Model Number

LD28/LV28-Z-F2/49/76a/82b/112

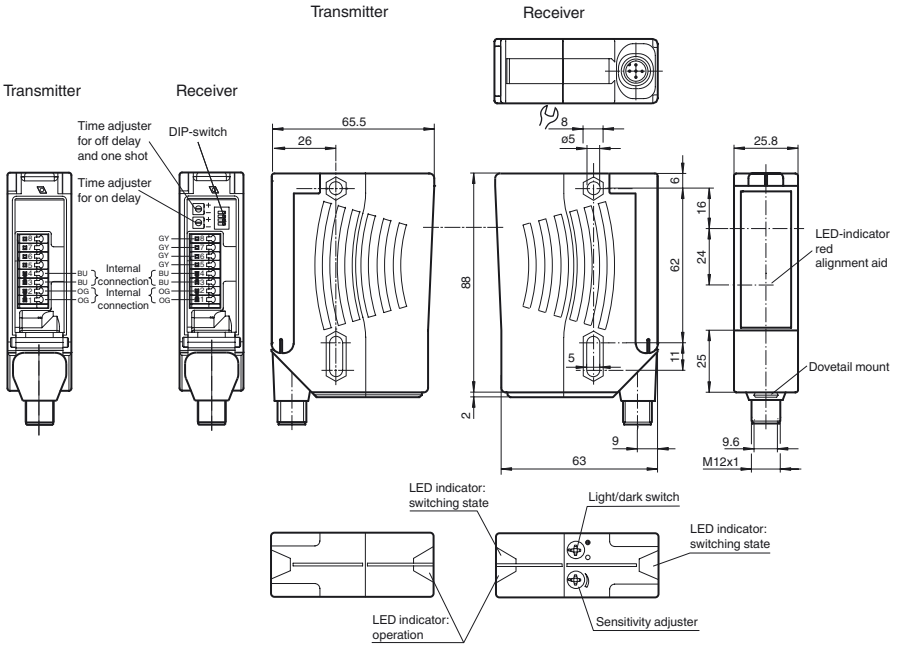
Thru-beam sensor

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

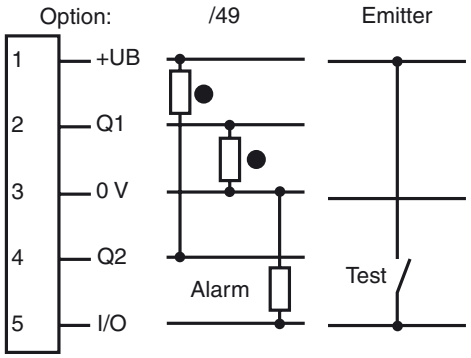
Features

- Ultra bright LEDs for power on, pre fault indication and switching state
- Highly visible LED as alignment aid in receiver optics
- 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

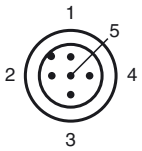


Electrical connection



○ = Light on
● = Dark on

Pinout



Release date: 2011-02-21 14:49 Date of issue: 2011-02-21 116622_ENG.xml

Technical data

System components		
Emitter		LD28-F2/76a/112
Receiver		LV28-Z-F2/49/82b/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		F2 = 30 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)
Output		
Output of the pre-fault indication		1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector, Umax = 30 V DC, Imax = 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 NPN, 1 PNP synchronized-switching, short-circuit protected, reverse polarity protected , open collectors
Switching voltage		max. 30 V DC
Switching current		max. 200 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

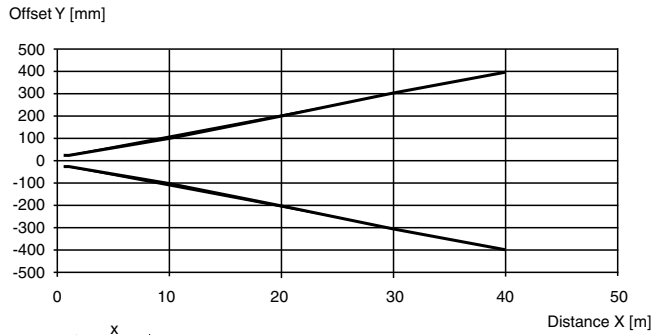
Other suitable accessories can be found at www.pepperl-fuchs.com

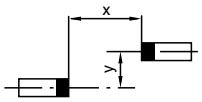
Release date: 2011-02-21 14:49 Date of issue: 2011-02-21 116622_ENG.xml

Curves/Diagrams

Characteristic response curve

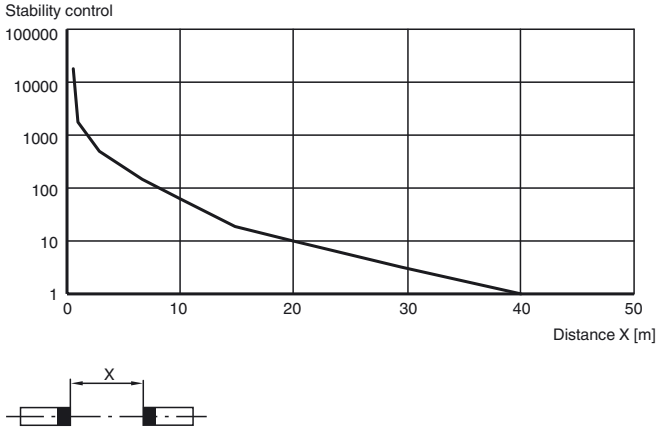
LD28/LV2; LA28/LK28





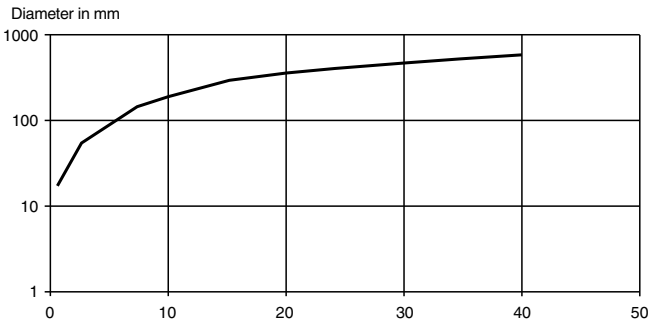
Permissible distance (offset) between the optical axis of the emitter and receiver.

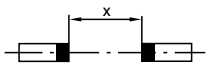
Relative received light strength



Light spot diameter = f (Distance)

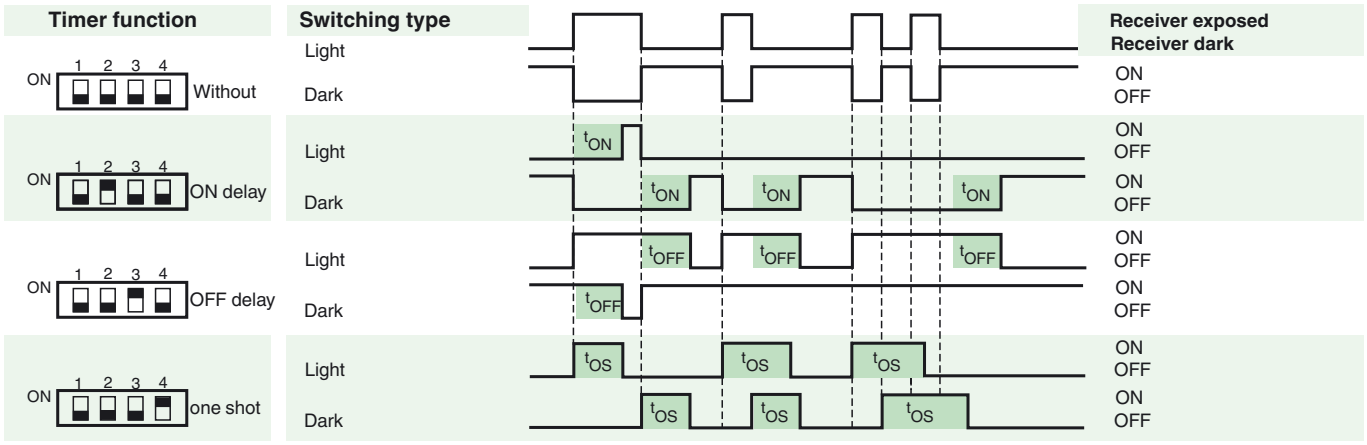
LD28/LV28; LA28/LK28





Timer functions

Release date: 2011-02-21 14:49 Date of issue: 2011-02-21 116622_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	

Release date: 2011-02-21 14:49 Date of issue: 2011-02-21 116622_ENG.xml

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com