# Thru-beam sensor



#### CE c(UL **VISC**� ) us

# **Model Number**

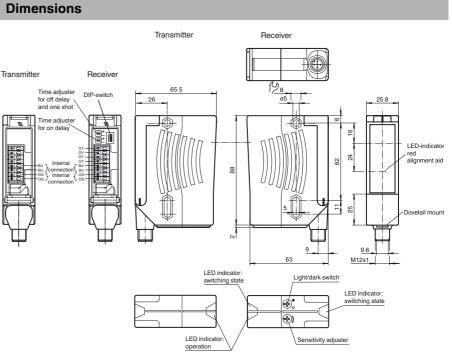
LD28/LV28-Z-F1/47/76a/82b/112

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

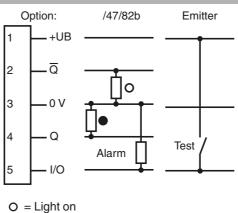
## **Features**

- Universal series with highly versatile ٠ fields of use
- Resistant against noise: reliable operation under all conditions
- Highly visible LED as alignment aid in ٠ receiver optics
- Programmable time function GAN, ٠ GAB, IAB as well as GAN-IAB and GAN-GAB as double function
- Emitter with test input .
- Version with red light

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



# **Electrical connection**









Refer to "General Notes Relating to Pepperl+Fuchs Product Information" Pepperl+Fuchs Group www.pepperl-fuchs.com

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LD28/	'LV28-2	Z-F1/47	7/76a/	′82b/	112

the function reserve for approx. 10 s (yellow and red LEDs flash).			
Emitter         LD28-F1/75a/112           Resciver         LV28-Z-F1/47/82b/112           General specifications         030 m           Effective detection range         030 m           Threshold detection range         40 m           Light source         LED           Light source         LED           Light source         LED           Alignment aid         Effective detection range           Jameser of the light source         East section           Diameter of the light spot         approx.0.6 m at 30 m           Angle of divergence         Fencitive series in structure s	Technical data		
Emitter         LD28-F1/75a/112           Resciver         LV28-Z-F1/47/82b/112           General specifications         030 m           Effective detection range         030 m           Threshold detection range         40 m           Light source         LED           Light source         LED           Light source         LED           Alignment aid         Effective detection range           Jameser of the light source         East section           Diameter of the light spot         approx.0.6 m at 30 m           Angle of divergence         Fencitive series in structure s			
Reserver     LV28-Z-F1/47/82b/112       General specifications	• •		LD28-E1/76a/112
Effective detection range         030 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         FI = 25 kHZ           Diameter of the light spot         approx.0.6 m t3 0 m           Angle of divergence         Emitter 1 2:, Receiver 5°           Angle of divergence         Emitter 1 2:, Receiver 5°           MTTF <sub>d</sub> 620 a           Mission Time (T <sub>M</sub> )         20 a           Diagnostic Coverage (CC)         90 %           Poperation indicator         LED green           Function indicator         LED for lens           Function indicator         LED off: signal > 2 x switching point (function reserve)           Sutch of signal < switching point			
Effective detection range         030 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         FI = 25 kHZ           Diameter of the light spot         approx.0.6 m t3 0 m           Angle of divergence         Emitter 1 2:, Receiver 5°           Angle of divergence         Emitter 1 2:, Receiver 5°           MTTF <sub>d</sub> 620 a           Mission Time (T <sub>M</sub> )         20 a           Diagnostic Coverage (CC)         90 %           Poperation indicator         LED green           Function indicator         LED for lens           Function indicator         LED off: signal > 2 x switching point (function reserve)           Sutch of signal < switching point	General specifications		
Light source LED Light how modulated visible relight Algment aid Light how modulated visible relight Algment aid LED red (in receiver lens) illuminated constantly: beam is interrupted, ftashes: reaching switching point, off: sufficient stability control Transmitter frequency FI = 25 kHz Diameter of the light spot Angle of divergence Antipent light limit 50000 Lux Functional safety related parameters MTTF_6 620 a Mission Time (T <sub>N</sub> ) 20 a Diagnostic Coverage (CC) 90 % Indicators/operating means Operation indicator LED green LED yellow: LED yellow: LED yellow: LED vellow: Signal between 1 x switching point (function reserve) LED vellow: LED vellow: Signal between 1 x switching point and 2 x switching point Control elements Control elements Control elements U Operation indicator LED vellow: LED vellow: Test input Pre-fault indication output Pre-fault indication			0 30 m
Light type     modulated visible red light       Alignment aid     LED red (in receiver lens)       Illuminated constantly beam is interrupted, title interaction of sufficient disability beam is interrupted, title interaction of sufficient disability beam is interrupted.       Transmitter frequency     F1 = 25 kHz       Diameter of the light spot     approx 0.6 m at 30 m       Angle of divergence     Emitter 1.2*, "       Freeciver 5*     F1 = 25 kHz       Diagnostic Coverage (DC)     90 %       Indicators/operating means     00%       Operation indicator     LED green       Functional safety letated parameters     LED green       Functional safety letated parameters     LED green       Poperation indicator     LED green       Function indicator     LED green       Function indicator     LED green       Portation indicator     LED for signal < xwitching point (function reserve)	Threshold detection range		40 m
Alignment aid       LED red (in receiver lens) infinitated constantly: beam is interrupted, (flashes: reaching switching point, off: sufficient stability control         Transmitter frequency       F1 = 25 kHz approx.0.6 m at 30 m         Angle of divergence       Emitter 1.2*, Receiver 5*         Ambien light limit       50000 Lux         Functional safety related parameters       620 a         Mission Time (T <sub>k0</sub> )       20 a         Diagnostic Coverage (DC)       90 %.         Indicator/Operating means       E         Operation indicator       LED green         Function indicator       LED in constantly: signal > 2 x switching point (function escreve)         2. LED flashes: signal detween 1 x switching point and 2 x switching point         Motor       10 30 V DC         Ripple       10 % 0 %         No-load supply current       10 % 0 %         Porating voltage       Up %         No-load supply current       10 % 0 %         Switching type       light/tdark on, switchable         Symboling	Light source		LED
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 12*, reserved server 5*         Protectional sately related parameters       F         MTTFrd       620 a         Mission Time (Tsp)       20 a         Diagnostic Coverage (DC)       90 %.         Indicators/operating means       LED green         Operation indicator       LED green         Function indicator       LED green         Function indicator       LED point         Control elements       sensitivity adjustment (Adjustment t < 25% of the effective operating rong and sensitivity adjustment (Adjustment t < 25% of the effective operating voltage	Light type		modulated visible red light
Diameter of the light spot       approx. 0.6 m at 30 m         Angle of divergence       Hitter 1.2*, Hereiver 5*         Ambient light limit       50000 Lux         Functional safety related parameters       Functional safety related parameters         MTTF_d       620 a         Diagnostic Coverage (DC)       90 %.         Indicators/operating means       LED green         Operation indicator       LED green         Function later       LED green         Function indicator       LED green         Control elements       signal setween 1 x switching point (function reserve)         2. LED flashes: signal setween 1 x switching point de 2 x switching point witching point         No-load supply current       0         0       Bipple         No-load supply current       0         Perfault indication output       10 %         Pre-fault indication output       1 PNP transitor, short-circuit protected, protected from revers polarity open collector, Umax = 30 Y DC, Imax = 0.2 A         Notioad supply current       1 PNP transitor, short-circuit protected, reverse polarity open collector.         Pre-fault indication output       1 PNP transitor, short-circuit protected, reverse polarity open collector.         Switching voltage       max. 2 A         Switching output       2 PNP, complementary, short-ci	Alignment aid		illuminated constantly: beam is interrupted, flashes: reaching switching point,
Angle of divergence     Emitter 12*, Receiver 5*       Ambient light limit     50000 Lux       Functional safety related parameters     Image: Content of	Transmitter frequency		F1 = 25 kHz
Receiver 5°         Ambient light limit       50000 Lux         Functional safety related parameters       Environment Schwart Sc	Diameter of the light spot		approx. 0.6 m at 30 m
Functional safety related parameters       620 a         MTFg       620 a         Mission Time (T <sub>M</sub> )       20 a         Diagnostic Coverage (DC)       90 %         Indicators/operating means       Doperation indicator         Question indicator       LED green         Function indicator       LED yellow: 1. LED it constantly: signal > 2 x switching point (function reserve)         2. LED flashes: signal between 1 x switching point       3. LED off: signal < switching point	Angle of divergence		
MTTFd       620 a         Mission Time (T <sub>M</sub> )       20 a         Diagnostic Coverage (DC)       90 %         Indicators/operating means       EED green         Operation indicator       LED green         Function indicator       LED green         Function indicator       LED green         Function indicator       LED fashes: signal > 2 x switching point (function reserve)         2. LED flashes: signal setween 1 x switching point       3. LED off: signal < switching point	Ambient light limit		50000 Lux
Mission Time (T <sub>M</sub> )       20 a         Diagnostic Coverage (DC)       90 %         Indicators/operating means       Deperation indicator         Function indicator       LED green         Function indicator       LED green         Expression indicator       LED green         Function indicator       LED green         Subscription       3. LED 6ft: signal > 2x switching point (function reserve)         2. LED flashes: signal between 1 x switching point and 2 x switching point         Control elements       sensitivity adjustment (Adjustment to < 25% of the effective operating range). Light-on/dark-on changeover switch	Functional safety related param	eters	
Diagnostic Coverage (DC)         90 %           Indicators/operating means            Operation indicator         LED green           Function indicator         LED yellow: 1. LED it constantly: signal > 2 x switching point (function reserve) 2. LED tashes: signal between 1 x switching point and 2 x switching point           Control elements         sensitivity adjustment (Aujustment to < 25% of the effective operating range), Light-on/dark-on changeover switch	8		
Indicators/operating means <ul> <li>Operation indicator</li> <li>LED green</li> <li>Function indicator</li> <li>LED prelow:                 <ol> <li>LED bit constantly: signal &gt; 2 x switching point (function reserve)</li></ol></li></ul>			
Operation indicator       LED green         Function indicator       LED yelow:         1. LED it constantly: signal > 2 x switching point (function reserve)       2. LED fashes: signal between 1 x switching point and 2 x switching point         Control elements       3. LED off: signal = switching point         Sensitivity adjustment (Adjustment to < 25% of the effective operating range), Light-on/dark-on changeover switch	Diagnostic Coverage (DC)		90 %
Function indicator       LED yellow: 1. LED it 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	• •		
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	1		-
witching point       3. LED off: signal < switching point	Function indicator		<ol> <li>LED lit constantly: signal &gt; 2 x switching point (function reserve)</li> </ol>
Control elements       sensitivity adjustment (Adjustment to < 25% of the effective operating range), Light-on/dark-on changeover switch			switching point
Operating voltage       UB       10 30 V DC         Ripple       10 %       Emitter: $\leq$ 50 mA         No-load supply current       Ig       Emitter: $\leq$ 50 mA         Receiver: $\leq$ 35 mA       Emitter: $\leq$ 35 mA         Input       emitter deactivation at +UB ( $max$ , $<$ 3 mA at 30 V DC)         Output       IPNP 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).         Switching type       light/dark on, switchable         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 requency       f         Timer function       0.5 ms         Timer function       ON delay (GAN), OFF delay (GAB), one shot (IAB), ON delay-oFF delay (GAN-GAB), programmable adjustment interval 0.02 s 1 s         Conformity       Product standard         Product standard       EN 60947-5-2         Ambient conditions       40 75 °C (-40 140 °F)         Storage temperature       -40 60 °C (-40 140 °F)         Housing width       85.5 mm	Control elements		sensitivity adjustment (Adjustment to < 25% of the effective
No-load supply current       10 %         No-load supply current       I₀         Emitter: ≤ 50 mA         Receiver: ≤ 35 mA         Input         Test input       emitter deactivation at +U <sub>B</sub> (I <sub>max</sub> < 3 mA at 30 V DC)	Electrical specifications		
No-load supply current       I₀       Emitter: ≤ 50 mA Receiver: ≤ 35 mA         Input       emitter deactivation at +U₀ (I <sub>max.</sub> < 3 mA at 30 V DC)	Operating voltage	UB	10 30 V DC
Input       Feceiver: ≤ 35 mA         Input       emitter deactivation at +U <sub>B</sub> (I <sub>max.</sub> < 3 mA at 30 V DC)	Ripple		10 %
Test input       emitter deactivation at +U <sub>B</sub> (I <sub>max.</sub> < 3 mA at 30 V DC)	No-load supply current	Ι <sub>Ο</sub>	
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 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 frequency       f         Max. 2 A         Switching frequency       f         ON delay (GAN), OFF delay (GAB), one shot (IAB), ON delay-oprogrammable adjustment interval 0.02 s 1 s         Conformity       Product standard         Product standard       EN 60947-5-2         Ambient temperature       -40 60 °C (-40 140 °F)         Storage temperature       -40 75 °C (-40 167 °F)         Mechanical specifications       Housing width         Housing depth       65.5 mm         Degree of protection       IP67         Connection       5-pin, M12 x 1 connector         Material       Housing	•		
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 frequency       f         1000 Hz       Switching frequency         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         Product standard       EN 60947-5-2         Ambient temperature       -40 60 °C (-40 140 °F)         Storage temperature       -40 65 °C (-40 167 °F)         Mechanical specifications       Housing width         Housing height       88 mm         Housing depth       65.5 mm         Degree of protection       FP67         Connection       5-pin, M12 x 1 connector         Material       Housing         <	Test input		emitter deactivation at $+U_B$ ( $I_{max.} < 3 \text{ mA at } 30 \text{ V DC}$ )
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 typelight/dark on, switchableSignal output2 PNP, complementary, short-circuit protected, reverse polarity protected , open collectorsSwitching voltagemax. 30 V DCSwitching requencyf1000 HzResponse time0.5 msTimer functionON 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 sConformityProduct standardProduct standardEN 60947-5-2Ambient temperature-40 60 °C (-40 140 °F) Storage temperatureHousing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterial HousingPlastic ABS	Output		
Signal output2 PNP, complementary, short-circuit protected, reverse polarity protected , open collectorsSwitching voltagemax. 30 V DCSwitching currentmax. 2 ASwitching frequencyf1000 HzResponse time0.5 msTimer functionON 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 sConformityProduct standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 167 °F)Mechanical specifications-40 75 °C (-40 167 °F)Housing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterial			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.
protected , open collectorsSwitching voltagemax. 30 V DCSwitching currentmax. 2 ASwitching frequencyf1000 HzResponse time0.5 msTimer functionON 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 sConformityProduct standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Housing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHausing ABSHousingPlastic ABS	0 71		
Switching voltagemax. 30 V DCSwitching currentmax. 2 ASwitching frequencyf1000 HzResponse time0.5 msTimer functionON 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 sConformityProduct standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specificationsEN 60947-5-2Housing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHousingHousingPlastic ABS	Signal output		
Switching currentmax. 2 ASwitching frequencyf1000 HzResponse time0.5 msTimer functionON 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 sConformityProduct standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specificationsEN 60947-5-2Housing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHousingHousingPlastic ABS	Switching voltage		
Response time0.5 msTimer functionON 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 sConformityEN 60947-5-2Product standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specificationsEN 60947-5-2Housing width25.8 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHousingHousingPlastic ABS			max. 2 A
Timer functionON 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 sConformityEN 60947-5-2Product standardEN 60947-5-2Ambient conditions-40 60 °C (-40 140 °F)Storage temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specifications	Switching frequency	f	1000 Hz
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Product standardEN 60947-5-2Ambient conditionsAmbient temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specificationsHousing width25.8 mmHousing height88 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialImage: ConnectorHousingPlastic ABS	Timer function		one shot (GAN-IAB), ON delay-OFF delay (GAN-GAB), programmable
Ambient conditionsAmbient temperature-40 60 °C (-40 140 °F)Storage temperature-40 75 °C (-40 167 °F)Mechanical specificationsHousing width25.8 mmHousing height88 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHousingHousingPlastic ABS	•		
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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         Housing       Plastic ABS	•		
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Housing height88 mmHousing depth65.5 mmDegree of protectionIP67Connection5-pin, M12 x 1 connectorMaterialHousingHousingPlastic ABS	Mechanical specifications		
Housing depth     65.5 mm       Degree of protection     IP67       Connection     5-pin, M12 x 1 connector       Material     Image: Material state of the sta	•		
Degree of protection     IP67       Connection     5-pin, M12 x 1 connector       Material        Housing     Plastic ABS			
Connection     5-pin, M12 x 1 connector       Material     Housing       Plastic ABS	<b>e</b> 1		
Material Housing Plastic ABS	• •		
Housing Plastic ABS			5-pin, M12 x 1 connector
Optical face Plastic pane	-		
Mass 140 g (emitter and receiver)	•		•

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-MLV11-K dove tail mounting clamp

**OMH-RLK29-HW** Mounting bracket for rear wall mounting

OMH-RL28-C Weld slag cover model

## V15-G-2M-PUR

Female cordset, M12, 5-pin, PUR cable

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

Approvals and certificates

Germany: +49 621 776 1111

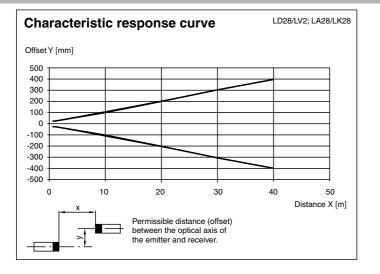
fa-info@de.pepperl-fuchs.com

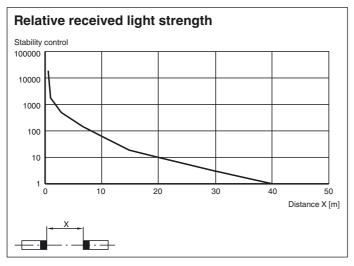
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

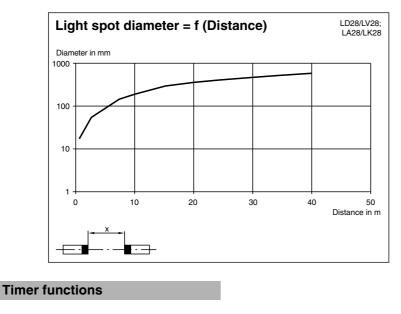
### Protecti

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
CCC approval	CCC approval / marking not required for products rated $\leq$ 36 V

# **Curves/Diagrams**







Pepperl+Fuchs Group www.pepperl-fuchs.com

Refer to "General Notes Relating to Pepperl+Fuchs Product Information" USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com

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#### **EPPPERL+FUCHS** 3

Timer function	Switching type		Receiver exposed Receiver dark
ON ON Without	Light Dark		ON OFF
1 2 3 4	Light		ON OFF
ON I ON delay	Dark		ON OFF
1 2 3 4	Light		ON OFF
ON OFF delay	Dark	<sup>1</sup> OFF	ON OFF
1 2 3 4	Light	tos tos tos	ON OFF
ON ON ONE shot	Dark	tos tos tos	ON OFF

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.

Туре	Description	Notes
-Z	OFF delay timer	Adjustable time interval
	one shot timer	(0.02 s - 1 s)
	ON delay timer	
	ON delay timer / OFF delay timer	
	ON delay timer / one shot timer	

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