



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



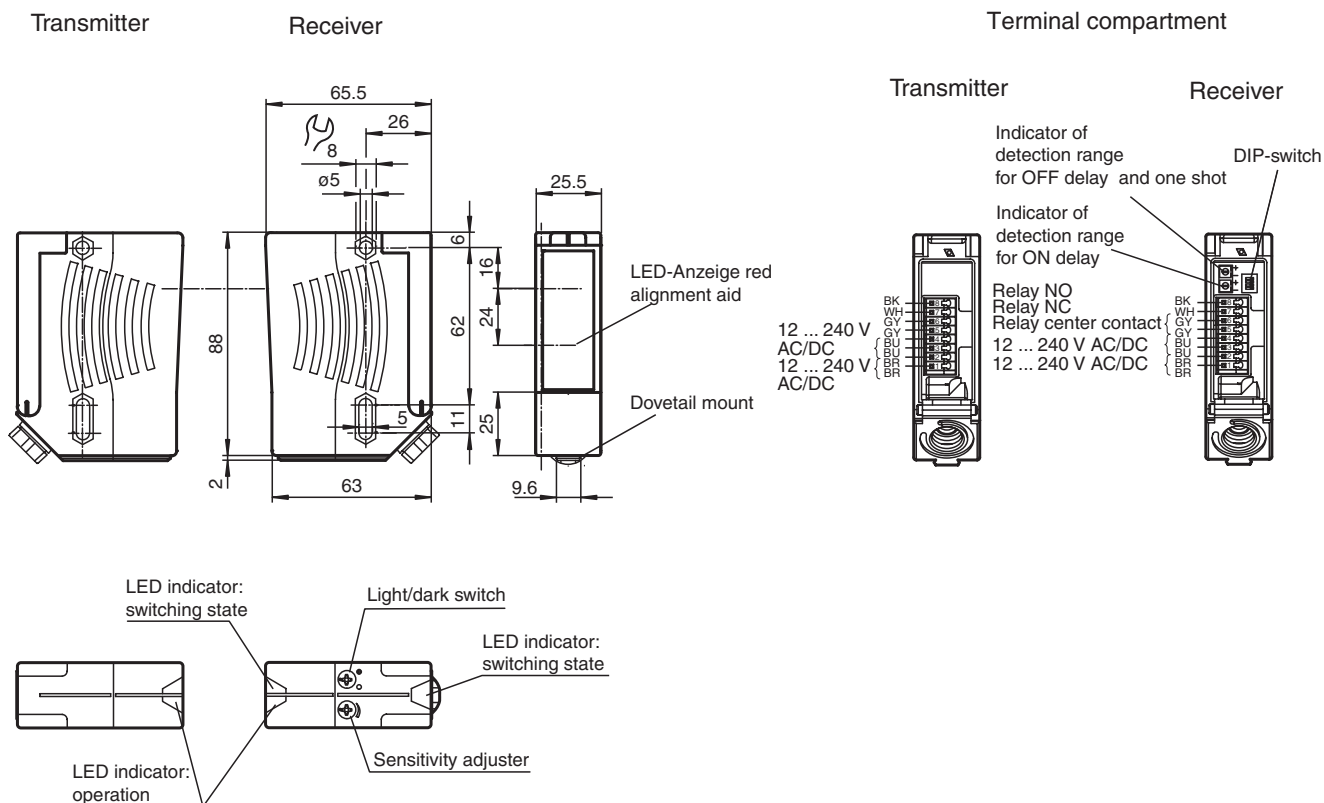
Function

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

Dimensions



Technical Data

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
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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)

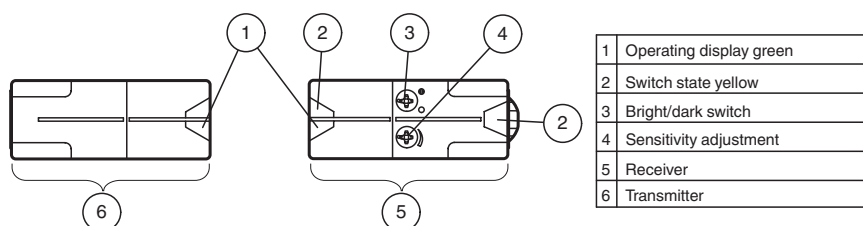
The diagram illustrates the wiring for the Emitter and Receiver of a 12V AC/DC relay module. The Emitter side shows connections for BK, WH, GY, GY, BU, BU, BN, and BN. The Receiver side shows connections for BK, WH, GY, GY, BU, BU, BN, and BN. The diagram includes labels for n.c. (not connected), ~0V, ~+UB, and 12V ..: 240V AC/DC.

Emitter	Receiver
BK	BK
WH	WH
GY	GY
GY	GY
BU	BU
BU	BU
BN	BN
BN	BN

Labels for Emitter: n.c., n.c., n.c., n.c., ~0V, ~+UB, 12V ..: 240V AC/DC.

Labels for Receiver: NO, NC, C, C, ~0V, ~+UB, 12V ..: 240V AC/DC.

Assembly



Characteristic response curve

Offset Y [mm]

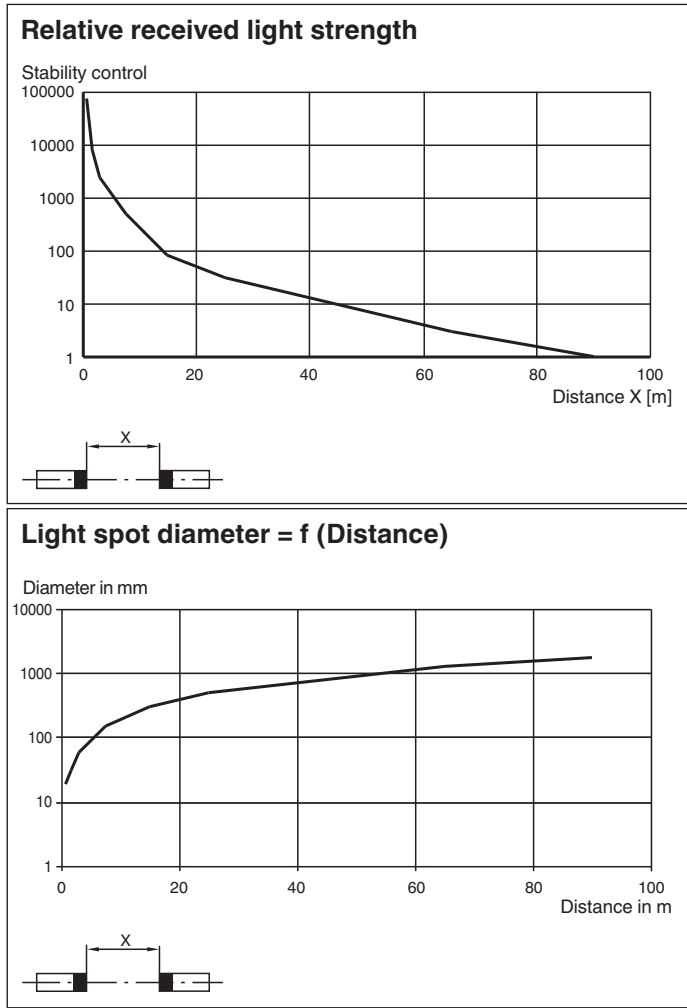
The graph plots Offset Y [mm] on the vertical axis (ranging from -1000 to 1000) against Distance X [m] on the horizontal axis (ranging from 0 to 100). Two lines originate from the point (0, 0), representing the permissible range of offset. The upper line reaches approximately 900 mm at 90 m, and the lower line reaches approximately -900 mm at 90 m.

Distance X [m]	Offset Y [mm] (Upper Limit)	Offset Y [mm] (Lower Limit)
0	0	0
20	225	-225
40	450	-450
60	675	-675
80	900	-900
90	900	-900

Distance X [m]

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

Characteristic Curve







Application



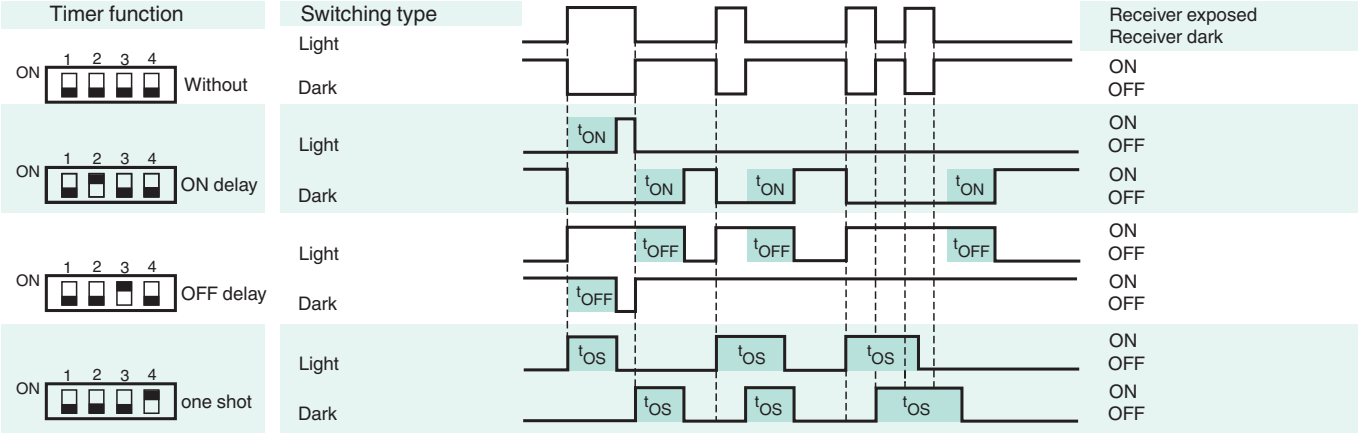
Accessories

	OMH-05	Mounting aid for round steel \varnothing 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

Timer functions



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	