Thru-beam sensor

LD28/LV28-LAS-F1-Z/47/76a/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
- Emitter with test input
- Laser version for long ranges

Universal thru-beam sensor, large housing design, 300 m detection range, red laser light, laser class 2, 25 kHz transmission frequency, light/dark on, DC version, 2 PNP outputs, timer function, test input, pre-fault output, terminal compartment

Safety Information

LASER LIGHT
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
WAVELENGTH: 650 nm
MAX PULSE ENERGY: < 18 nJ
PULSE DURATION: 20 µs
IEC 60825-1: 2007 CERTIFIED.
COMPLIES WITH 21 CFR 1040.10
AND 1040.11 EXCEPT FOR DEVIA-
TIONS PURSUANT TO LASER NOTICE
NO. 50, DATED JUNE 24, 2007.

LUMIÈRE LASER
NE PAS REGARDER LE FAISCEAU
PRODUIT LASER CLASSE 2
LONGUEUR D'ONDE: 650 nm
MAX. ÉNERGIE D'IMPULSION: < 18 nJ
DURÉE D'IMPULSION: 20 µs
CERTIFIÉ CEI 60825-1: 2007.
CONFORME AUX NORMES 21 CFR
1040.10 ET 1040.11 À L'EXCEPTION
DES ÉCARTS CONFORMÉMENT
À LA NOTICE DU LASER
N° 50, DATÉE DU 24 JUIN 2007.

Safety Information

Laser Class 2 Information
The irradiation can lead to irritation especially in a dark environment. Do not point at people!
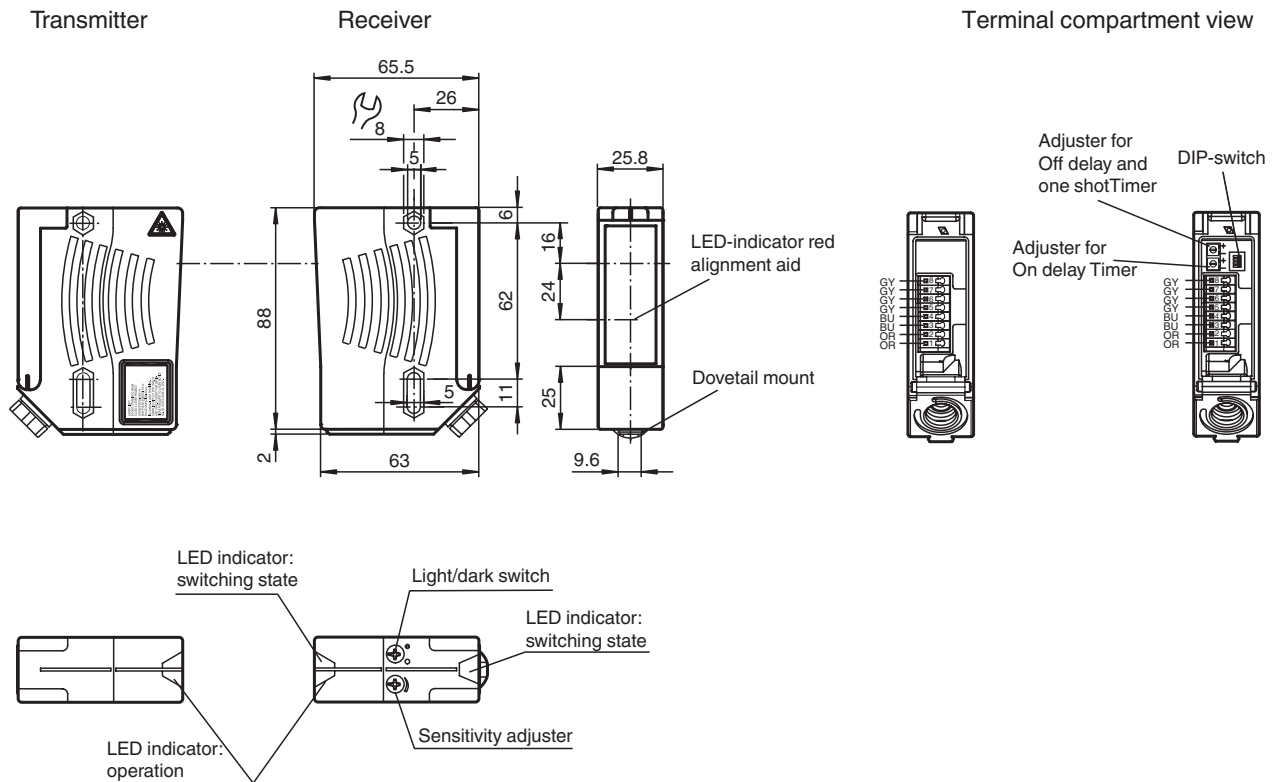Caution: Do not look into the beam!
Maintenance and repairs should only be carried out by authorized service personnel!
Attach the device so that the warning is clearly visible and readable.
Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

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Dimensions

Transmitter   Receiver   Terminal compartment view

LED-indicator red alignment aid

Dovetail mount

Adjuster for Off delay and one shotTimer

DIP-switch

Adjuster for On delay Timer

LED indicator: switching state

Light/dark switch

LED indicator: switching state

LED indicator: operation

Sensitivity adjuster

Technical Data

System components	
Emitter	LD28-LAS-F1/76a/116
Receiver	LV28-LAS-F1-Z/47/82b/116
General specifications	
Effective detection range	0 ... 300 m
Threshold detection range	400 m
Light source	laser diode
Light type	modulated visible red light
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM
Laser class	2
Wave length	650 nm
Beam divergence	< 1.5 mrad
Pulse length	20 µs
Repetition rate	25 kHz
max. pulse energy	18 nJ
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. 6 mm at 5 m, approx. 75 x 300 mm at 300 m vertical to housing axis
Angle of divergence	Emitter: 0.06 ° Receiver: 5 °

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www.pepperl-fuchs.com   fa-info@us.pepperl-fuchs.com   fa-info@de.pepperl-fuchs.com   fa-info@sg.pepperl-fuchs.com   PEPPERL+FUCHS   2

Technical Data

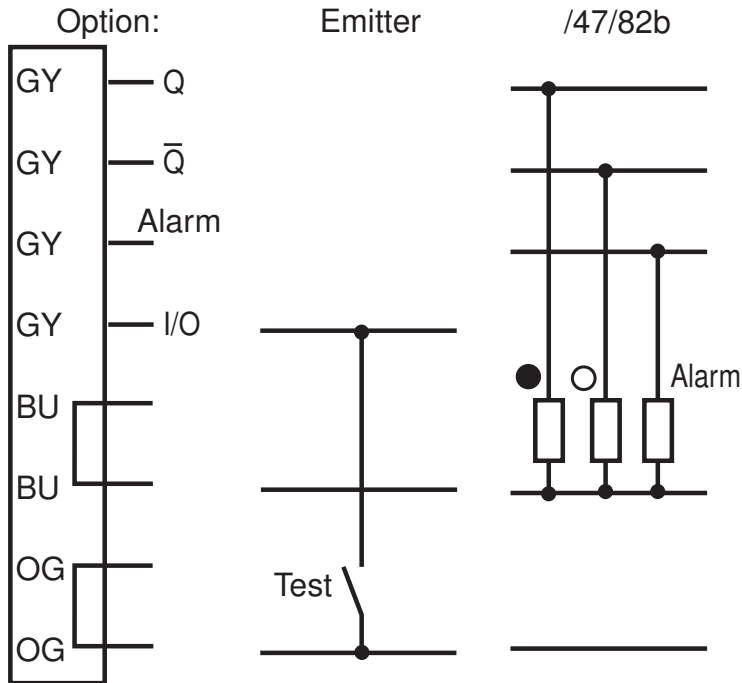|		
Ambient light limit		50000 Lux
Functional safety related parameters		
$MTTF_d$		540 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		90 %
Indicators/operating means		
Operation indicator		LED green
Function indicator		LED yellow: 1. LED lit constantly: signal > 2 x switching point (function reserve) 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: ≤ 55 mA Receiver: ≤ 35 mA
Input		
Test input		emitter deactivation at $+U_B$
Output		
Pre-fault indication output		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
Signal output		2 PNP, complementary, 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
Conformity		
Product standard		EN 60947-5-2
Laser safety		EN 60825-1
Approvals and certificates		
Protection class		II, rated insulation 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 250 V AC Caution! The protection class 2 is only valid when the terminal compartment is closed.
UL approval		cULus Listed , Class 2 power source
CCC approval		CCC approval / marking not required for products rated ≤36 V
FDA approval		IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007
Ambient conditions		
Ambient temperature		-10 ... 50 °C (14 ... 122 °F)
Storage temperature		-20 ... 75 °C (-4 ... 167 °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		

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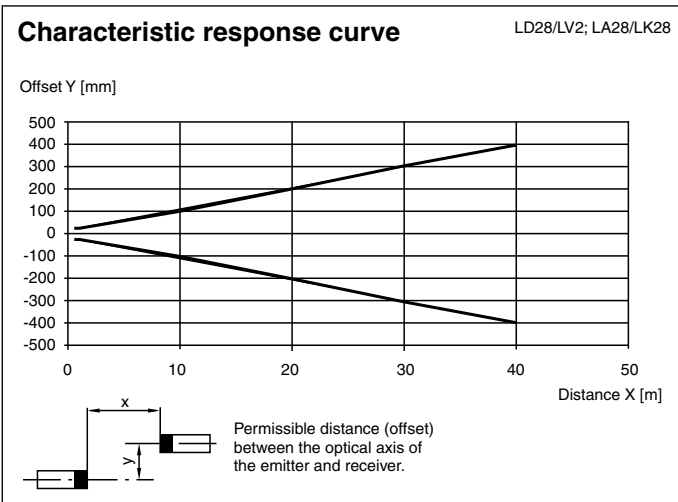fa-info@sg.pepperl-fuchs.com

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Technical Data

Housing	Plastic ABS
Optical face	Plastic pane
Mass	200 g (emitter and receiver)

Connection Assignment

Option: Emitter /47/82b

GY — Q

GY — $\overline{Q}$

GY — Alarm

GY — I/O

BU

BU

OG

OG

Test

Alarm

○ = Light on
● = Dark on

Characteristic Curve

Characteristic response curve   LD28/LV2; LA28/LK28

Offset Y [mm]

Distance X [m]

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

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Relative received light strength

Stability control

Light spot diameter = f (Distance)

LD28/LV28;
LA28/LK28
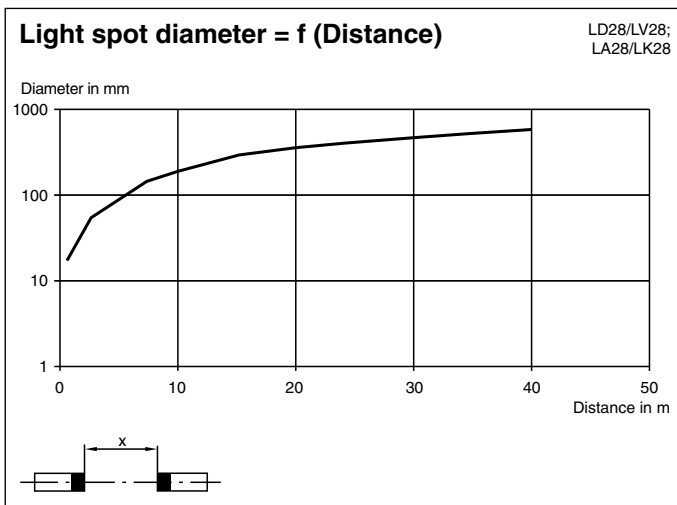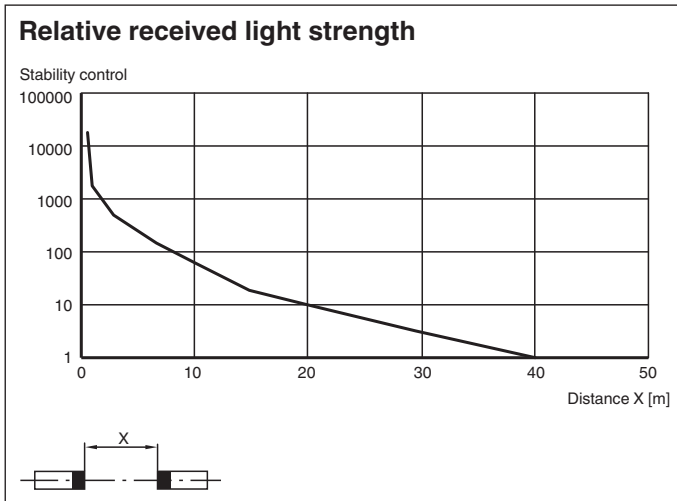
Accessories

	OMH-05	Mounting aid for round steel ø 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
	OMH-RLK29	Mounting bracket
	OMH-RLK29-HW	Mounting bracket for rear wall mounting
	OMH-RL28-C	Weld slag cover model

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Timer functions
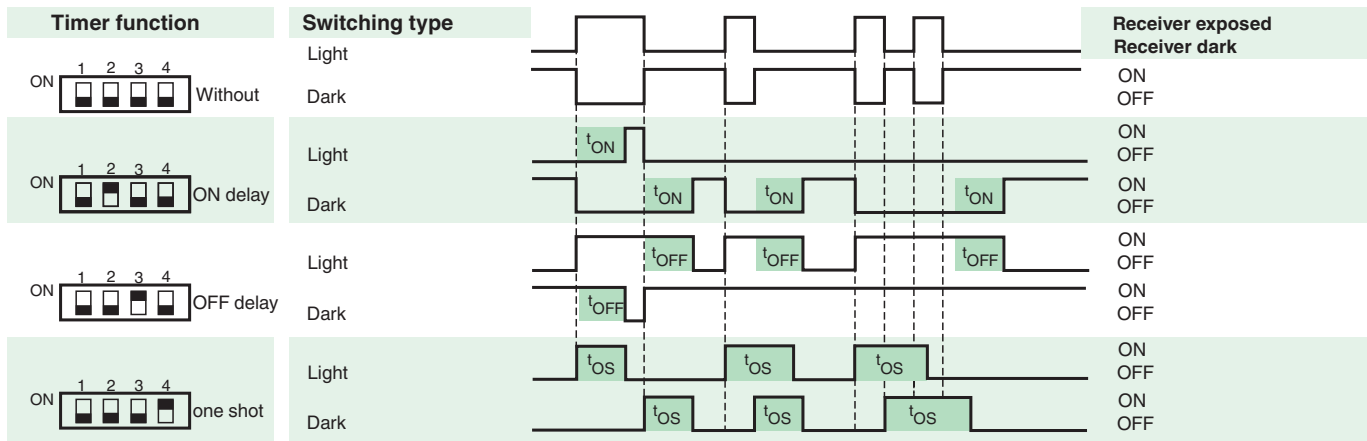
Time t_{ON}, t_{OFF} and t_{OS} are adjustable from 0.02 to 1 seconds.
The Light-/Dark-Switch (Left, outer switch) is shown in the "Dark ON" position.

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	

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