



Model Number

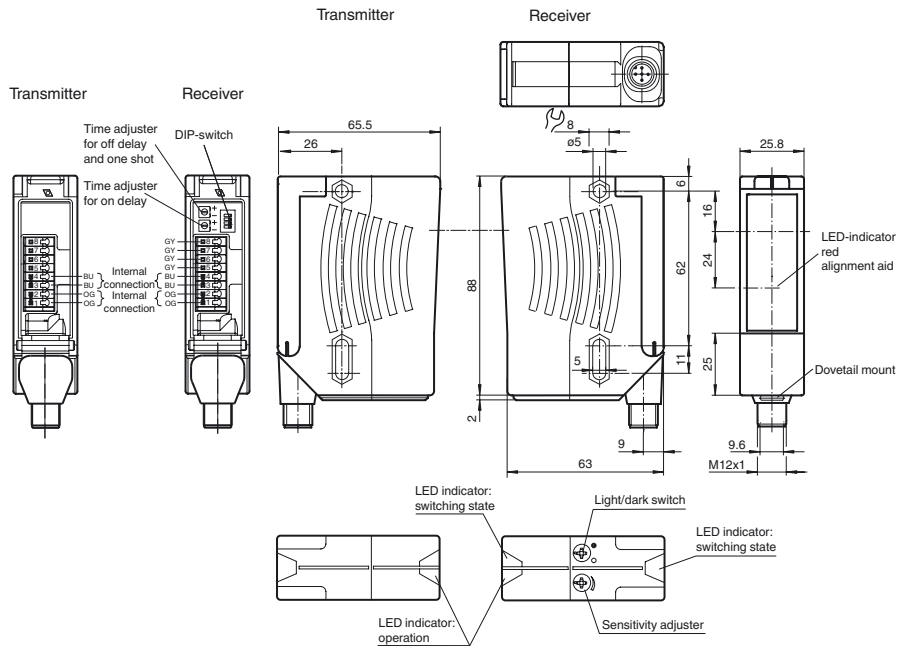
LD28/LV28-Z-F1/76a/82b/110/112

Thru-beam sensor
with metal connector M12; 5-pin, 90°
convertible

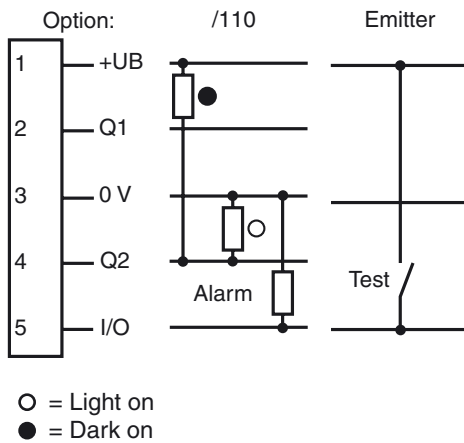
Features

- Ultra bright LEDs for power on, pre fault indication and switching state
- Highly visible LED as alignment aid in receiver optics
- Powerful push-pull output
- Emitter deactivation
- Programmable time function GAN, GAB, IAB as well as GAN-IAB and GAN-GAB as double function
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, protection degree IP67

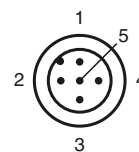
Dimensions



Electrical connection



Pinout



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Subject to modifications without notice

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Technical data**System components**

Emitter	LD28-F1/76a/112
Receiver	LV28-Z-F1/82b/110/112

General specifications

Effective detection range	0 ... 30 m
Threshold detection range	40 m
Light source	LED
Light type	modulated visible red light , 660 nm
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. 0.6 m at 30 m
Angle of divergence	Emitter 1.2°, Receiver 5°
Ambient light limit	50000 Lux

Functional safety related parameters

MTTF _d	620 a
Mission Time (T _M)	20 a
Diagnostic Coverage (DC)	90 %

Indicators/operating means

Operating display	LED green
Function display	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
Controls	sensitivity adjustment (Adjustment to < 25% of the effective operating range) , Light/Dark switch

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I ₀	Emitter: ≤ 50 mA Receiver: ≤ 35 mA

Input

Test input	emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC)
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Output

Output of the pre-fault indication	1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector, U _{max} = 30 V DC, I _{max} = 0.2 A The output becomes inactive if the signal level has fallen below the function reserve for approx. 10 s (yellow and red LEDs flash). If the light beam is interrupted four times during this period, the output immediately becomes inactive.	
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 output, short-circuit protected, reverse polarity protected	
Switching voltage	max. 30 V DC	
Switching current	max. 100 mA	
Switching frequency	f	1000 Hz
Response time	0.5 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	

Ambient conditions

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

Mechanical specifications

Protection degree	IP67
Connection	5-pin, M12 x 1 connector, 90° rotatable
Material	
Housing	Plastic ABS
Optical face	Plastic pane
Mass	140 g (emitter and receiver)

Compliance with standards and directives

Standard conformity	
Product standard	EN 60947-5-2:2007

Approvals and certificates

UL approval	cULus
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

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-RLK29

Mounting bracket

OMH-MLV11-K

dove tail mounting clamp

OMH-RLK29-HW

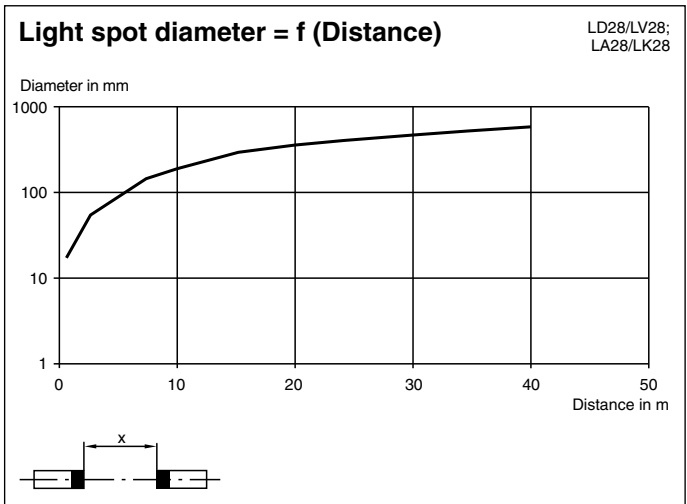
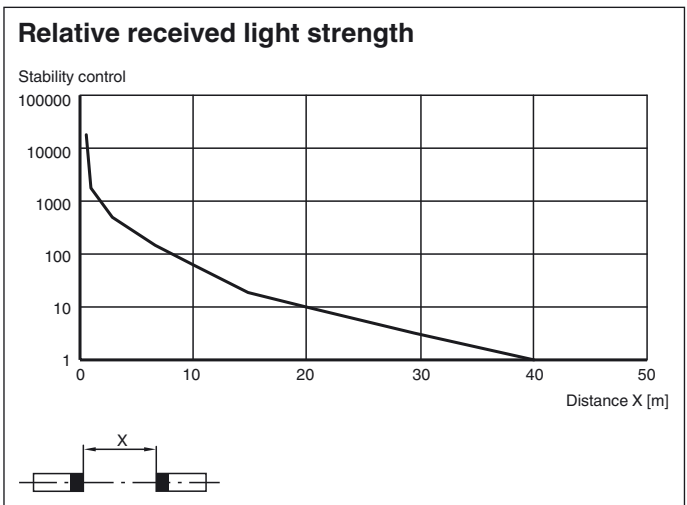
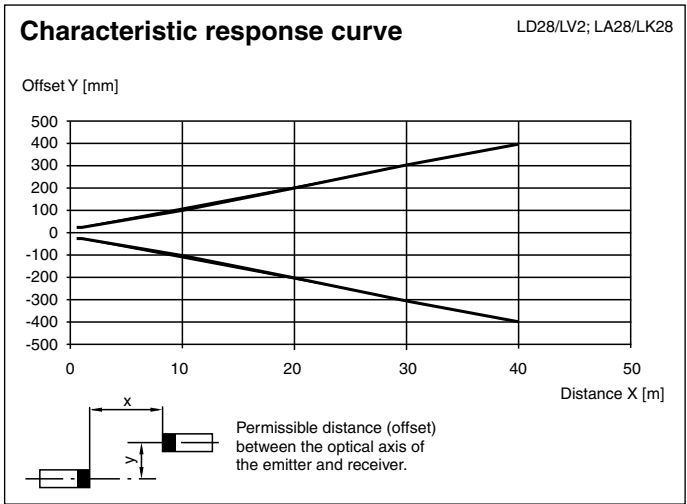
Mounting bracket for rear wall mounting

OMH-RL28-C

Protective cover

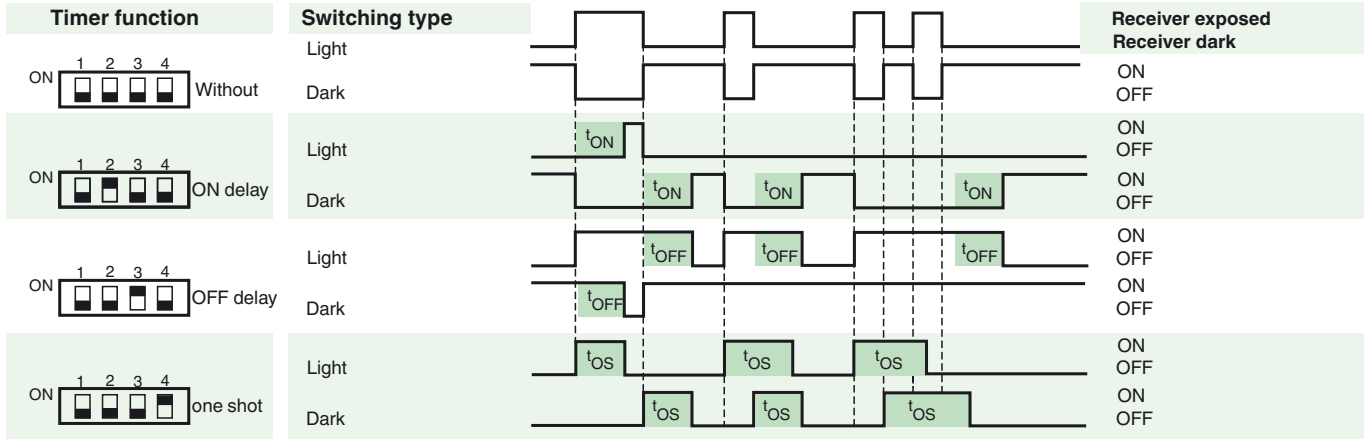
Other suitable accessories can be found at www.pepperl-fuchs.com

Curves/Diagrams



Timer functions

Release date: 2011-02-21 14:49 Date of issue: 2011-02-21 116630_ENG.xml



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