



## Surge Protection Barrier M-LB-Ex-2114

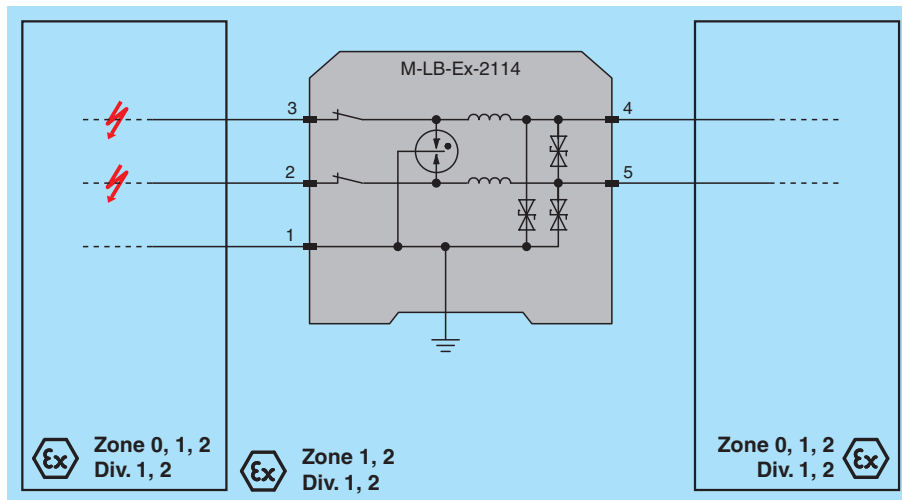
- Surge protection barrier for 2 signal lines
- Nominal voltage 1 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20  $\mu$ s) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508



### Function

The device 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 loop voltage during the duration of the overvoltage pulse.  
The device is used for intrinsic safety applications.  
The device is HART transparent.  
The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



### Technical Data

#### General specifications

|                                  |          |
|----------------------------------|----------|
| Number of protected signal lines | 2        |
| Topology                         | grounded |

#### Functional safety related parameters

|                              |       |
|------------------------------|-------|
| Safety Integrity Level (SIL) | SIL 3 |
|------------------------------|-------|

#### Electrical specifications

|                 |                                                                                                                  |
|-----------------|------------------------------------------------------------------------------------------------------------------|
| Connection      | protected area: terminals 4, 5<br>unprotected area: terminals 2, 3<br>shielding/grounding: terminal 1 (optional) |
| Rated current   | $I_r$ 500 mA , restrictions see derating tables<br>UL : 400 mA , restrictions see control drawing                |
| Leakage current | < 10 $\mu$ A at 1 V and 25 °C (77 °F) , line-line                                                                |
| Nominal voltage | 1 V DC                                                                                                           |

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0002  
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222  
pa-info@de.pepperl-fuchs.com

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

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## Technical Data

|                                                                |             |                                                                                                                                                   |
|----------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum continuous operating voltage                           | $U_c$       | 6 V DC                                                                                                                                            |
| Series resistance                                              |             | $\leq 3 \Omega$ per line                                                                                                                          |
| Impulse rating                                                 |             | 1 kV/0.5 kA (category C1)<br>10 kV/5 kA (category C2)<br>1 kA (category D1)                                                                       |
| Impulse discharge current (10/350 $\mu$ s)                     | $I_{imp}$   | 1 kA per line (2x)                                                                                                                                |
| Nominal discharge current (8/20 $\mu$ s)                       | $I_n$       | 5 kA per line (10x)                                                                                                                               |
| Total discharge current (8/20 $\mu$ s)                         | $I_{total}$ | 20 kA (1x) , overstressed fault mode 3 acc. to IEC 61643-21                                                                                       |
| Voltage protection level                                       | $U_p$       | max. 12 V line-line for nominal discharge current $I_n$<br>max. 31 V line-earth for nominal discharge current $I_n$                               |
| Impulse reset time                                             |             | < 500 ms                                                                                                                                          |
| Insertion loss                                                 |             | $\leq 3$ dB at 0 ... 250 kHz in 100 $\Omega$ system                                                                                               |
| <b>Conformity</b>                                              |             |                                                                                                                                                   |
| Electromagnetic compatibility                                  |             | EN 61326-3-1:2017                                                                                                                                 |
| Degree of protection                                           |             | IEC 60529:2013                                                                                                                                    |
| Functional safety                                              |             | IEC/EN 61508:2010                                                                                                                                 |
| Surge protective devices for low voltage                       |             | IEC 61643-21:2000+A1:2008+A2:2012                                                                                                                 |
| <b>Ambient conditions</b>                                      |             |                                                                                                                                                   |
| Ambient temperature                                            |             | -40 ... 80 °C (-40 ... 176 °F)<br>Observe the temperature range limited by derating, see section derating.                                        |
| Storage temperature                                            |             | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                    |
| Relative humidity                                              |             | max. 95 % , without condensation                                                                                                                  |
| Corrosion resistance                                           |             | acc. to ISA-S71.04, severity level G3                                                                                                             |
| <b>Mechanical specifications</b>                               |             |                                                                                                                                                   |
| Degree of protection                                           |             | IP20 , after mounting of the insulation spacer                                                                                                    |
| Connection                                                     |             | screw terminals , max. core cross section 1 x 2.5 mm <sup>2</sup>                                                                                 |
| Material                                                       |             | Polyamide (PA)                                                                                                                                    |
| Mass                                                           |             | approx. 32 g                                                                                                                                      |
| Dimensions                                                     |             | 6.2 x 93 x 72.4 mm (0.24 x 3.7 x 2.8 inch) (W x H x D)                                                                                            |
| Mounting                                                       |             | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                  |
| <b>Data for application in connection with hazardous areas</b> |             |                                                                                                                                                   |
| EU-type examination certificate                                |             | KIWA 19 ATEX 0003 X                                                                                                                               |
| Marking                                                        |             | Ⓔ II 2(1)G Ex ia [ia Ga] IIC T6...T4 Gb<br>Ⓔ II (1)D [Ex ia Da] IIIC<br>Ⓔ I (M1) [Ex ia Ma] I                                                     |
| Temperature class                                              |             | T6, T5 or T4 , restrictions see derating tables                                                                                                   |
| Voltage                                                        | $U_i$       | 6 V                                                                                                                                               |
| Current                                                        | $I_i$       | 500 mA , restrictions see derating tables                                                                                                         |
| Internal capacitance                                           | $C_i$       | negligible                                                                                                                                        |
| Internal inductance                                            | $L_i$       | 20 $\mu$ H                                                                                                                                        |
| Directive conformity                                           |             |                                                                                                                                                   |
| Directive 2014/34/EU                                           |             | EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012                                                                                                    |
| <b>International approvals</b>                                 |             |                                                                                                                                                   |
| UL approval                                                    |             | E501704<br>E501881                                                                                                                                |
| Control drawing                                                |             | 116-0479                                                                                                                                          |
| Current                                                        | $I_i$       | 400 mA , restrictions see control drawing                                                                                                         |
| Breakdown voltage                                              | $U_{BR}$    | 6 ... 12 V line-line at 100 V/s acc. to UL 497B<br>6 ... 12 V line-earth at 100 V/s acc. to UL 497B<br>< 1000 V at 100 V/ $\mu$ s acc. to UL 497B |
| IECEx approval                                                 |             |                                                                                                                                                   |
| IECEx certificate                                              |             | IECEx KIWA 19.0003X                                                                                                                               |
| IECEx marking                                                  |             | Ex ia [ia Ga] IIC T6...T4 Gb<br>[Ex ia Da] IIIC<br>[Ex ia Ma] I                                                                                   |
| <b>General information</b>                                     |             |                                                                                                                                                   |

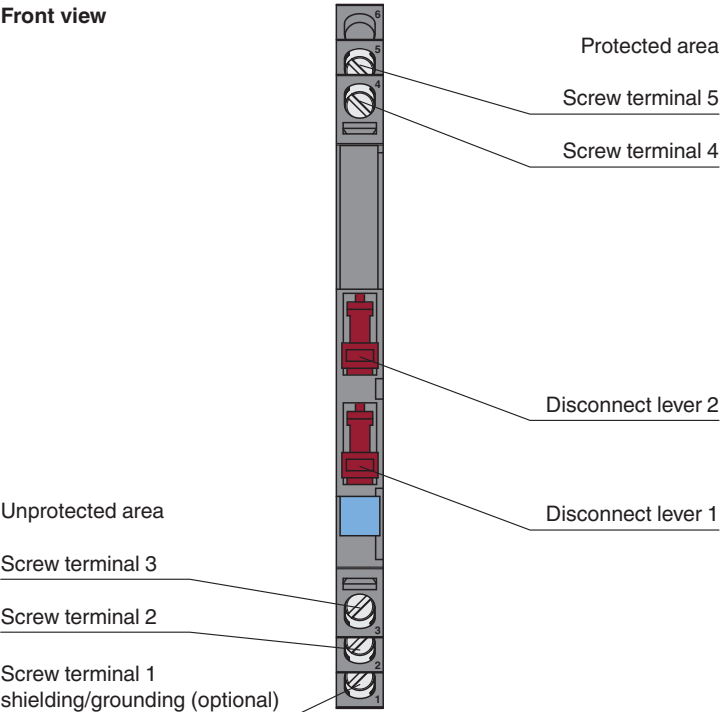
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Technical Data

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

Assembly



Matching System Components

|                                                                                     |                |                                          |
|-------------------------------------------------------------------------------------|----------------|------------------------------------------|
|  | <b>USLKG6N</b> | Terminal block for equipotential bonding |
|-------------------------------------------------------------------------------------|----------------|------------------------------------------|

Accessories

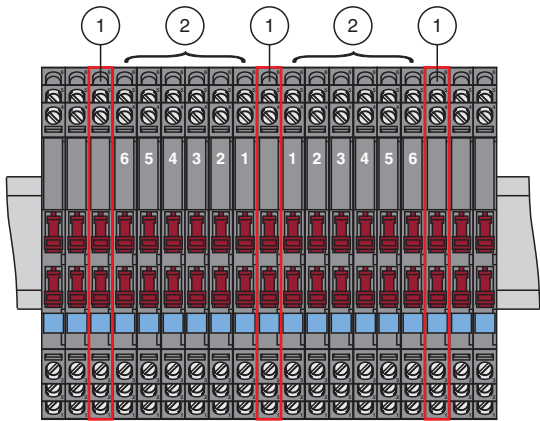
|                                                                                     |                  |                                                         |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------|
|  | <b>M-LB-2800</b> | Insulation spacer for surge protection system M-LB-2000 |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------|

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Operation

Derating of the Rated Current

This derating is valid for mounting in areas requiring explosion protection level Gb or Gc and temperature class T4 or in a non-hazardous area under following special conditions:  
The increased rated current of 0.5 A is only applicable for a device (1) if the current in at least 6 adjacent devices (2) from both sides of the device is < 80 % of the increased current, see figure.



| Max. ambient temperature         | 30 °C  | 40 °C  | 50 °C  | 60 °C  | 70 °C  | 80 °C  |
|----------------------------------|--------|--------|--------|--------|--------|--------|
| I <sub>I</sub> (I <sub>r</sub> ) | 500 mA | 420 mA | 340 mA | 260 mA | 180 mA | 100 mA |

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in areas requiring explosion protection level Gb or Gc and temperature class T4 or in a non-hazardous area.

| Max. ambient temperature         | 30 °C  | 40 °C  | 50 °C  | 60 °C  | 70 °C  | 80 °C  |
|----------------------------------|--------|--------|--------|--------|--------|--------|
| I <sub>I</sub> (I <sub>r</sub> ) | 400 mA | 340 mA | 280 mA | 220 mA | 160 mA | 100 mA |

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in areas requiring explosion protection level Gb or Gc and temperature class T5 or T6.

| Max. ambient temperature         | 30 °C  | 40 °C  | 50 °C  | 60 °C  | 70 °C | 80 °C |
|----------------------------------|--------|--------|--------|--------|-------|-------|
| I <sub>I</sub> (I <sub>r</sub> ) | 280 mA | 224 mA | 168 mA | 112 mA | 56 mA | 0 mA  |

Linear interpolation allowed, extrapolation not allowed.

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