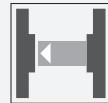




Thru-beam sensor

LD28/LV28-Z-F1/47/76a/82b/112

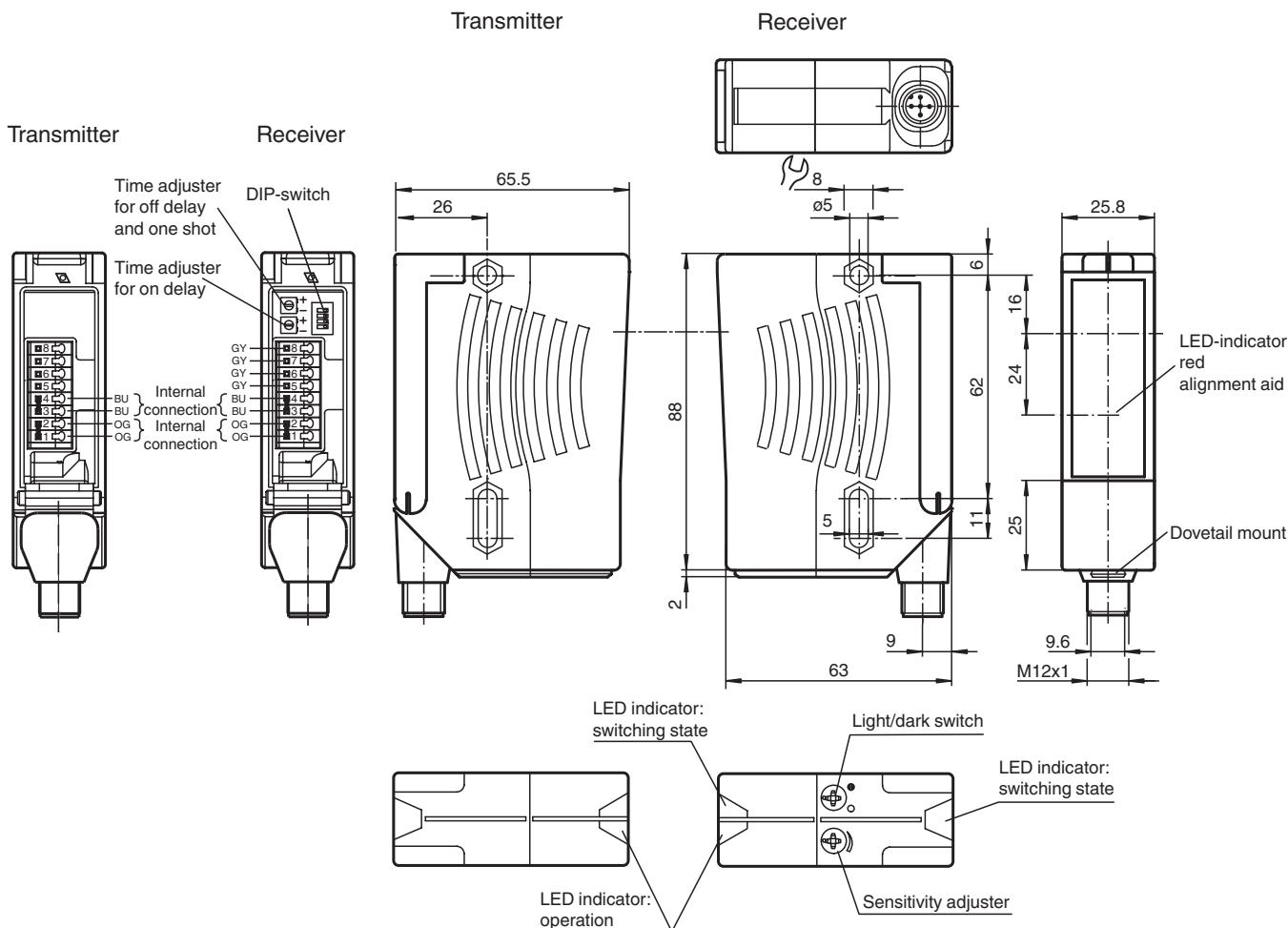


- Universal series with highly versatile fields of use
- Resistant against noise: reliable operation under all conditions
- Highly visible LED as alignment aid in receiver optics
- Programmable time function GAN, GAB, IAB as well as GAN-IAB and GAN-GAB as double function
- Emitter with test input
- Version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

Universal thru-beam sensor, large housing design, 30 m detection range, red light, 25 kHz transmission frequency, light/dark on, DC version, 2 PNP outputs, timer function, test input, pre-fault output, M12 plug



Dimensions



Technical Data

System components

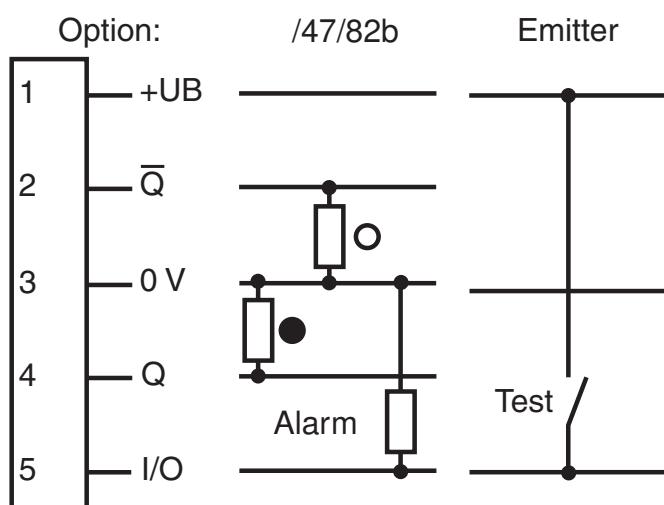
Technical Data

Emitter	LD28-F1/76a/112	
Receiver	LV28-Z-F1/47/82b/112	
General specifications		
Effective detection range	0 ... 30 m	
Threshold detection range	40 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. 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		
Operation indicator	LED green	
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	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		
Pre-fault indication output		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
Signal output		2 PNP, complementary, short-circuit protected, reverse polarity protected , open collectors
Switching voltage		max. 30 V DC
Switching current		max. 2 A
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
Conformity		
Product standard	EN 60947-5-2	
Approvals and certificates		
EAC conformity	TR CU 020/2011	
Protection class	II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit basis insulation of input circuit according to EN 50178, rated insulation voltage 230 V AC Caution! The protection class 2 is only valid when the terminal compartment is closed.	
UL approval	cULus Listed , Class 2 power source	

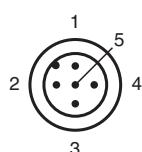
Technical Data

CCC approval	CCC approval / marking not required for products rated ≤ 36 V
Ambient conditions	
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 75 °C (-40 ... 167 °F)
Mechanical specifications	
Housing width	25.8 mm
Housing height	88 mm
Housing depth	65.5 mm
Degree of protection	IP67
Connection	5-pin, M12 x 1 connector
Material	
Housing	Plastic ABS
Optical face	Plastic pane
Mass	140 g (emitter and receiver)

Connection Assignment



Connection Assignment

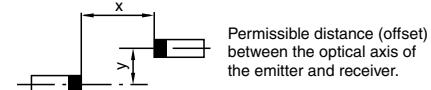
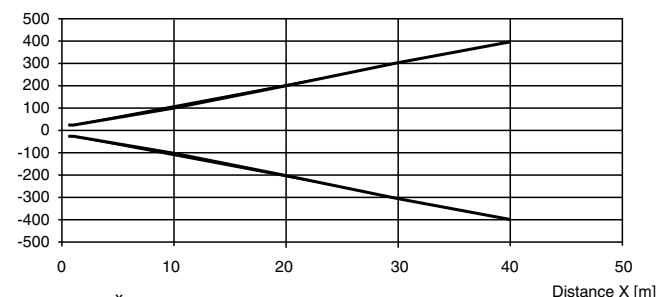


Characteristic Curve

Characteristic response curve

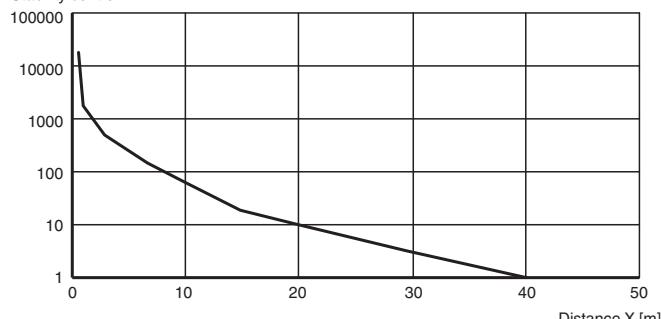
LD28/LV2; LA28/LK28

Offset Y [mm]

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

Relative received light strength

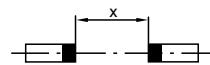
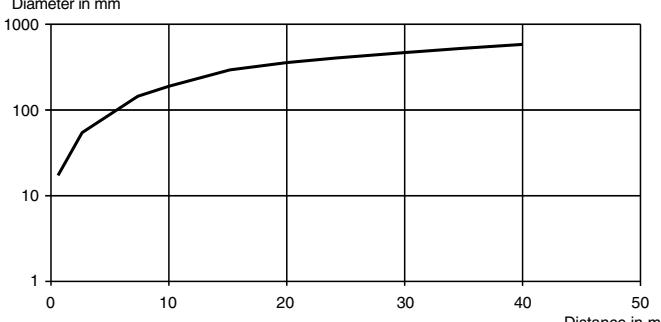
Stability control



Light spot diameter = f (Distance)

LD28/LV28;
LA28/LK28

Diameter in mm



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

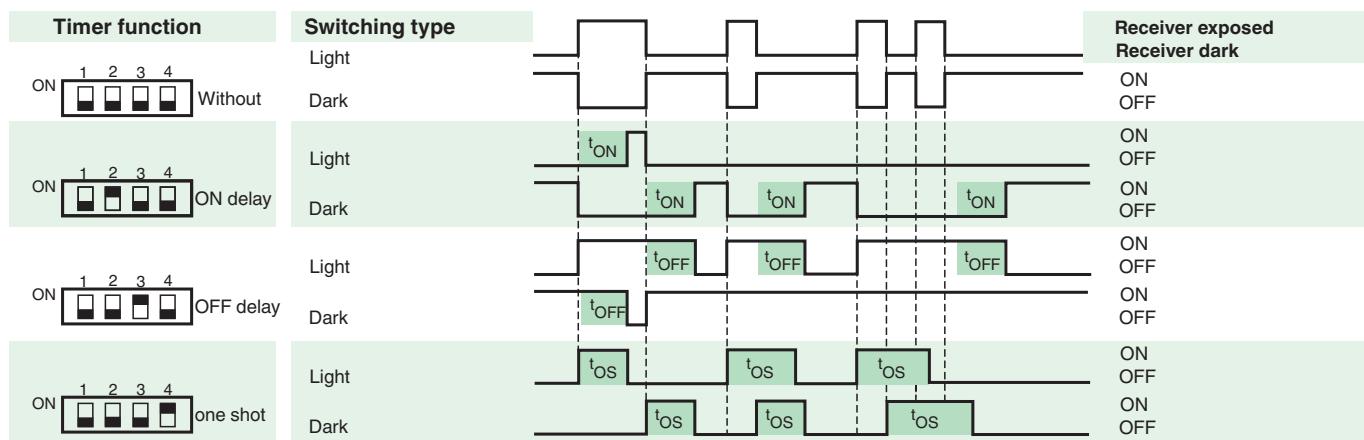
**OMH-22**

Mounting aid for RL* series

Accessories

	OMH-RLK29-HW	Mounting bracket for rear wall mounting
	OMH-RL28-C	Weld slag cover model
	V15-G-2M-PUR	Female cordset single-ended M12 straight A-coded, 5-pin, PUR cable grey

Timer functions



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