



Model Number

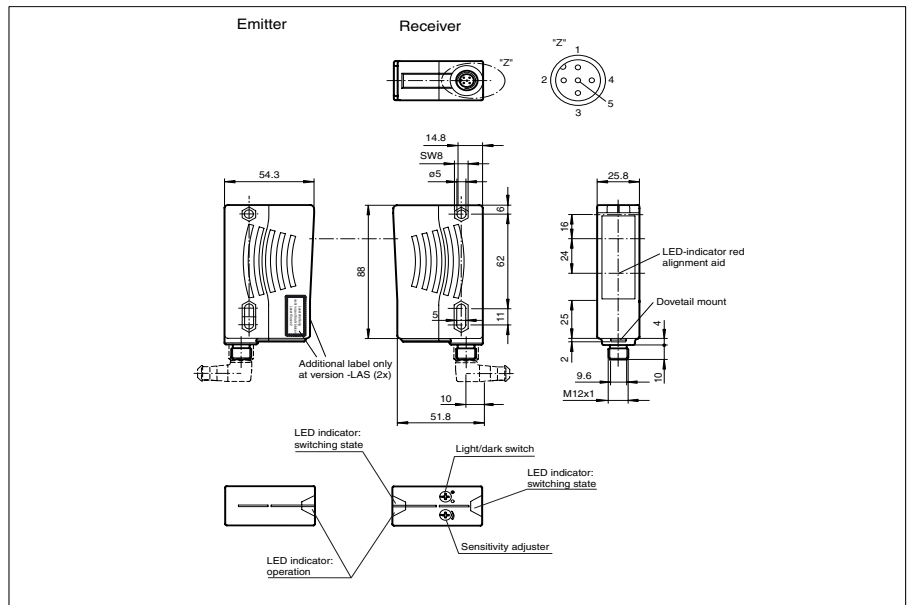
LD28/LV28-F2/76a/82b/105/110

Thru-beam sensor
with 5-pin, M12 x 1 plastic connector

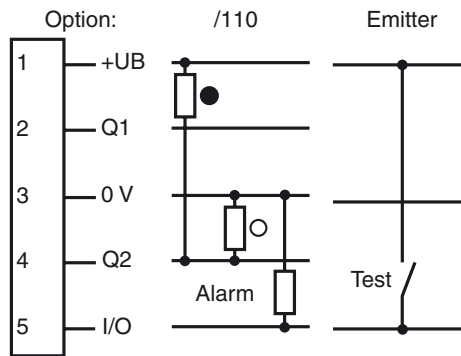
Features

- Ultra bright LEDs for power on, stability control and switching state
- Very clearly visible LED as alignment aid in receiver optics
- Powerful push-pull output
- Emitter deactivation
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, protection class IP67
- Protection class II

Dimensions



Electrical connection



○ = Light on
● = Dark on

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Additional accessories can be found in the Internet.

Subject to modifications without notice

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Technical data**General specifications**

Effective detection range	0 ... 30 m
Threshold detection range	40 m
Light source	LED, 660 nm
Approvals	CE, cULus
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
Light type	red, modulated light
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 lits 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
Operating elements	sensitivity adjuster (Adjustment to < 25% of the effective operating range) , Light/dark switch

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Protection class		II , rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1
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 proof, 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	
Signal output	1 push-pull output, short-circuit proof, protected against reverse polarity	
Switching voltage	max. 30 V DC	
Switching current	max. 100 mA	
Switching frequency	f	1000 Hz
Response time		0.5 ms

Standard conformity

Standards	EN 60947-5-2
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Ambient conditions

Ambient temperature	-40 ... 60 °C (233 ... 333 K)
Storage temperature	-40 ... 75 °C (233 ... 348 K)

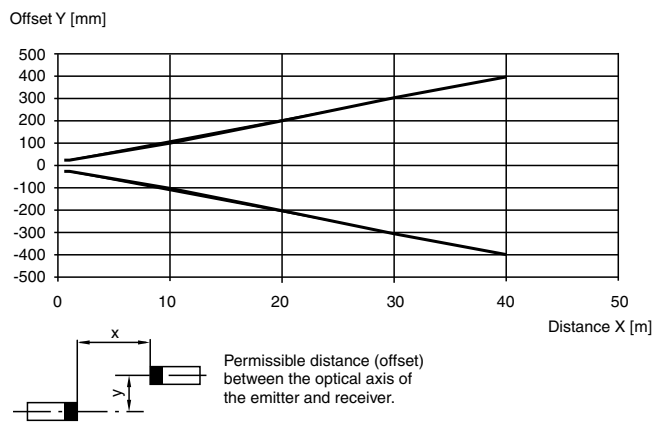
Mechanical specifications

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

Curves / Diagrams

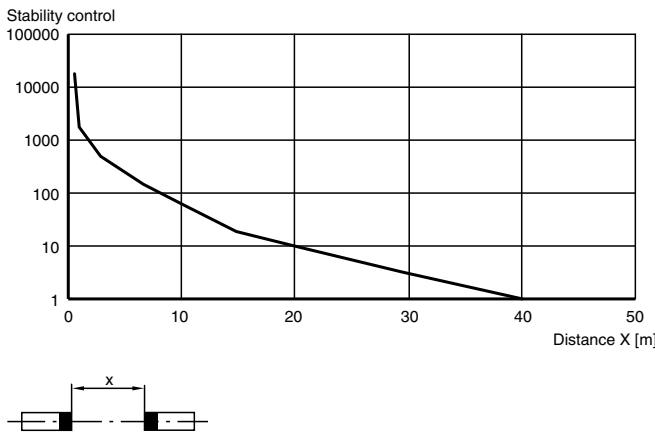
Characteristic response curve

LD28/LV2; LA28/LK28



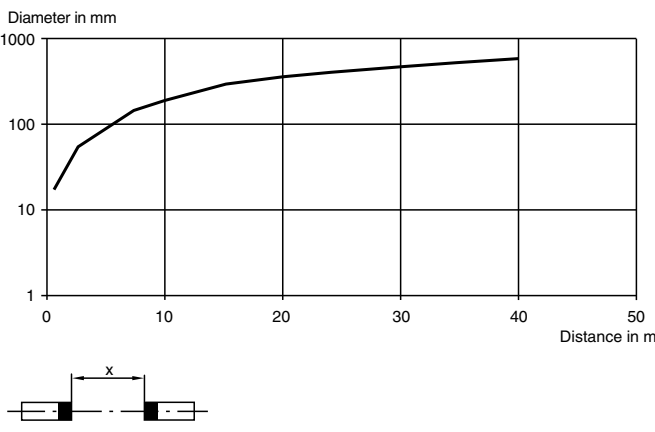
Relative received light strength

LD28/LV28; LA28/LK28



Light spot diameter = f (Distance)

LD28/LV28; LA28/LK28



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