

Features

- Surge protection for 2 signal lines
- Nominal voltage 24 V DC
- Protection module for non-grounded signal lines
- Max. surge current (8/20 μs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication output
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC 61508

Function

The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device has LEDs for the status indication. If required, this status is transferred to the corresponding function module via a status indication output.

The device is HART transparent.

The device is inserted onto the base module and forms the surge protection barrier together with the base module.

The device can be replaced without tools by a locking lever.

Assembly

Front view

Connection
Status indication output



LED red:
Fault

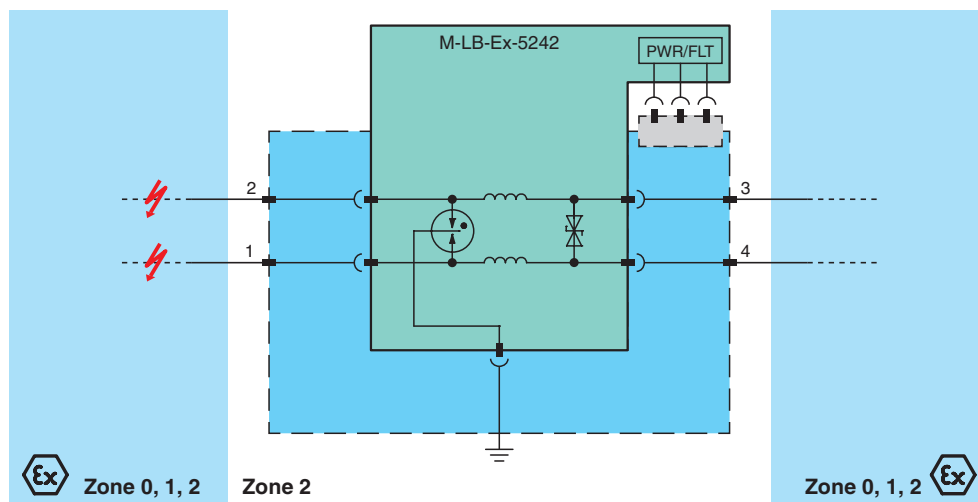
LED yellow:
Maintenance

LED green:
Power supply






SIL 3

Connection



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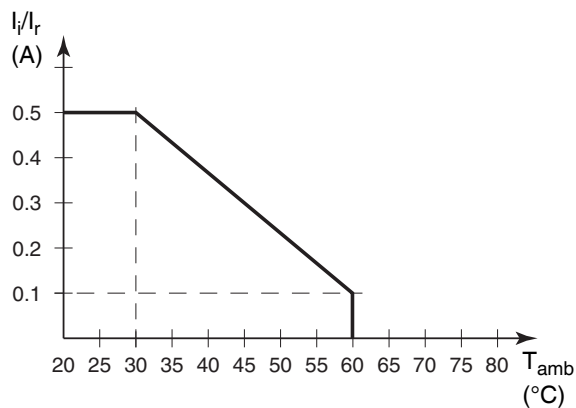
General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Connection		via Universal Power Rail M-UPR-03-S
Nominal voltage		see power feed module M-LB-5300
Current		≤ 8 mA
Electrical specifications		
Connection		protected area: terminals 3, 4 unprotected area: terminals 1, 2
Rated current	I_r	500 mA , restrictions see derating characteristics
Leakage current		< 3 μ A at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC
Maximum continuous operating voltage		30 V DC
U_c		
Series resistance		≤ 0.6 Ω per line
Impulse rating		1 kV/0.5 kA (category C1) 10 kV/5 kA (category C2) 1 kA (category D1)
Impulse discharge current (10/350 μ s)		1 kA per line (2x)
I_{imp}		
Nominal discharge current (8/20 μ s)	I_n	5 kA per line (10x)
Rated surge current (8/20 μ s)	I_{SM}	10 kA per line (1x)
Total discharge current (8/20 μ s)	I_{total}	20 kA (1x)
Voltage protection level	U_p	≤ 45 V line-line for nominal discharge current I_n ≤ 1400 V line-earth for nominal discharge current I_n
Impulse reset time		< 500 ms
Insertion loss		≤ 0.03 dB, at 0 ... 4 kHz, in 600 Ω -System ≤ 3 dB, at 0 ... 600 kHz, in 100 Ω -System
Output		
Additional functions		
Status indication		fault and maintenance signal via Universal Power Rail M-UPR-03-S
Galvanic isolation		
Signal lines/fault indication output		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Signal lines/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Indicators/settings		
Display elements		LED PWR (power supply), green LED LED FLT (fault signal), red LED LED CHK (maintenance signal), yellow LED
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Degree of protection		IEC 60529:2013
Functional safety		IEC/EN 61508:2010
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F) Observe the temperature range limited by derating, see section derating.
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		max. 95 % , without condensation
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 20 g
Dimensions		6.2 x 77 x 79 mm
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with hazardous areas		
EU-type examination certificate		BVS 17 ATEX E 069 X
Marking		 II 3(1)G Ex ec [ia Ga] IIC T4 Gc  II (1)D [Ex ia Da] IIIC  I (M1) [Ex ia Ma] I
Voltage	U_i	30 V
Current	I_i	500 mA , restrictions see derating characteristics

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Internal capacitance	C_i	negligible
Internal inductance	L_i	36 μ H
Supply		
Maximum safe voltage	U_m	60 V AC/DC (Attention! The rated voltage can be lower.)
Fault indication output		
Maximum safe voltage	U_m	60 V AC/DC (Attention! The rated voltage can be lower.)
Galvanic isolation		
Signal lines/fault indication output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Signal lines/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-7:2015 , EN 60079-11:2012
International approvals		
IECEX approval		
IECEX certificate		IECEX BVS 17.0061X
IECEX marking		Ex ec [ia Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .
Accessories		
Designation		system components: - base module with screw terminals M-LB-Ex-5000 - base module with spring terminals M-LB-Ex-5000.SP - power feed module M-LB-5300 - fault status module M-LB-5400 - maintenance status module M-LB-5500 - universal power rail M-UPR-03-S - place holder module M-LB-Ex-5900 - separation wall M-UPR-I

Derating of the Rated Current



In the case of a short circuit, the rated current must not be exceeded.

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