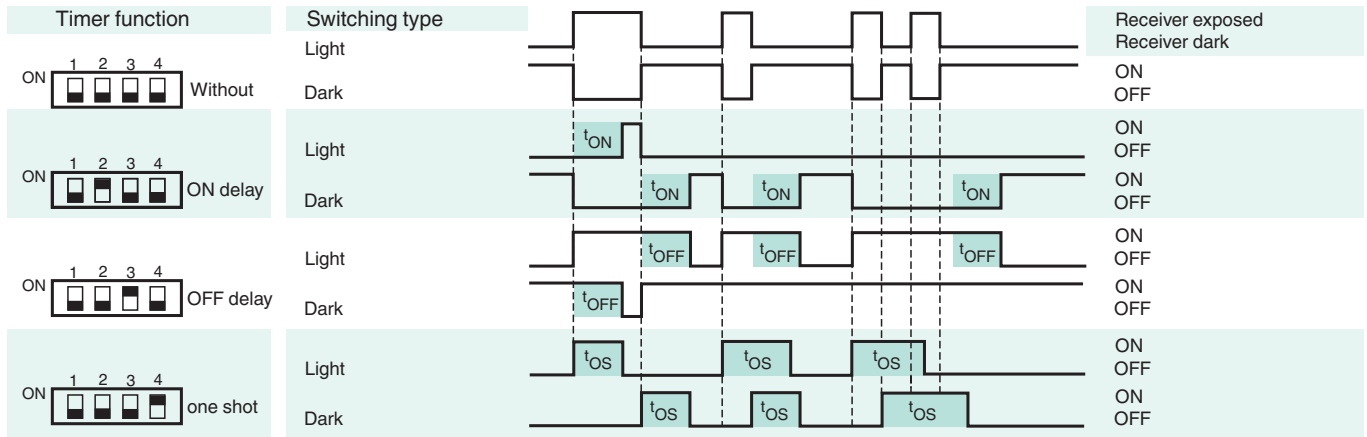
Time t_{ON}, t_{OFF} and t_{OS} are adjustable from 0.1 to 10 seconds.
The Light-/Dark-Switch (Left, outer switch) is shown in the "Dark ON" position.

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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