# Устройства защиты сигнальных линий

Технические характеристики

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# Surge Protection Barrier

P-LB-1.E.23

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 2 and 3 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











# **Function**

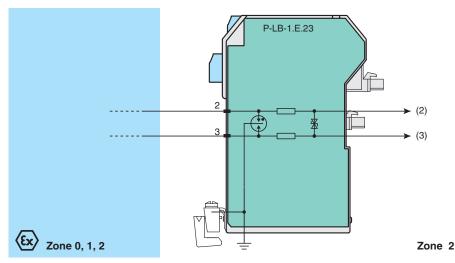
This Surge Protection Barrier is designed for use with K-System (KF modules).

By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module.

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



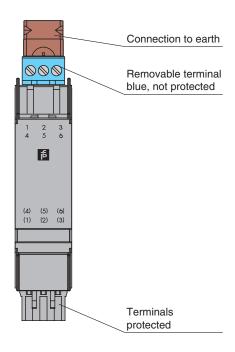
# **Technical Data**

General specifications		
Number of protected signal lines		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 2, 3
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Leakage current On-state voltage		max. 5 μA max. 45 V
· ·		may 45 V
0 1: 1::		max. 45 v
Ground insulation		max. 500 V breakdown voltage
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	$U_{i}$	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 µs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq$ 0.5 $\Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
nternational approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. $ \\$

### Front view



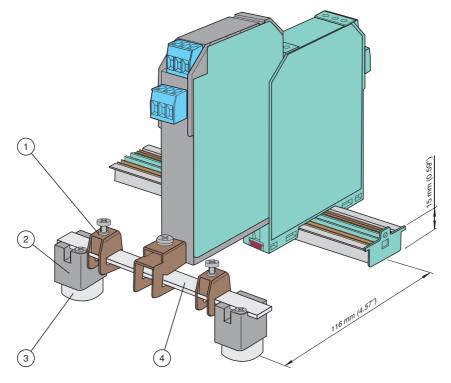
ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

- installation height 15 mm: spacing roller ZH-Z.AR.85

- installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-1.A.13

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1 and 3 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

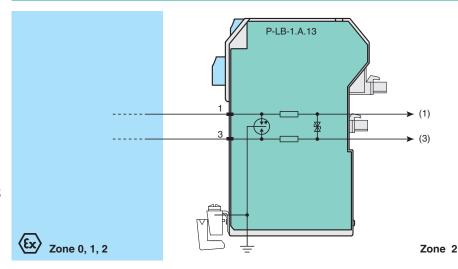
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

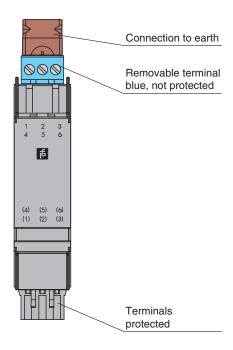
General specifications		
Number of protected signal lines		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 3
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with haza	ardous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	$U_{i}$	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 µs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		≤ 0.5 Ω per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manua where applicable.

### Front view

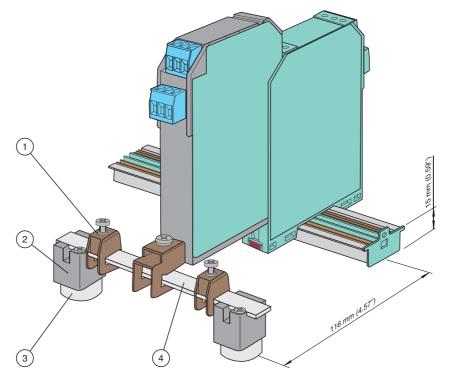


ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-2.A.1346

- 2-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 3, 4 and 6 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

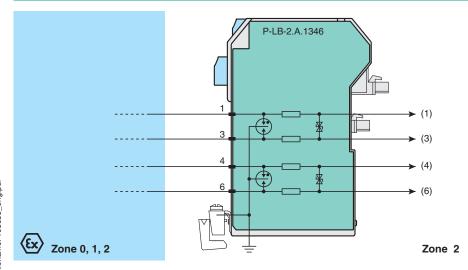
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

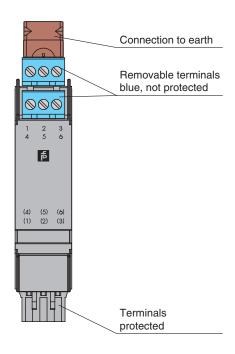
General specifications		
Number of protected signal lines		4
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 3; 4, 6
Rated voltage	$U_B$	max. 30 V
Rated current	$I_{B}$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		-
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with hazar	rdous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	$U_{i}$	30 V
Current	li	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 µs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq$ 0.5 $\Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### Front view



ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

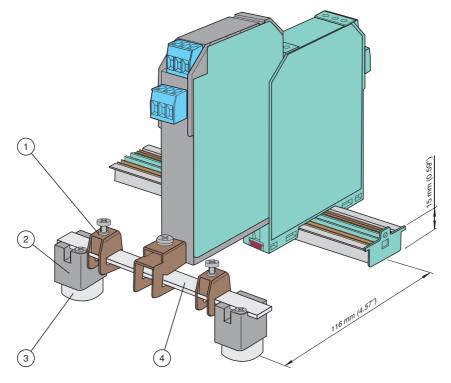
# Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-1.B.12

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1 and 2 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











# **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

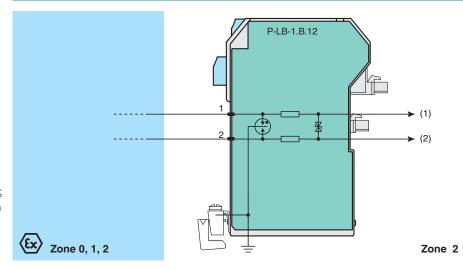
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

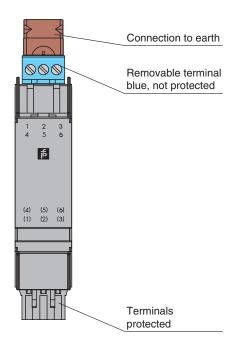
General specifications		
Number of protected signal lines		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	Ui	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	Ci	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 μs) per conductor
Nominal response time		, , , ,
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		≤ 0.5 Ω per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### Front view

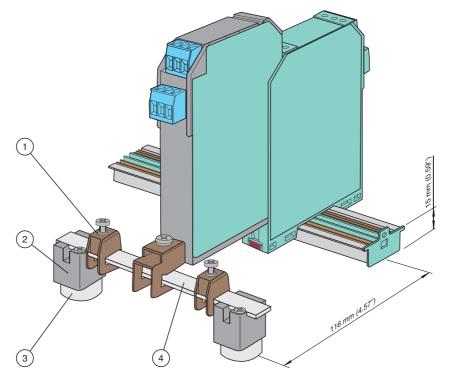


ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-2.B.1245

- 2-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 2, 4 and 5 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

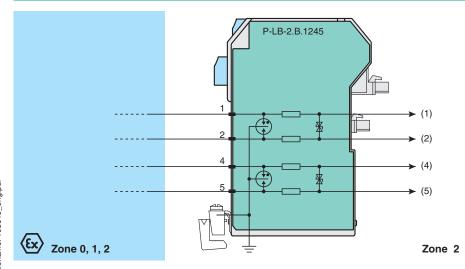
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

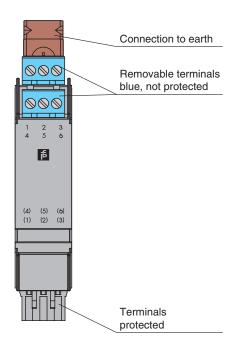
General specifications		
Number of protected signal lines		4
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2; 4, 5
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		a con contract and
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		⊕ II (1)G [Ex ia Ga] IIC
Voltage	Ui	30 V
Current	I <sub>i</sub>	250 mA
Internal capacitance	Ci	negligible
Internal inductance	L <sub>i</sub>	200 μΗ
Maximum leakage current	·	10 kA (8/20 µs) per conductor
Nominal response time		. (
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq 0.5 \Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		© II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		14 74 14 174 17 14
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### Front view



ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

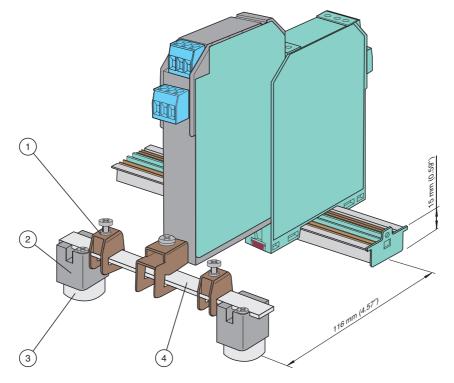
# Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-1.C.123

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 2 and 3 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

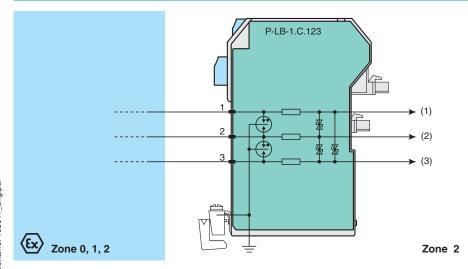
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



#### **Technical Data**

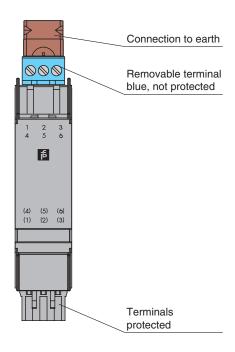
General specifications		
Number of protected signal lines		3
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2, 3
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	Ui	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 μs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq$ 0.5 $\Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
nternational approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### Front view

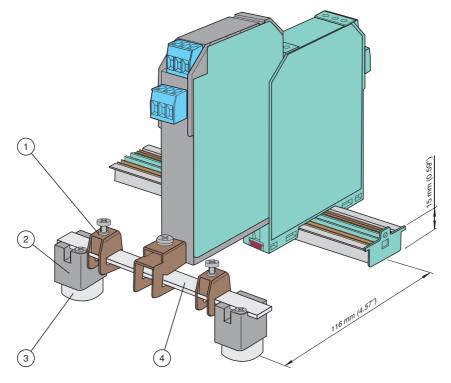


ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier P-LB-1.D.1234

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 2, 3 and 4 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

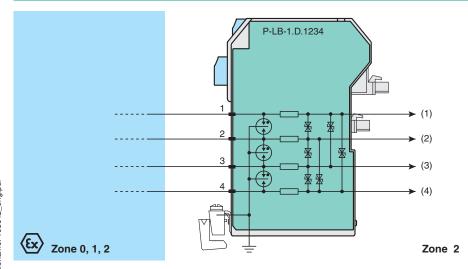
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

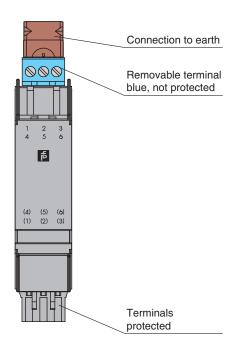
General specifications		
Number of protected signal lines		4
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2, 3, 4
Rated voltage	$U_B$	max. 30 V
Rated current	$I_{B}$	max. 250 mA
Rated voltage		max. 30 V

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with h	nazardous	areas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	$U_{i}$	30 V
Current	li	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	300 μΗ
Maximum leakage current		10 kA (8/20 µs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		≤ 0.5 Ω per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### Front view



ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

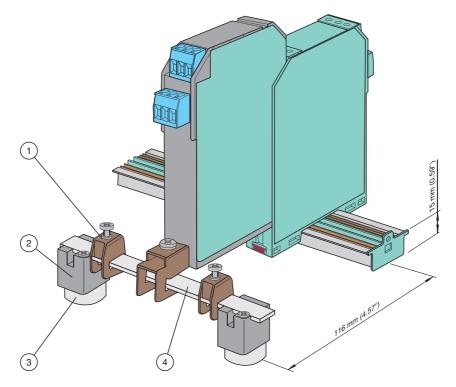
# Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier

P-LB-2.C.2356

- 2-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 2, 3, 5 and 6 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

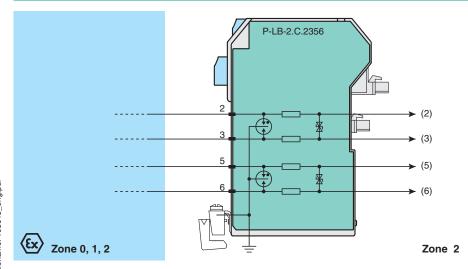
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

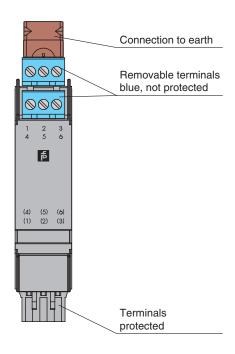
General specifications		
Number of protected signal lines		4
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		Terminals 2, 3; 5, 6
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		-
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		⑤ II (1)G [Ex ia Ga] IIC
Voltage	Ui	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Maximum leakage current		10 kA (8/20 μs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq$ 0.5 $\Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### Front view



ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

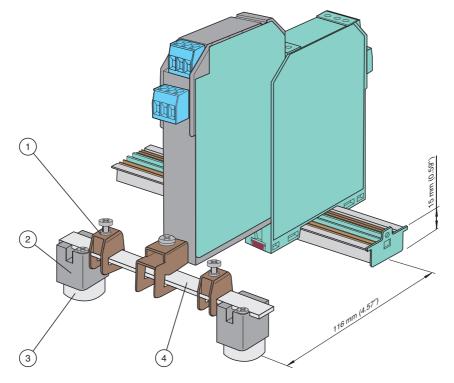
# Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10





# Surge Protection Barrier

P-LB-1.F.1236

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 2, 3 and 6 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

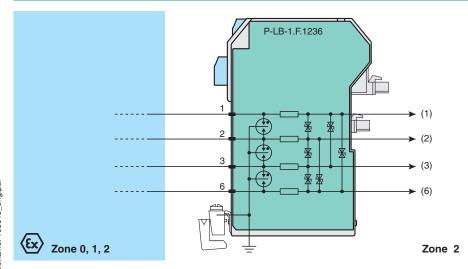
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



# **Technical Data**

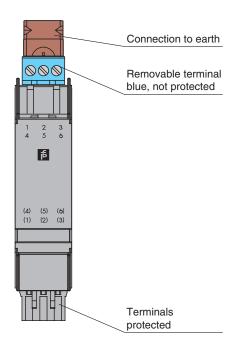
General specifications		
Number of protected signal lines		4
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2, 3, 6
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with	hazardous a	areas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		
Voltage	$U_{i}$	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	L <sub>i</sub>	300 μΗ
Maximum leakage current		10 kA (8/20 μs) per conductor
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		≤ 0.5 Ω per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### Front view



ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

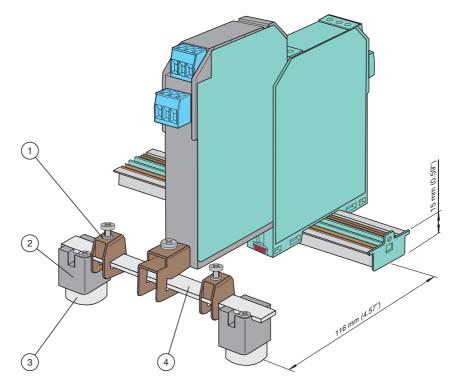
#### Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10



Keep the drilling distance of 116 mm between center mounting rail and center grounding bar.



# Surge Protection Barrier P-LB-2.D.123456

- 2-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
- Protects leads 1, 2, 3, 4, 5 and 6 of KF modules
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508











#### **Function**

This Surge Protection Barrier is designed for use with K-System (KF modules).

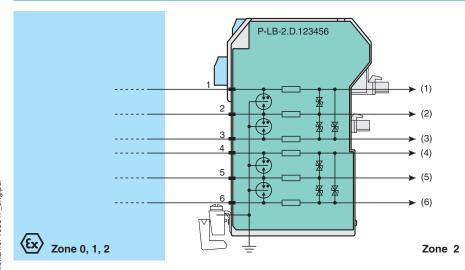
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe

level for the duration of the surge.

The end digits of the model designation correspond to the protected terminals of the respective KF module. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



#### **Technical Data**

General specifications		
Number of protected signal lines		6
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Signal lines		
Connection		terminals 1, 2, 3; 4, 5, 6
Rated voltage	$U_B$	max. 30 V
Rated current	$I_B$	max. 250 mA

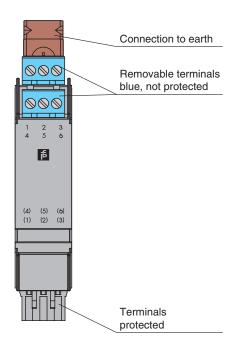
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Technical Data		
Leakage current		max. 5 μA
On-state voltage		max. 45 V
Ground insulation		max. 500 V breakdown voltage
Conformity		a con contract and
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 60 °C (-4 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		20 x 104 x 127 mm (0.8 x 4.1 x 5 inch) (W x H x D)
Mounting		on the KF module
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		PTB 02 ATEX 2044
Marking		⊕ II (1)G [Ex ia Ga] IIC
Voltage	Ui	30 V
Current	I <sub>i</sub>	250 mA
Internal capacitance	Ci	negligible
Internal inductance	L <sub>i</sub>	200 μΗ
Maximum leakage current	·	10 kA (8/20 µs) per conductor
Nominal response time		. (
Symmetrical		1 ns
Asymmetric		100 ns
Series resistor		$\leq 0.5 \Omega$ per wire
Bandwidth		≥ 40 kHz
Certificate		PF 16 CERT 3908 X
Marking		© II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
IECEx approval		
IECEx certificate		IECEx BAS 12.0123
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		14 74 14 174 17 14
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

# **Assembly**

#### Front view



### Accessories

ZH-Z.AK16	Connection terminal for grounding rail
ZH-Z.AB/SS	Mounting block for grounding rail
ZH-Z.NLS-Cu3/10	Grounding Rail

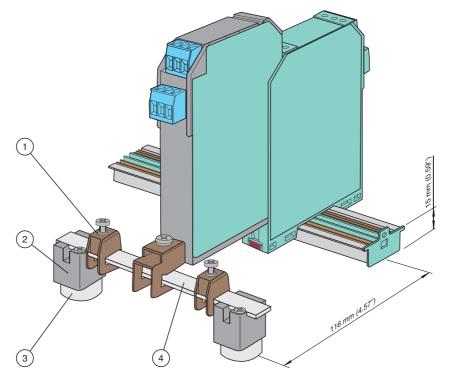
#### Installation

1 Connection terminal2 Mounting blockZH-Z.AK16ZH-Z.AB/SS

3 Spacing roller when mounting on 35 mm DIN EN 60715 mounting rail:

installation height 15 mm: spacing roller ZH-Z.AR.85installation height 7.5 mm: no spacing roller necessary

4 Grounding rail ZH-Z.NLS-Cu3/10



Keep the drilling distance of 116 mm between center mounting rail and center grounding bar.

### FS-LB-I

- 1-channel
- Field mount module
- M20 x 1.5 thread
- Stainless steel housing
- Max. surge current (8/20 µs) 20 kA
- 500 V isolation from earth
- Suitable for hazardous area
- Up to SIL 3 acc. to IEC/EN 61508



#### **Function**

This Surge Protection Barrier limits induced transients of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

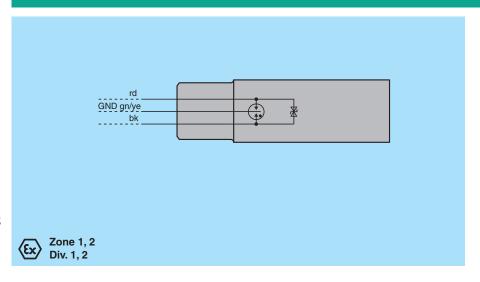
This barrier provides 85 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have less than 500 V isolation-to-ground.

It is installed in an available conduit or cable gland opening like those found on most process transmitters.

For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



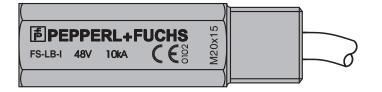
#### **Technical Data**

General specifications		
Number of protected signal lines		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Rated voltage	$U_{r}$	≤ 48 V
Rated current	l <sub>r</sub>	≤ 250 mA
Leakage current		≤ 5 µA
On-state voltage		≤ 85 V
Ground insulation		≥ 500 V breakdown voltage

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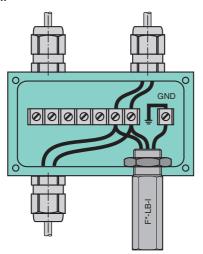
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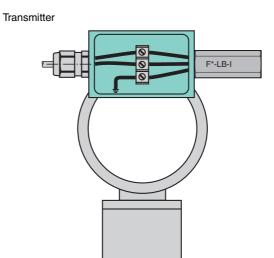
Technical Data		
Electrical specifications		
Total discharge current (8/20 µs)	I <sub>total</sub>	20 kA
Conformity	totai	
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-30 60 °C (-22 140 °F) For usage in hazardous area observe the EC-type examination certificate.
Mechanical specifications		
Housing material		Stainless steel 1.4401 (AISI 316) surface all over polished
Degree of protection		IP67
Cable		
Length	L	0.3 m
Mass		approx. 200 g
Dimensions		AF22 x 77 mm (0.9 x 3 inch)
Length		77 mm
Width across flats		22
Mounting		M20 x 1.5 thread
Data for application in connection with	hazardous a	ıreas
EU-type examination certificate		PTB 00 ATEX 2175
Marking		
Voltage	$U_{i}$	50 V
Maximum leakage current		10 kA line to ground (common), 5 kA line to line (differential) in accordance to IEC 60
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Bandwidth		≥ 40 kHz
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity Attestation of Conformity and instructions have to be observed where applicable.



### Installation examples

Terminal box





### FP-LB-I

- 1-channel
- Field mount module
- PG13.5 thread
- Stainless steel housing
- Max. surge current (8/20 µs) 20 kA
- 500 V isolation from earth
- Suitable for hazardous area
- Up to SIL 3 acc. to IEC/EN 61508



#### **Function**

This Surge Protection Barrier limits induced transients of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

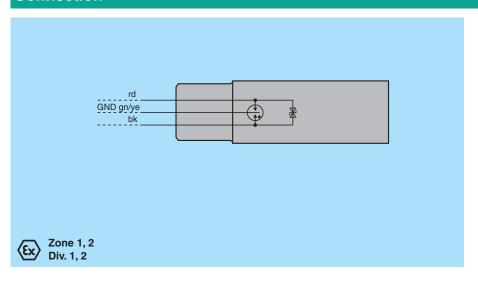
This barrier provides 85 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have less than 500 V isolation-to-ground.

It is installed in an available conduit or cable gland opening like those found on most process transmitters.

For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection

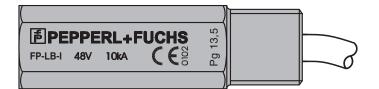


#### **Technical Data**

General specifications		
Number of protected signal lines		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Rated voltage	$U_{r}$	≤ 48 V
Rated current	I <sub>r</sub>	≤ 250 mA
Leakage current		≤ 5 µA
On-state voltage		≤ 85 V
Ground insulation		≥ 500 V breakdown voltage

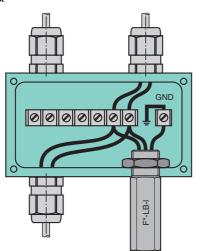
Release date: 2024-01-15 Date of issue: 2024-01-15 Filename: 098917\_eng.pdf

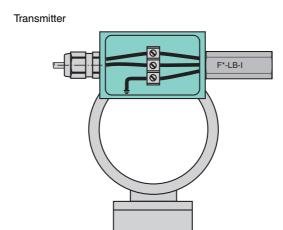
Technical Data		
Electrical specifications		
Total discharge current (8/20 µs)	I <sub>total</sub>	20 kA
Conformity	.0101	
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-30 60 °C (-22 140 °F) For usage in hazardous area observe the EC-type examination certificate.
Mechanical specifications		
Housing material		Stainless steel 1.4401 (AISI 316) surface all over polished
Degree of protection		IP67
Cable		
Length	L	0.3 m
Mass		approx. 200 g
Dimensions		AF22 x 77 mm (0.9 x 3 inch)
Length		77 mm
Width across flats		22
Mounting		PG13.5 thread
Data for application in connection with haz	ardous a	ireas
EU-type examination certificate		PTB 00 ATEX 2175
Marking		
Voltage	$U_{i}$	50 V
Maximum leakage current		10 kA line to ground (common), 5 kA line to line (differential) in accordance to IEC 60-2
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Bandwidth		≥ 40 kHz
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable.



### Installation examples

Terminal box





### FN-LB-I

- 1-channel
- Field mount module
- ½ NPT thread
- Stainless steel housing
- Max. surge current (8/20 µs) 20 kA
- 500 V isolation from earth
- Suitable for hazardous area
- Up to SIL 3 acc. to IEC/EN 61508



#### **Function**

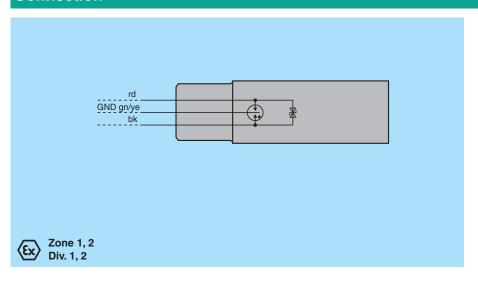
This Surge Protection Barrier limits induced transients of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

This barrier provides 85 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have less than 500 V isolation-to-ground.

It is installed in an available conduit or cable gland opening like those found on most process transmitters. For additional information, refer to the manual and

Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

#### Connection



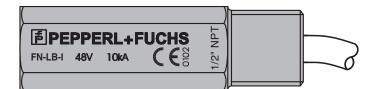
#### **Technical Data**

General specifications		
Number of protected signal lines		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Rated voltage	$U_{r}$	≤ 48 V
Rated current	l <sub>r</sub>	≤ 250 mA
Leakage current		≤ 5 µA
On-state voltage		≤ 85 V
Ground insulation		≥ 500 V breakdown voltage

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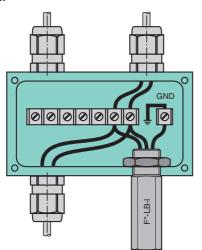
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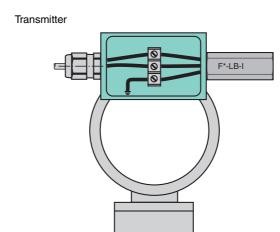
Technical Data		
Electrical specifications		
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA
Conformity		
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-30 60 °C (-22 140 °F) For usage in hazardous area observe the EC-type examination certificate.
Mechanical specifications		
Housing material		Stainless steel 1.4401 (AISI 316) surface all over polished
Degree of protection		IP67
Cable		
Length	L	0.3 m
Mass		approx. 200 g
Dimensions		AF22 x 77 mm (0.9 x 3 inch)
Length		77 mm
Width across flats		22
Mounting		NPT1/2 thread
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		PTB 00 ATEX 2175
Marking		
Voltage	$U_{i}$	50 V
Maximum leakage current		10 kA line to ground (common), 5 kA line to line (differential) in accordance to IEC 60-2
Nominal response time		
Symmetrical		1 ns
Asymmetric		100 ns
Bandwidth		≥ 40 kHz
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable.



### Installation examples

Terminal box







K-LB-1.30

- 1-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 30 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













#### **Function**

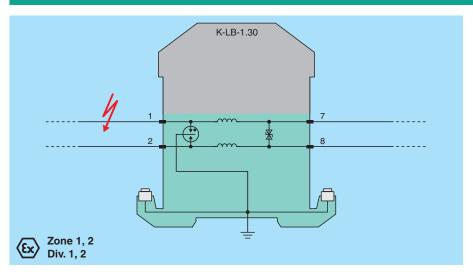
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

#### **Connection**



#### **Technical Data**

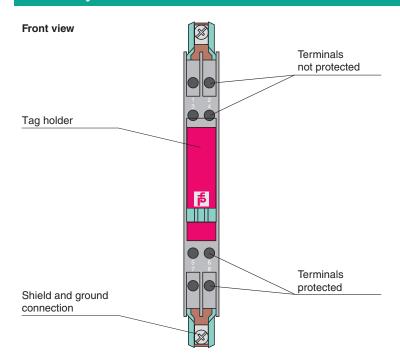
General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 7, 8 unprotected area: terminals 1, 2
Rated current	l <sub>r</sub>	250 mA
Leakage current		$<$ 5 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line

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Technical Data		
Nominal voltage		24 V DC
Maximum continuous operating voltage	Uc	30 V DC
Series resistance	00	< 0.5 Ω per line
Impulse rating		10 kV/5 kA (category C2)
Impulse discharge current (10/050 us)		2 kV/2 kA (category D1)
Impulse discharge current (10/350 µs)	I <sub>imp</sub>	2 kA per line (2x)
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line (10x)
Rated surge current (8/20 µs)	I <sub>SM</sub>	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 75 V line-line for nominal discharge current $I_n$ max. 1.2 kV line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	rdous a	•
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking		© II 2(1)G Ex ia IIC T6/T5/T4
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	Ui	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	C <sub>i</sub>	negligible
Internal inductance	L <sub>i</sub>	200 μH
Certificate		PF 16 CERT 4065 X
Marking		© II (3)D [Ex ic Dc] IIIC
Directive conformity		( ) ( )
Directive 2014/34/EU		EN 00070 0 0040 A44 0040 EN 00070 44 0040
		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals  CSA approval		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
CSA approval		
CSA approval Control drawing		116-0187 (cCSAus)
CSA approval Control drawing IECEx approval		116-0187 (cCSAus)
CSA approval Control drawing		

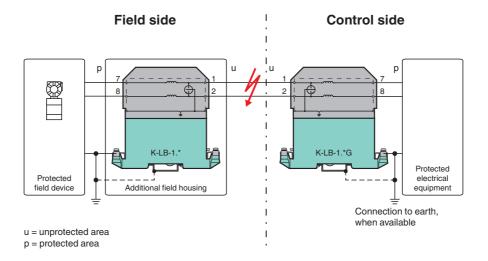
# **Assembly**



# **Matching System Components**

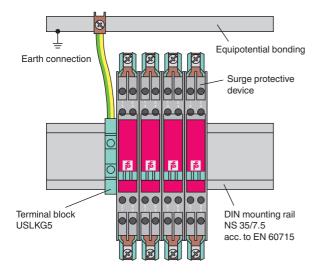
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#### **Topology**

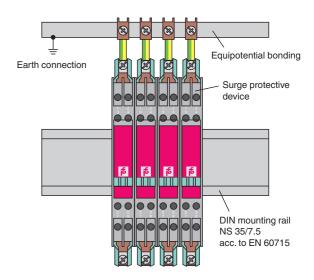


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



K-LB-2.30

- 2-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 30 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













#### **Function**

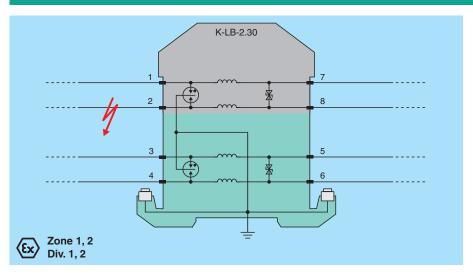
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

#### **Connection**



#### **Technical Data**

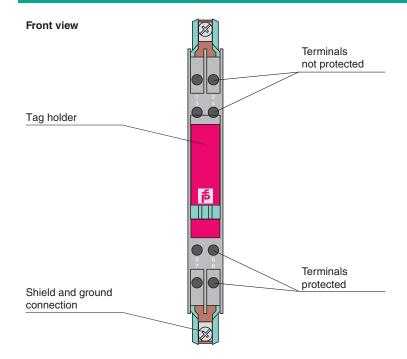
General specifications		
Number of protected signal lines		4
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 5, 6; 7, 8 unprotected area: terminals 1, 2; 3, 4
Rated current	l <sub>r</sub>	250 mA
Leakage current		$<$ 5 $\mu A$ at 24 V and 25 °C (77 °F) , line-line

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Nominal voltage	Technical Data		
Series resistance         < 0.5 D per line	Nominal voltage		24 V DC
Series esistance	Maximum continuous operating voltage	U <sub>c</sub>	30 V DC
			$< 0.5 \Omega$ per line
Nominal discharge current (8/20 μs)         I <sub>SS</sub> 5 kA por line (10x)           Ratiod surge current (8/20 μs)         I <sub>SS</sub> 10 kA por line (1x)           Total discharge current (8/20 μs)         I <sub>SS</sub> 20 kA (1x)           Voltage protection level         U <sub>9</sub> max. 7.2 kV line-lene fron rominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>8</sub> max. 1.2 kV	Impulse rating		10 kV/5 kA (category C2)
Rated surge current (8/20 µs)	Impulse discharge current (10/350 μs)	I <sub>imp</sub>	2 kA per line (2x)
Total discharge current (8/20 μs)	Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Voltage protection level         U <sub>I</sub> max. 1.2 k VI in earth for nominal discharge current I, max. 1.2 k VI in earth for nominal max. 1.2 k VI in earth for nominal current nominal	Rated surge current (8/20 µs)	I <sub>SM</sub>	10 kA per line (1x)
max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for nominal discharge current I,   max. 1.2 kV line-earth for non-earth for nominal discharge current I,   max. 1.2 kV line for non-earth for non-earth for nominal discharge current I,   max. 1.2 kV line for non-earth for non-earth for nominal discharge current I,   max. 1.2 kV line for non-earth	Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Insertion loss	Voltage protection level	$U_p$	
Ag	Impulse reset time		< 30 ms
Labeling	Insertion loss		
Degree of protection	Indicators/settings		
Degree of protection	Labeling		space for labeling at the front
Surge protective devices for low voltage    EN 61643-21:2001-A1:2008-A2:2013   IEC 61643-21:2001+A1:2008+A2:2012     IEC 61643-21:2001+A1:2008+A2:2012     IEC 61643-21:2001+A1:2008+A2:2012     Indoor	Conformity		
IEC 61643-21:2001+A1:2008+A2:2012   Installation conditions	Degree of protection		IEC 60529:2013
Installation conditions   Mounting location   Indoor	Surge protective devices for low voltage		
Mounting location Ambient conditions Ambient temperature Anbient temperature For usage in hazardous area observe EC-type examination certificate.  Relative humidity 5 95 %  Mechanical specifications  Degree of protection IP20 Connection Screw terminals Core cross section 2 x 2.5 mm² Mass approx. 100 g Dimensions 12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D) Mounting On 35 mm DIN mounting rail acc. to EN 60715:2001  Data for application in connection with hazardous areas  EU-type examination certificate Marking First or ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 80 °C Voltage Ui 30 V Current Ii 1 250 mA Internal capacitance Ci Internal inductance Li 200 μH Certificate PF 16 CERT 4065 X Marking ΦII (3)D [Ex ic Dc] IIIC  International approvals  CSA approval IECEx approval IECEx approval IECEx approval IECEx papproval IECEx papproval IECEx papproval IECEx BAS 14.0010X General information Observe the certificates, declarations of conformity, instruction manuals, and manuals, and manuals Observe the certificates, declarations of conformity, instruction manuals, and manuals Observe the certificates, declarations of conformity, instruction manuals, and manuals Observe the certificates, declarations of conformity, instruction manuals, and manuals Observe the certificates, declarations of conformity, instruction manuals, and manuals Observe the certificates.	Operating conditions		
Ambient conditions  Ambient temperature  All and a conditions  Ambient temperature  Relative humidity  5 95 %  Mechanical specifications  Degree of protection  Degree of protection  Connection  Core cross section  All and a section and	Installation conditions		
Ambient temperature  Relative humidity  Solution 5 95 %  Mechanical specifications  Degree of protection  Degree of protection  Core cross section  Assas  Dimensions  Dimensions  Dimensions  Delative examination certificate  Dimensions  Delative examination certificate  PTB 00 ATEX 2176 X  Marking  Temperature class  To for ambient temperature ≤ 50 °C To for ambient temperature ≤ 50 °C To for ambient temperature ≤ 80 °C To for ambient temperature ≤ 80 °C To for ambient temperature ≤ 80 °C  Voltage  Ui 30 V  Current  Ii Internal capacitance  Internal inductance  Li Directive conformity  Directive 2014/34/EU  International approval  Control drawing  IECEx approval  IECEx certificate  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals, and manuals, and manuals  PS Screw Time 1 of To for for for for for for for for for fo	Mounting location		indoor
For usage in hazardous area observe EC-type examination certificate.  For usage in hazardous area observe EC-type examination certificate.  S 95 %  Mechanical specifications  Degree of protection   IP20   Connection   Screw terminals   Core cross section   2 x 2.5 mm²   Mass   approx. 100 g   Dimensions   12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)   Mounting   on 35 mm DIN mounting rail acc. to EN 60715:2001  Data for application in connection with hazardous areas  EU-type examination certificate   PTB 00 ATEX 2176 X   Marking   Oll 2(1)G Ex ia IIC T6/T5/T4   Temperature class   T6 for ambient temperature ≤ 50 °C   T5 for ambient temperature ≤ 70 °C   T4 for ambient temperature ≤ 80 °C   Voltage   Ui   30 V   Current   Ii   250 mA   Internal capacitance   Ui   200 µH   Certificate   P T6 CERT 4065 X   Marking   Oll (3)D [Ex ic Dc] IIIC   Directive conformity   Directive conformity   Directive 2014/34/EU   EN 60079-0:2012+A11:2013 , EN 60079-11:2012   International approvals   CSA approval   Central drawing   116-0187 (cCSAus)   IECEx approval   IECEx approval   IECEx approval   IECEx certificate   IECEx BAS 14.0010X   General information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Dispersive conformity information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Dispersive to conformity information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Directive to conformity information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Directive to conformity information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Directive to conformity information   Observe the certificates, declarations of conformity, instruction manuals, and manuals   Directive to conformity information   Observe the certificates   Directive to conformity information   Office the certificate   Directive to conform	Ambient conditions		
Mechanical specifications         IP20           Connection         screw terminals           Core cross section         2 x 2.5 mm²           Mass         approx. 100 g           Dimensions         12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)           Mounting         on 35 mm DIN mounting rail acc. to EN 60715:2001           Data for application in connection with hazardous areas         EU-type examination certificate         PTB 00 ATEX 2176 X           Marking         © II 2(1)G Ex ia IIC T6/T5/T4         Temperature class         T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C           Voltage         U <sub>1</sub> 30 V           Current         I <sub>1</sub> 250 mA           Internal capacitance         C <sub>1</sub> negligible           Internal inductance         L <sub>1</sub> 200 µH           Certificate         PF 16 CERT 4065 X           Marking         © II (3)D [Ex ic Dc] IIIC           Directive conformity         Eincertificate           CSA approval         EX 60079-0:2012+A11:2013 , EN 60079-11:2012           International approvals         IECEx approval           LECEx certificate         ECEx BAS 14.0010X           General information         Observe the certificates, declarations of conformity, instruction manuals	·		For usage in hazardous area observe EC-type examination certificate.
Degree of protection	•		5 95 %
Connection screw terminals  Core cross section 2 x 2.5 mm²  Approx. 100 g  Dimensions 12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)  Mounting on 35 mm DIN mounting rail acc. to EN 60715:2001  Data for application in connection with hazardous areas  EU-type examination certificate PTB 00 ATEX 2176 X  Marking U12(1)G Ex ia IIC T6/T5/T4  Temperature class T6 for ambient temperature ≤ 50 °C  T5 for ambient temperature ≤ 70 °C  T4 for ambient temperature ≤ 80 °C  Voltage U1 30 V  Current I1 250 mA  Internal capacitance C1 negligible  Internal inductance L2 200 μH  Certificate PF16 CERT 4065 X  Marking W1 (3)D [Ex ic Dc] IIIC  Directive conformity  Directive 2014/34/EU EN 60079-0:2012+A11:2013 , EN 60079-11:2012  International approvals  CSA approval  Control drawing 116-0187 (cCSAus)  IECEx approval  IECEx perpoval  IECEx certificate EECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals.	·		
Core cross section         2 x 2.5 mm²           Mass         approx. 100 g           Dimensions         12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)           Mounting         on 35 mm DIN mounting rail acc. to EN 60715:2001           Data for application in connection with hazardous areas           EU-type examination certificate         PTB 00 ATEX 2176 X           Marking         © II 2(1)G Ex ia IIC T6/T5/T4           Temperature class         T6 for ambient temperature ≤ 50 °C           T5 for ambient temperature ≤ 70 °C           T4 for ambient temperature ≤ 80 °C           Voltage         U <sub>i</sub> 30 V           Current         I <sub>i</sub> 250 mA           Internal capacitance         C <sub>i</sub> negligible           Internal inductance         L <sub>i</sub> 200 µH           Certificate         PF 16 CERT 4065 X           Marking         © II (3)D [Ex ic Dc] IIIC           Directive 2014/34/EU         EN 60079-0:2012+A11:2013 , EN 60079-11:2012           International approvals         CSA approval           Control drawing         116-0187 (cCSAus)           IECEx approval         IECEx BAS 14.0010X           General information         Observe the certificates declarations of conformity, instruction manuals, and manuals, and manuals, and manuals. <td></td> <td></td> <td></td>			
Mass       approx. 100 g         Dimensions       12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)         Mounting       on 35 mm DIN mounting rail acc. to EN 60715:2001         Data for application in connection with hazardous areas       EU-type examination certificate       PTB 00 ATEX 2176 X         Marking       ⊕ II 2(1)G Ex ia IIC T6/T5/T4         Temperature class       T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C         Voltage       U₁       30 V         Current       I₁       250 mA         Internal capacitance       C₁       negligible         Internal inductance       L₁       200 μH         Certificate       PF 16 CERT 4065 X         Marking       ⊕ II (3)D [Ex ic Dc] IIIC         Directive conformity       Directive 2014/34/EU       EN 60079-0:2012+A11:2013 , EN 60079-11:2012         International approvals       CSA approval         CECEx approval       IECEx approval         IECEx certificate       IECEx BAS 14.0010X         General information       Observe the certificates, declarations of conformity, instruction manuals, and manuals, and manuals, and manuals.			
Dimensions	Core cross section		2 x 2.5 mm <sup>2</sup>
Mounting       on 35 mm DIN mounting rail acc. to EN 60715:2001         Data for application in connection with hazardous areas         EU-type examination certificate       PTB 00 ATEX 2176 X         Marking       ∅ II 2(1)G Ex ia IIC T6/T5/T4         Temperature class       T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C         Voltage       Ui       30 V         Current       Ii       250 mA         Internal capacitance       Ci       negligible         Internal inductance       Li       200 μH         Certificate       PF 16 CERT 4065 X         Marking       № II (3)D [Ex ic Dc] IIIC         Directive conformity       EN 60079-0:2012+A11:2013 , EN 60079-11:2012         International approvals       EN 60079-0:2012+A11:2013 , EN 60079-11:2012         CSA approval       Control drawing       116-0187 (cCSAus)         IECEx approval       IECEx BAS 14.0010X         General information       Observe the certificates, declarations of conformity, instruction manuals, and manuals			
Data for application in connection with hazardous areas         EU-type examination certificate       PTB 00 ATEX 2176 X         Marking       ⊕ II 2(1)G Ex ia IIC T6/T5/T4         Temperature class       T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C         Voltage       U <sub>1</sub> 30 V         Current       I <sub>1</sub> 250 mA         Internal capacitance       C <sub>1</sub> negligible         Internal inductance       L <sub>1</sub> 200 μH         Certificate       PF 16 CERT 4065 X         Marking       ⊕ II (3)D [Ex ic Dc] IIIC         Directive conformity       EN 60079-0:2012+A11:2013 , EN 60079-11:2012         International approvals       EN 60079-0:2012+A11:2013 , EN 60079-11:2012         CSA approval       116-0187 (cCSAus)         IECEx approval       IECEx BAS 14.0010X         General information       Observe the certificates, declarations of conformity, instruction manuals, and manuals	Dimensions		, , ,
EU-type examination certificate  Marking  © II 2(1)G Ex ia IIC T6/T5/T4  Temperature class  T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C  Voltage  Ui 30 V  Current Ii, 250 mA  Internal capacitance Internal inductance  Li 200 µH  Certificate Marking Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval Control drawing IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	•		
Marking  Temperature class  Temperature class  Temperature ≤ 50 °C T5 for ambient temperature ≤ 50 °C T4 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C  Voltage  U <sub>i</sub> 30 V  Current  I <sub>i</sub> 250 mA  Internal capacitance C <sub>i</sub> negligible Internal inductance L <sub>i</sub> 200 μH  Certificate PF 16 CERT 4065 X  Marking WI (3)D [Ex ic Dc] IIIC  Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013 , EN 60079-11:2012  International approvals  CSA approval Control drawing IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals		rdous a	
Temperature class  T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C  Voltage  U <sub>i</sub> 30 V  Current I <sub>i</sub> 250 mA  Internal capacitance Internal inductance I <sub>i</sub> 200 μH  Certificate PF 16 CERT 4065 X  Marking WI (3)D [Ex ic Dc] IIIC  Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013 , EN 60079-11:2012  International approvals  CSA approval Control drawing IECEx approval IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	**		
T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C  Voltage U <sub>i</sub> 30 V  Current I <sub>i</sub> 250 mA  Internal capacitance C <sub>i</sub> negligible Internal inductance L <sub>i</sub> 200 µH  Certificate PF 16 CERT 4065 X  Marking Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval Control drawing IECEx approval IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	Marking		
Current I <sub>1</sub> 250 mA Internal capacitance C <sub>1</sub> negligible Internal inductance L <sub>1</sub> 200 μH  Certificate PF 16 CERT 4065 X  Marking □ IIIC  Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval Control drawing 116-0187 (cCSAus)  IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Temperature class		T5 for ambient temperature ≤ 70 °C
Internal capacitance  Internal inductance  Li 200 µH  Certificate  PF 16 CERT 4065 X  Marking  Directive conformity  Directive 2014/34/EU  EN 60079-0:2012+A11:2013 , EN 60079-11:2012  International approvals  CSA approval  Control drawing  IECEx approval  IECEx certificate  IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	Voltage	Ui	30 V
Internal inductance L <sub>i</sub> 200 µH  Certificate PF 16 CERT 4065 X  Marking © II (3)D [Ex ic Dc] IIIC  Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval Control drawing 116-0187 (cCSAus)  IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Current	l <sub>i</sub>	250 mA
Certificate PF 16 CERT 4065 X  Marking © II (3)D [Ex ic Dc] IIIC  Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval Control drawing 116-0187 (cCSAus)  IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Internal capacitance	Ci	negligible
Marking  Directive conformity  Directive 2014/34/EU  EN 60079-0:2012+A11:2013, EN 60079-11:2012  International approvals  CSA approval  Control drawing  IECEx approval  IECEx approval  IECEx certificate  IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	Internal inductance	Li	200 μΗ
Directive conformity Directive 2014/34/EU EN 60079-0:2012+A11:2013, EN 60079-11:2012 International approvals CSA approval Control drawing IECEx approval IECEx certificate IECEx certificate IECEx BAS 14.0010X  General information Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Certificate		PF 16 CERT 4065 X
Directive 2014/34/EU EN 60079-0:2012+A11:2013 , EN 60079-11:2012  International approvals  CSA approval  Control drawing 116-0187 (cCSAus)  IECEx approval  IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Marking		
International approvals  CSA approval  Control drawing 116-0187 (cCSAus)  IECEx approval  IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Directive conformity		
CSA approval Control drawing 116-0187 (cCSAus)  IECEx approval IECEx certificate IECEx BAS 14.0010X  General information Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manuals	Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
Control drawing  IECEx approval  IECEx certificate  IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	International approvals		
IECEx approval IECEx certificate IECEx BAS 14.0010X  General information  Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manual	CSA approval		
IECEx certificate  IECEx BAS 14.0010X  General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	Control drawing		116-0187 (cCSAus)
General information  Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and manuals	IECEx approval		
Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manual	IECEx certificate		IECEx BAS 14.0010X
Supplementary information Observe the certificates, declarations of conformity, instruction manuals, and manual	General information		
where applicable.	Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

# **Assembly**

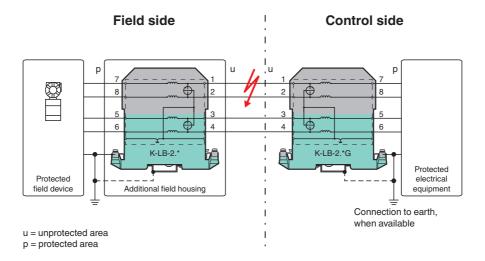


# **Matching System Components**

USLKG5

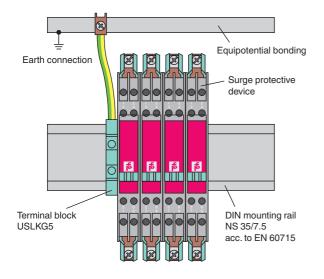
### **Application**

#### **Topology**

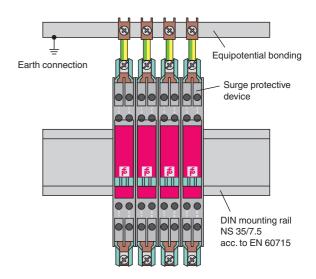


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



### K-LB-1.6

- 1-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 6 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













#### **Function**

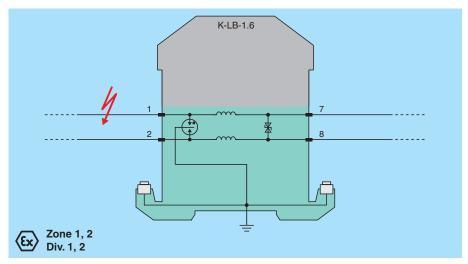
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

#### Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

#### **Connection**

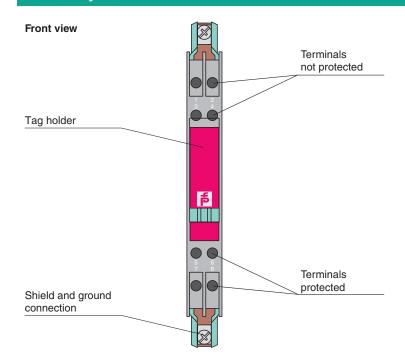


#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 7, 8 unprotected area: terminals 1, 2
Rated current	l <sub>r</sub>	250 mA
Leakage current		$< 5\mu\text{A}$ at 1 V and 25 °C (77 °F) , line-line

Release date: 2022-03-03 Date of issue: 2022-03-03 Filename: 098910\_eng.pdf

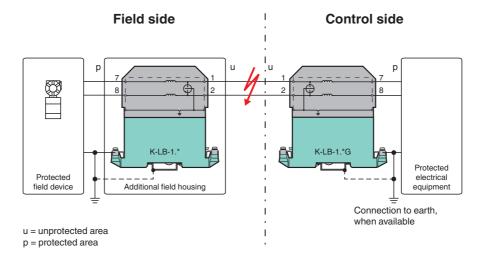
Technical Data		
Nominal voltage		1 V DC
Maximum continuous operating voltage	Uc	6 V DC
Series resistance		$< 0.5 \Omega$ per line
Impulse rating		10 kV/5 kA (category C2) 2 kV/2 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	2 kA per line (2x)
Nominal discharge current (8/20 μs)	$I_n$	5 kA per line (10x)
Rated surge current (8/20 µs)	$I_{SM}$	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 60 V line-line for nominal discharge current $I_n$ max. 1.2 kV line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 $\Omega$ -System $\leq$ 3 dB, at 0 174 kHz, in 100 $\Omega$ -System
ndicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	dous a	
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking		
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	$U_{i}$	6 V
Current	$I_i$	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Certificate		PF 16 CERT 4065 X
Marking		ⓑ II (3)D [Ex ic Dc] IIIC
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
nternational approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
IECEx approval		
IECEx approval IECEx certificate		IECEx BAS 14.0010X
		IECEx BAS 14.0010X



# **Matching System Components**

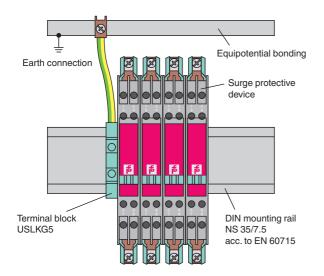
USLKG5

#### **Topology**

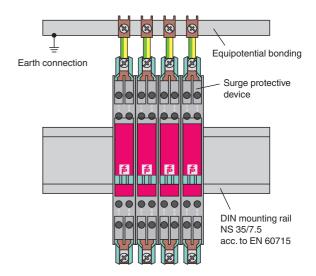


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



### K-LB-2.6

- 2-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 6 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













#### **Function**

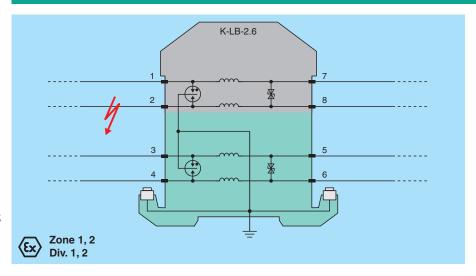
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

#### Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

#### **Connection**

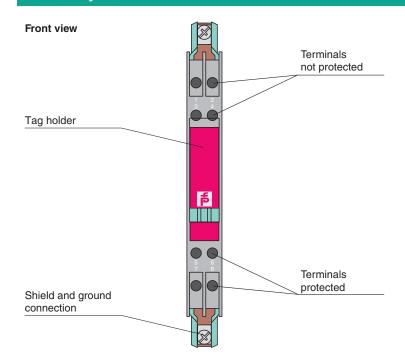


#### **Technical Data**

General specifications		
Number of protected signal lines		4
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 5, 6; 7, 8 unprotected area: terminals 1, 2; 3, 4
Rated current	I <sub>r</sub>	250 mA
Leakage current		< 5 μA at 1 V and 25 °C (77 °F) , line-line

Release date: 2022-03-03 Date of issue: 2022-03-03 Filename: 098911\_eng.pdf

Technical Data		
Nominal voltage		1 V DC
Maximum continuous operating voltage	Uc	6 V DC
Series resistance	00	$< 0.5 \Omega$ per line
Impulse rating		10 kV/5 kA (category C2) 2 kV/2 kA (category D1)
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	2 kA per line (2x)
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line (10x)
Rated surge current (8/20 µs)	$I_{SM}$	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 60 V line-line for nominal discharge current I <sub>n</sub> max. 1.2 kV line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haz	zardous	areas
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking		
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	Ui	6 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	Ci	negligible
Internal inductance	Li	200 μΗ
Certificate		PF 16 CERT 4065 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
IECEx approval		
IECEx certificate		IECEx BAS 14.0010X
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

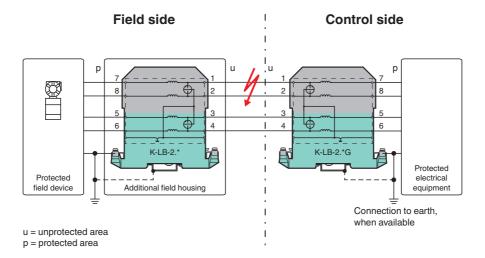


# **Matching System Components**

USLKG5

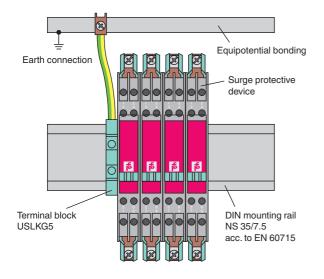
### **Application**

#### **Topology**

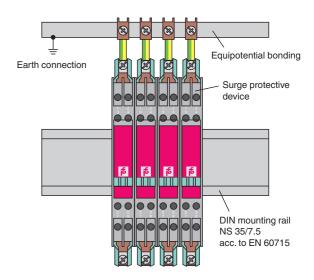


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



K-LB-1.30G

- 1-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 30 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













#### **Function**

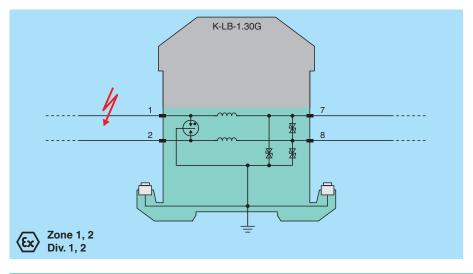
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

#### **Connection**



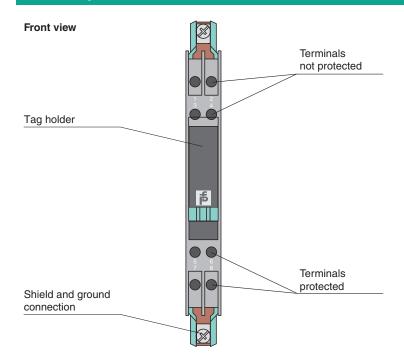
#### **Technical Data**

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 7, 8 unprotected area: terminals 1, 2
Rated current	l <sub>r</sub>	250 mA
Leakage current		$<$ 10 $\mu A$ at 24 V and 25 °C (77 °F) , line-line

Release date: 2022-03-03 Date of issue: 2022-03-03 Filename: 098912\_eng.pdf

Technical Data		
Nominal voltage		24 V DC
Maximum continuous operating voltage	$U_{c}$	30 V DC
Series resistance		$< 0.5 \Omega$ per line
Impulse rating		10 kV/5 kA (category C2) 2 kV/2 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	2 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Rated surge current (8/20 µs)	$I_{SM}$	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 100 V line-line for nominal discharge current $I_{n}$ max. 50 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
ndicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	dous ar	reas
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking		© II 2(1)G Ex ia IIC T6/T5/T4
Temperature class		T6 for ambient temperature $\leq$ 50 °C T5 for ambient temperature $\leq$ 70 °C T4 for ambient temperature $\leq$ 80 °C
Voltage	$U_{i}$	30 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	Ci	negligible
Internal inductance	Li	200 μΗ
Certificate		PF 16 CERT 4065 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
		116 0187 (aCCAua)
Control drawing		116-0187 (cCSAus)
Control drawing IECEx approval		116-0167 (CCSAus)
ū		IECEx BAS 14.0010X
IECEx approval		

# **Assembly**

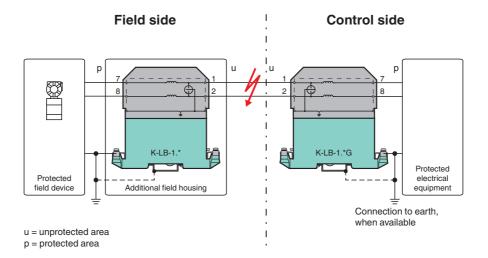


# **Matching System Components**

USLKG5

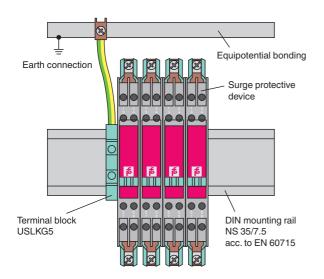
### **Connection**

### **Topology**

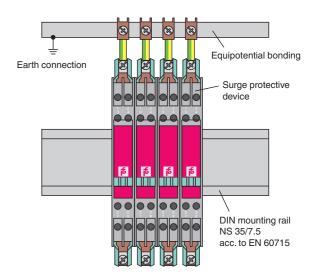


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



K-LB-2.30G

- 2-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 30 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

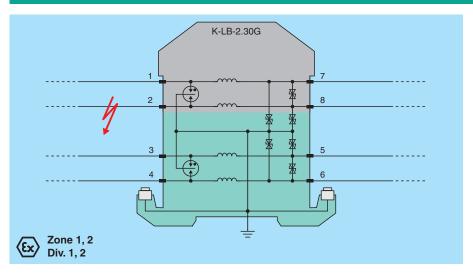
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

### **Connection**

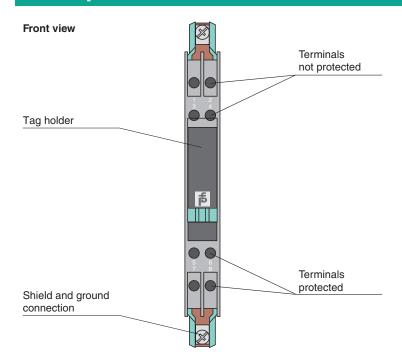


### **Technical Data**

General specifications		
Number of protected signal lines		4
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 5, 6; 7, 8 unprotected area: terminals 1, 2; 3, 4
Rated current	l <sub>r</sub>	250 mA
Leakage current		$<$ 10 $\mu A$ at 24 V and 25 °C (77 °F) , line-line

Release date: 2022-03-03 Date of issue: 2022-03-03 Filename: 098913\_eng.pdf

Technical Data		
Nominal voltage		24 V DC
Maximum continuous operating voltage	Uc	30 V DC
Series resistance	00	< 0.5 Ω per line
Impulse rating		10 kV/5 kA (category C2)
Image dia alcanga a compat (10/050 cm)		2 kV/2 kA (category D1)
Impulse discharge current (10/350 µs)	I <sub>imp</sub>	2 kA per line (2x)
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line (10x)
Rated surge current (8/20 µs)	I <sub>SM</sub>	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 100 V line-line for nominal discharge current $I_n$ max. 50 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		595%
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	rdous a	•
EU-type examination certificate	uouo u	PTB 00 ATEX 2176 X
Marking		© II 2(1)G Ex ia IIC T6/T5/T4
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	Ui	30 V
Current	I <sub>i</sub>	250 mA
Internal capacitance	C <sub>i</sub>	negligible
Internal inductance	L <sub>i</sub>	200 μH
Certificate	-1	PF 16 CERT 4065 X
Marking		© II (3)D [Ex ic Dc] IIIC
Directive conformity		(-)- <u>[</u> o 20]o
Directive 2014/34/EU		
		EN 60079-0:2012+A11:2013 . FN 60079-11:2012
		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals  CSA approval		
International approvals  CSA approval  Control drawing		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 116-0187 (cCSAus)
International approvals  CSA approval  Control drawing  IECEx approval		116-0187 (cCSAus)
International approvals  CSA approval  Control drawing		



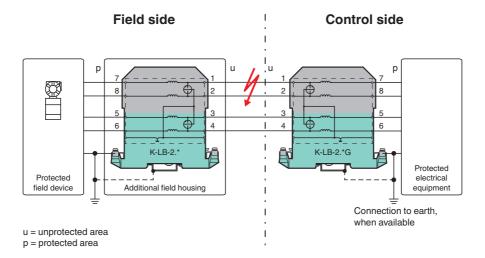
# **Matching System Components**

USLKG5

Terminal block for equipotential bonding

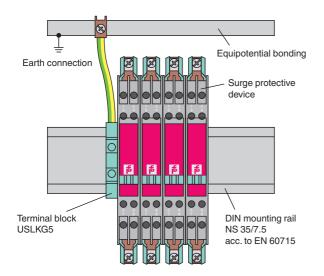
### **Application**

### **Topology**

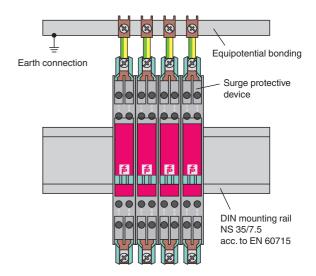


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



K-LB-1.6G

- 1-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 6 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

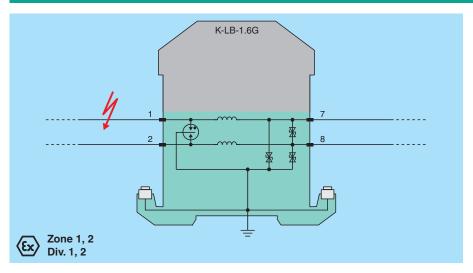
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

### **Connection**



### **Technical Data**

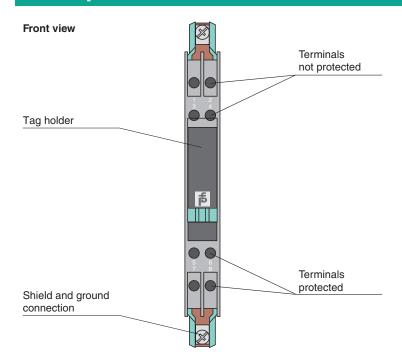
General specifications		
Number of protected signal lines		2
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 7, 8 unprotected area: terminals 1, 2
Rated current	l <sub>r</sub>	250 mA
Leakage current		$<$ 10 $\mu A$ at 1 V and 25 °C (77 °F) , line-line

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Technical Data		
Nominal voltage		1 V DC
Maximum continuous operating voltage	Uc	6 V DC
Series resistance	O <sub>c</sub>	< 0.5 Ω per line
Impulse rating		10 kV/5 kA (category C2) 2 kV/2 kA (category D1)
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	2 kA per line (2x)
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line (10x)
Rated surge current (8/20 µs)	I <sub>SM</sub>	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	U <sub>p</sub>	max. 90 V line-line for nominal discharge current I <sub>n</sub> max. 25 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	dous ai	
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking Temperature class		<ul> <li>Il 2(1)G Ex ia IIC T6/T5/T4</li> <li>T6 for ambient temperature ≤ 50 °C</li> <li>T5 for ambient temperature ≤ 70 °C</li> </ul>
		T4 for ambient temperature ≤ 80 °C
Voltage Current	U <sub>i</sub>	6 V 250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Certificate		PF 16 CERT 4065 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
IECEx approval		
IECEx certificate		IECEx BAS 14.0010X
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### **Assembly**



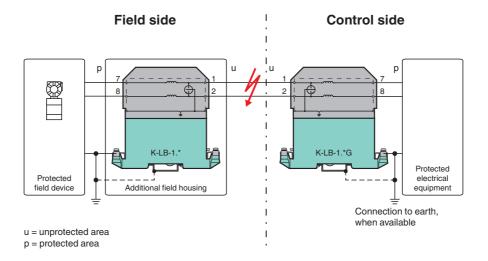
# **Matching System Components**

USLKG5

Terminal block for equipotential bonding

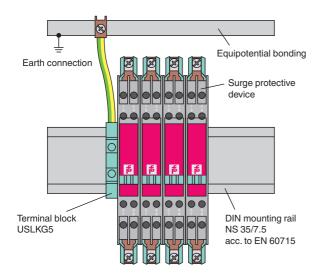
### **Connection**

### **Topology**

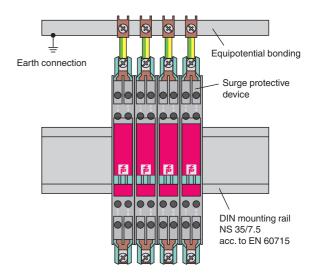


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



K-LB-2.6G

- 2-channel
- Mounting on DIN mounting rail
- For intrinsically safe or non-intrinsically safe 6 V applications
- Protects field or control circuit inputs
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

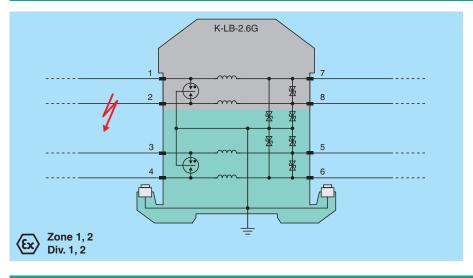
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse. The device is HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

Note:

Always connect the device to high-quality ground connections. The device must have the same potential as the devices it protects. Install the ground system in accordance with the applicable regulations.

### **Connection**



### **Technical Data**

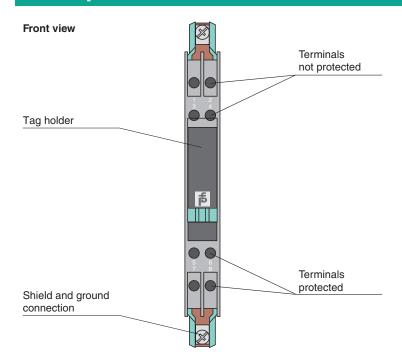
General specifications				
Number of protected signal lines		4		
Topology		grounded		
Functional safety related parameters				
Safety Integrity Level (SIL)		SIL 3		
Electrical specifications				
Connection		protected area: terminals 5, 6; 7, 8 unprotected area: terminals 1, 2; 3, 4		
Rated current	I <sub>r</sub>	250 mA		
Leakage current		$<$ 10 $\mu A$ at 1 V and 25 °C (77 °F) , line-line		

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Technical Data		
Nominal voltage		1 V DC
Maximum continuous operating voltage	$U_{c}$	6 V DC
Series resistance	- 0	$< 0.5 \Omega$ per line
Impulse rating		10 kV/5 kA (category C2) 2 kV/2 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	2 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Rated surge current (8/20 µs)	I <sub>SM</sub>	10 kA per line (1x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x)
Voltage protection level	$U_p$	max. 90 V line-line for nominal discharge current $I_{n}$ max. 25 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 30 ms
Insertion loss		$\leq$ 0.05 dB, at 0 4 kHz, in 600 Ω-System $\leq$ 3 dB, at 0 174 kHz, in 100 Ω-System
Indicators/settings		
Labeling		space for labeling at the front
Conformity		
Degree of protection		IEC 60529:2013
Surge protective devices for low voltage		EN 61643-21:2001+A1:2009+A2:2013 IEC 61643-21:2001+A1:2008+A2:2012
Operating conditions		
Installation conditions		
Mounting location		indoor
Ambient conditions		
Ambient temperature		-30 80 °C (-22 176 °F) For usage in hazardous area observe EC-type examination certificate.
Relative humidity		5 95 %
Mechanical specifications		ina.
Degree of protection		IP20
Connection		screw terminals
Core cross section		2 x 2.5 mm <sup>2</sup>
Mass		approx. 100 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haz	ardous a	
EU-type examination certificate		PTB 00 ATEX 2176 X
Marking		© II 2(1)G Ex ia IIC T6/T5/T4
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	$U_{i}$	6 V
Current	l <sub>i</sub>	250 mA
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	200 μΗ
Certificate		PF 16 CERT 4065 X
Marking		
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
CSA approval		
Control drawing		116-0187 (cCSAus)
IECEx approval		
IECEx certificate		IECEx BAS 14.0010X
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### **Assembly**



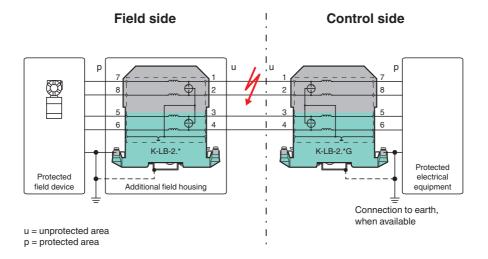
# **Matching System Components**

USLKG5

Terminal block for equipotential bonding

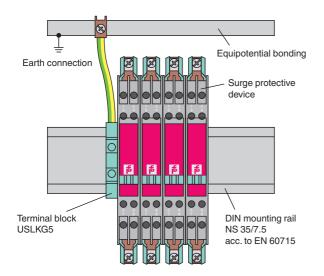
### **Application**

### **Topology**

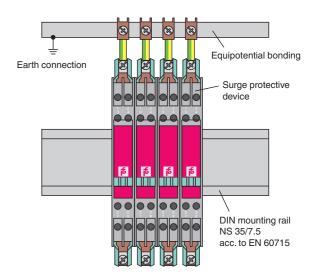


### Installation

#### Installation examples



Insulated mounting (group grounding)



Insulated mounting (individual grounding)



### M-LB-2112

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











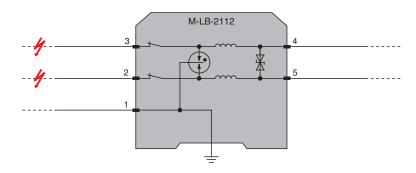
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



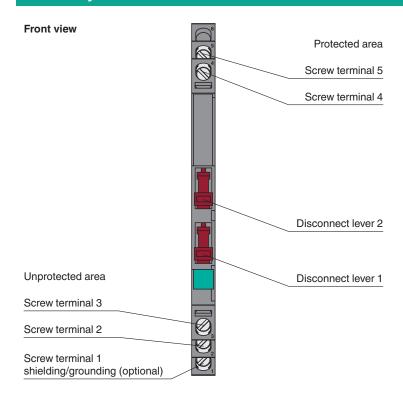
Zone 2 Div. 2

### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$< 5~\mu\text{A}~\text{at 1 V}$ and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Technical Data		
Maximum continuous operating voltage	Uc	6 V DC
Series resistance	- 0	≤3Ω 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 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_{n}$ max. 1400 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 400 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
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
Data for application in connection with ha	zardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
International approvals		
UL approval		E501704 E501881
Breakdown voltage	$U_{BR}$	6 12 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/µs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.



# **Matching System Components**

	USLKG6N	Terminal block for equipotential bonding
-		

### Accessories

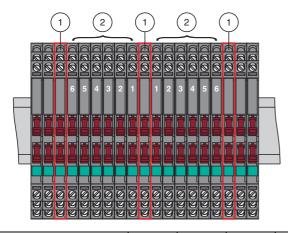
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **Operation**

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.



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



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









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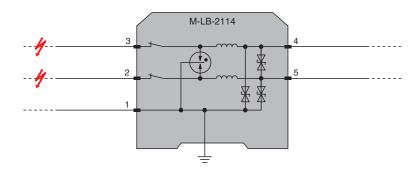
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2 Div. 2

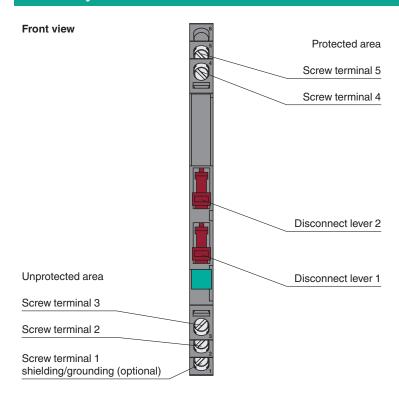
### **Technical Data**

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$<$ 10 $\mu A$ at 1 V and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Maximum continuous operating voltage       U <sub>c</sub> 6 V DC         Series resistance       ≤ 3 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 μs)       I <sub>Imp</sub> 1 kA per line (2x)         Nominal discharge current (8/20 μs)       I <sub>In</sub> 5 kA per line (10x)         Total discharge current (8/20 μs)       I <sub>In</sub> 5 kA per line (10x)         Voltage protection level       U <sub>p</sub> max. 12 V line-line for nominal discharge current I <sub>In</sub> Impulse reset time       < 500 ms         Insertion loss       ≤ 3 dB at 0 250 kHz in 100 Ω system         Conformity       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         Ambient conditions       -40 80 °C (-40 176 °F)         Ambient temperature       -40 85 °C (-40 185 °F)
Impulse rating    1 kV/0.5 kA (category C1)   10 kV/5 kA (category C2)   1 kA (category C1)   10 kV/5 kA (category C2)   1 kA (category C1)   10 kV/5 kA (category C2)   1 kA (category C1)   10 kV/5 kA (category C2)   1 kA (category C1)   10 kV/5 kA (category C2)   1 kA (category C1)   1 kA (category
Impulse discharge current (10/350 μs)  Imp 1 kA per line (2x)  Nominal discharge current (8/20 μs)  In 5 kA per line (10x)  Total discharge current (8/20 μs)  Ilotal 20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21  Voltage protection level  Up max. 12 V line-line for nominal discharge current In max. 31 V line-earth for nominal discharge current In max. 31
Nominal discharge current (8/20 $\mu$ s)
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 $I_n$ max. 31 V line-earth for nominal discharge current $I_n$ Impulse reset time $< 500 \text{ ms}$ Insertion loss $\le 3 \text{ dB at } 0 \dots 250 \text{ kHz in } 100 \Omega \text{ system}$ Conformity  Electromagnetic compatibility  EN 61326-3-1:2017  Degree of protection  Functional safety  Surge protective devices for low voltage  Ambient conditions  Ambient temperature $-40 \dots 80  ^{\circ}\text{C}  (-40 \dots 176  ^{\circ}\text{F})$ Observe the temperature range limited by derating, see section derating.
$\begin{array}{llllllllllllllllllllllllllllllllllll$
$\label{eq:max.31 V line-earth for nominal discharge current I_n} \\ Impulse reset time & < 500  ms \\ Insertion loss & \leq 3  dB  at  0  \dots 250  kHz  in  100  \Omega  system \\ \hline \textbf{Conformity} \\ \hline Electromagnetic compatibility & EN 61326-3-1:2017 \\ \hline \textbf{Degree of protection} & IEC 60529:2013 \\ \hline \textbf{Functional safety} & IEC/EN 61508:2010 \\ \hline \textbf{Surge protective devices for low voltage} & IEC 61643-21:2000+A1:2008+A2:2012 \\ \hline \textbf{Ambient conditions} \\ \hline \textbf{Ambient temperature} & -40 \dots 80  ^{\circ}\text{C}  (-40 \dots 176  ^{\circ}\text{F}) \\ \hline \textbf{Observe the temperature range limited by derating, see section derating.} \\ \hline \end{tabular}$
Insertion loss       ≤ 3 dB at 0 250 kHz in 100 $\Omega$ system         Conformity       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         Ambient conditions       -40 80 °C (-40 176 °F)         Observe the temperature range limited by derating, see section derating.
Conformity  Electromagnetic compatibility  Degree of protection  Functional safety  Surge protective devices for low voltage  Ambient conditions  Ambient temperature  Ambient temperature  EN 61326-3-1:2017  IEC 60529:2013  IEC/EN 61508:2010  IEC 61643-21:2000+A1:2008+A2:2012  Ambient conditions  -40 80 °C (-40 176 °F)  Observe the temperature range limited by derating, see section derating.
Electromagnetic compatibility  Degree of protection  EN 61326-3-1:2017  Degree of protection  Functional safety  Surge protective devices for low voltage  Ambient conditions  Ambient temperature  Ambient temperature  -40 80 °C (-40 176 °F)  Observe the temperature range limited by derating, see section derating.
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  Ambient conditions  Ambient temperature -40 80 °C (-40 176 °F) Observe the temperature range limited by derating, see section derating.
Functional safety  Surge protective devices for low voltage  Ambient conditions  Ambient temperature  -40 80 °C (-40 176 °F) Observe the temperature range limited by derating, see section derating.
Surge protective devices for low voltage  Ambient conditions  Ambient temperature  -40 80 °C (-40 176 °F) Observe the temperature range limited by derating, see section derating.
Ambient conditions  Ambient temperature  -40 80 °C (-40 176 °F) Observe the temperature range limited by derating, see section derating.
Ambient temperature -40 80 °C (-40 176 °F) Observe the temperature range limited by derating, see section derating.
Observe the temperature range limited by derating, see section derating.
Storage temperature -40 85 °C (-40 185 °F)
J
Relative humidity max. 95 %, without condensation
Corrosion resistance acc. to ISA-S71.04, severity level G3
Mechanical specifications
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
Data for application in connection with hazardous areas
Certificate KIWA 19 ATEX 0002 X
Marking
Temperature class T6, T5 or T4, restrictions see derating tables
Directive conformity
Directive 2014/34/EU EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
International approvals
UL approval E501704 E501881
Breakdown voltage  U <sub>BR</sub> 6 12 V line-line at 100 V/s acc. to UL 497B 6 12 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval
IECEx certificate IECEx KIWA 19.0002X
IECEx marking Ex ec IIC T6T4 Gc
General information
Supplementary information  Observe the certificates, declarations of conformity, instruction manuals, and man

### **Assembly**



# **Matching System Components**

, m. 170	USLKG6N	Terminal block for equipotential bonding

### Accessories

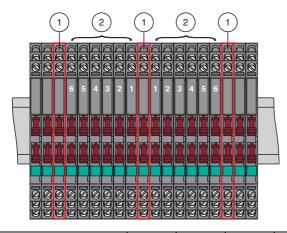
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **Operation**

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.



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



### M-LB-2142

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508









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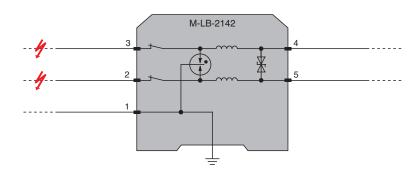
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



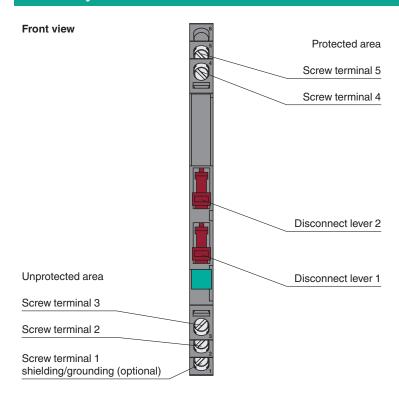
Zone 2 Div. 2

### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$<$ 3 $\mu A$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Technical Data		
Maximum continuous operating voltage	Uc	30 V DC
Series resistance		≤3Ω 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 μs)	I <sub>imp</sub>	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_{n}$ max. 1400 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 900 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
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
Data for application in connection with ha	zardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
International approvals		
UL approval		E501704 E501881
Breakdown voltage	$U_BR$	30 45 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.



# **Matching System Components**

- Table	USLKG6N	Terminal block for equipotential bonding
-		

### Accessories

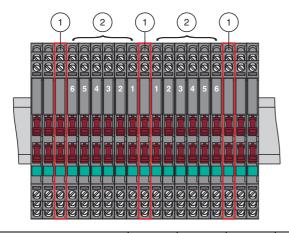
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **Operation**

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
l <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.



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

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- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508









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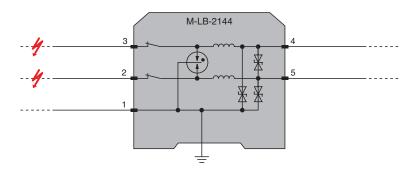
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2 Div. 2

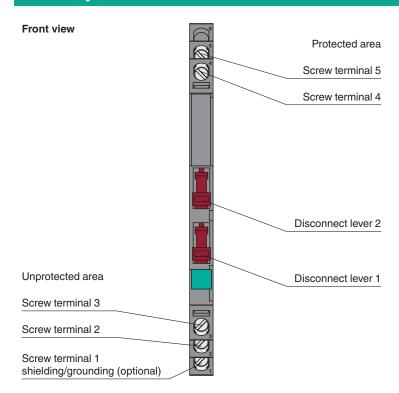
### **Technical Data**

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$<$ 6 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Technical Data		
Maximum continuous operating voltage	Uc	30 V DC
Series resistance		$\leq$ 3 $\Omega$ 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 µs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_{n}$ max. 60 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 700 kHz in 100 $\Omega$ system
onformity		
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
mbient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
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
ata for application in connection with haza	ardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704 E501881
Breakdown voltage	1.1	30 45 V line-line at 100 V/s acc. to UL 497B
	$U_BR$	30 45 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval	U <sub>BR</sub>	
IECEx approval IECEx certificate	UBR	
	UBR	< 1000 V at 100 V/μs acc. to UL 497B
IECEx certificate	UBR	< 1000 V at 100 V/μs acc. to UL 497B  IECEx KIWA 19.0002X

### **Assembly**



# **Matching System Components**

, m. 170	USLKG6N	Terminal block for equipotential bonding

### Accessories

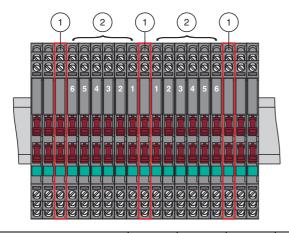
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **Operation**

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.



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



### M-LB-Ex-2112

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













### **Function**

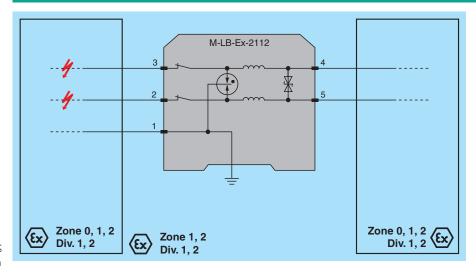
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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

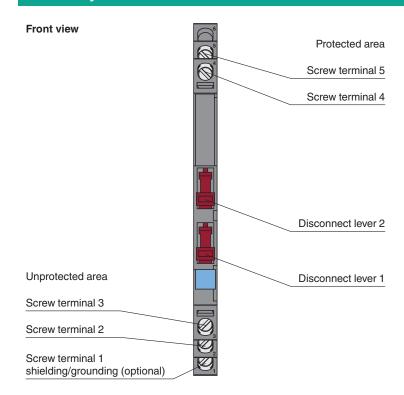


### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$< 5~\mu\text{A}~\text{at 1 V}$ and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Maximum continuous operating voltage	Uc	6 V DC
Series resistance		$\leq$ 3 $\Omega$ 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 $\mu$ s)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_{n}$ max. 1400 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		≤ 3 dB at 0 400 kHz in 100 Ω system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
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
Pata for application in connection with haza	rdous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li>II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb</li> <li>II (1)D [Ex ia Da] IIIC</li> <li>I (M1) [Ex ia Ma] I</li> </ul>
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	6 V
Current	l <sub>i</sub>	500 mA, restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 µH
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020, EN 60079-11:2012
nternational approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	li	400 mA , restrictions see control drawing
Breakdown voltage	U <sub>BR</sub>	6 12 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		IECEx KIWA 19.0003X
IECEx approval IECEx certificate		
		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC [Ex ia Ma] I
IECEx certificate		



# **Matching System Components**

- Malle	USLKG6N	Terminal block for equipotential bonding

### Accessories

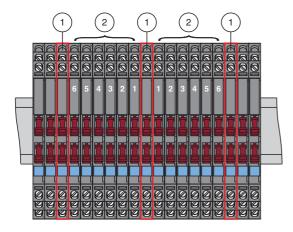
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **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
l <sub>i</sub> (l <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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <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.



### 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 µs) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

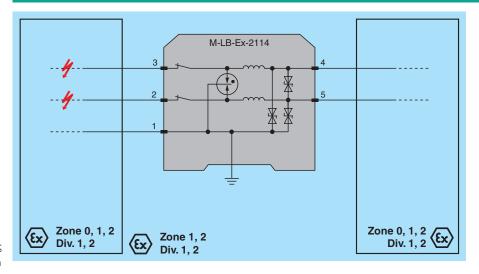
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables 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

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2023-06-20
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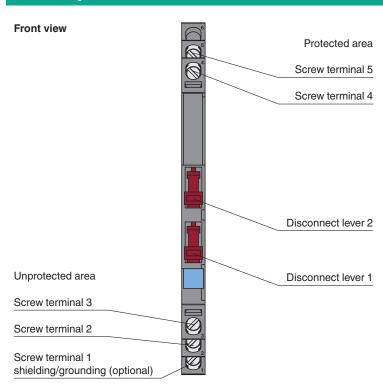
Maximum continuous operating voltage	Uc	6 V DC
Series resistance	O <sub>C</sub>	≤ 3 Ω per line
Impulse rating		1 kV/0.5 kA (category C1) 10 kV/5 kA (category C2) 1 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_n$ 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
conformity		
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
mbient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
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
ata for application in connection with hazar	dous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li>II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb</li> <li>II (1)D [Ex ia Da] IIIC</li> <li>I (M1) [Ex ia Ma] I</li> </ul>
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	6 V
Current	li	500 mA , restrictions see derating tables
Internal capacitance	$C_{i}$	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
nternational approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	li	400 mA , restrictions see control drawing
Breakdown voltage	U <sub>BR</sub>	6 12 V line-line at 100 V/s acc. to UL 497B 6 12 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/µs acc. to UL 497B
IECEx approval		·
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC

### **Technical Data**

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### **Assembly**



### **Matching System Components**



USLKG6N

Terminal block for equipotential bonding

### **Accessories**



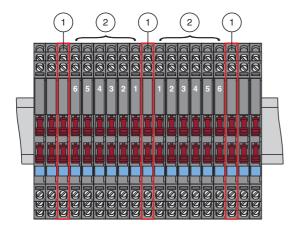
M-LB-2800

Insulation spacer for surge protection system M-LB-2000

#### **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
$l_i(l_r)$	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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <sub>r</sub> )	280 mA	224 mA	168 mA	112 mA	56 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier

### M-LB-Ex-2142

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

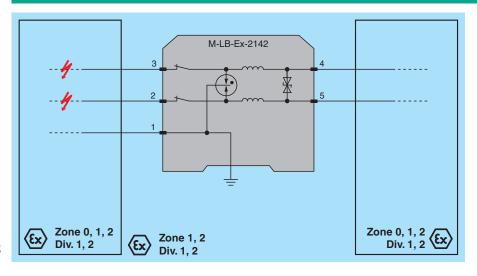
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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



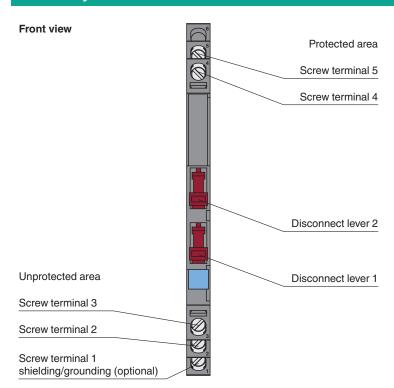
### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$<$ 3 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Maximum continuous operating voltage	Uc	30 V DC
Series resistance	Uc	
		$\leq$ 3 $\Omega$ per line 1 kV/0.5 kA (category C1)
Impulse rating		10 kV/5 kA (category C1) 1 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_{n}$ max. 1400 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 900 kHz in 100 $\Omega$ system
Conformity		
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
ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
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
Oata for application in connection with haz	ardous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li></li></ul>
Temperature class		T6, T5 or T4 , restrictions see derating tables
Voltage	Ui	30 V
Current	l <sub>i</sub>	500 mA , restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
nternational approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	l <sub>i</sub>	400 mA , restrictions see control drawing
Breakdown voltage	$U_{BR}$	30 45 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC [Ex ia Ma] I
General information		•
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuwhere applicable.

### **Assembly**



## **Matching System Components**

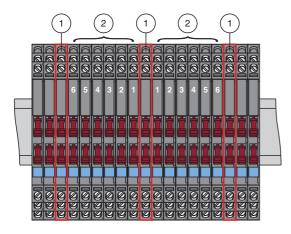
, m. 170	USLKG6N	Terminal block for equipotential bonding

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <sub>r</sub> )	280 mA	224 mA	168 mA	112 mA	56 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier

### M-LB-Ex-2144

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via screw terminals
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

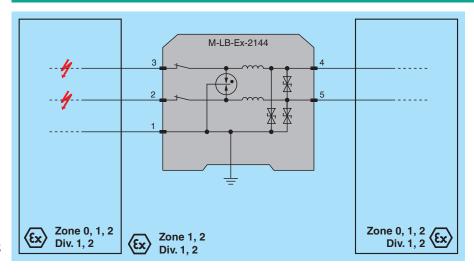
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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



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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$<$ 6 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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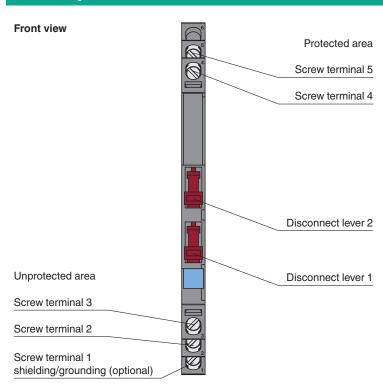
Maximum continuous operating voltage	Uc	30 V DC
Series resistance		$\leq$ 3 $\Omega$ per line
Impulse rating		1 kV/0.5 kA (category C1) 10 kV/5 kA (category C2) 1 kA (category D1)
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_n$ max. 60 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 500 ms
Insertion loss		≤ 3 dB at 0 700 kHz in 100 Ω system
Conformity		
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
Ambient conditions		40 000440 4000
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
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
Data for application in connection with haz	ardous a	
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		© II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb © II (1)D [Ex ia Da] IIIC © I (M1) [Ex ia Ma] I
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	30 V
Current	l <sub>i</sub>	500 mA , restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
International approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	l <sub>i</sub>	400 mA , restrictions see control drawing
Breakdown voltage	$U_BR$	30 45 V line-line at 100 V/s acc. to UL 497B 30 45 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC
General information		[Ex ia Ma] I

### **Technical Data**

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### **Assembly**



### **Matching System Components**



USLKG6N

Terminal block for equipotential bonding

### **Accessories**



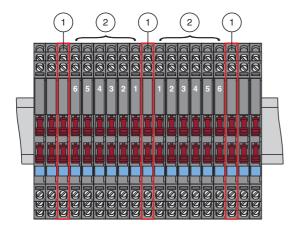
M-LB-2800

Insulation spacer for surge protection system M-LB-2000

#### **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
l <sub>i</sub> (l <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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <sub>r</sub> )	280 mA	224 mA	168 mA	112 mA	56 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-2112.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 1 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













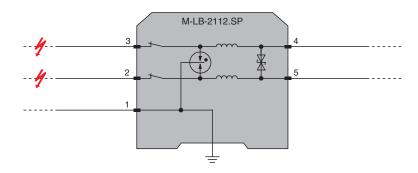
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection

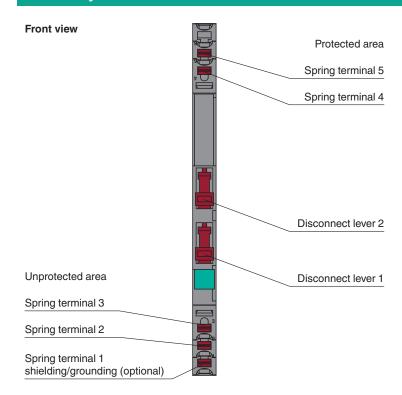


Zone 2 Div. 2

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$< 5~\mu\text{A}~\text{at 1 V}$ and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Technical Data		
Maximum continuous operating voltage	Uc	6 V DC
Series resistance		≤3Ω 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 μs)	I <sub>imp</sub>	1 kA per line (2x)
Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_n$ max. 1400 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 400 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20 , after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with ha	zardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704 E501881
Breakdown voltage	U <sub>BR</sub>	6 12 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manu where applicable.



### **Matching System Components**

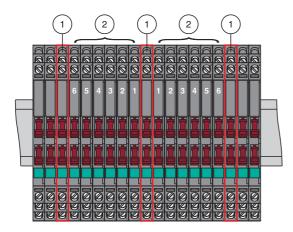
 USLKG6N	Terminal block for equipotential bonding

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-2114.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 1 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508









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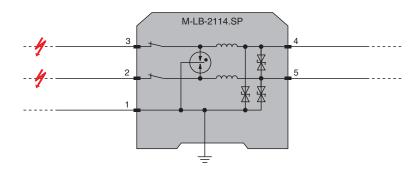
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection

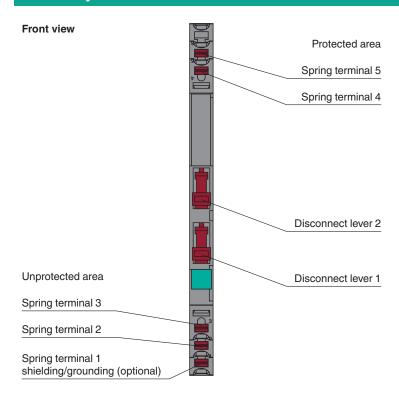


Zone 2 Div. 2

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables UL: 400 mA , restrictions see derating tables
Leakage current		$<$ 10 $\mu A$ at 1 V and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Maximum continuous operating voltage	Uc	6 V DC
Series resistance		$\leq$ 3 $\Omega$ 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 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 µs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_n$ 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
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with haz	ardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704 E501881
Breakdown voltage	$U_BR$	6 12 V line-line at 100 V/s acc. to UL 497B 6 12 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manu where applicable.



### **Matching System Components**

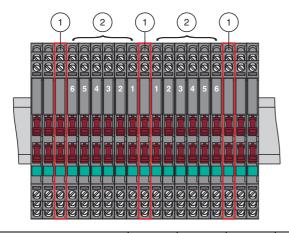
, maille	USLKG6N	Terminal block for equipotential bonding

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-2142.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508











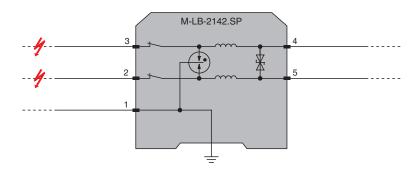
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection

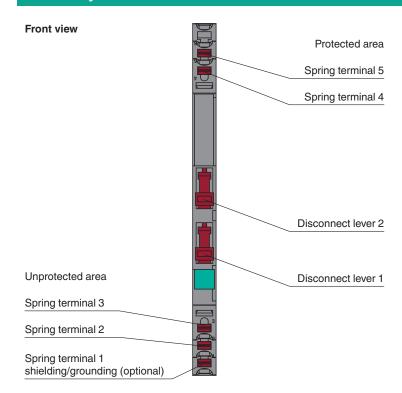


Zone 2 Div. 2

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		$<$ 3 $\mu A$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Technical Data		
Maximum continuous operating voltage	Uc	30 V DC
Series resistance		≤3Ω 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 µs)	I <sub>imp</sub>	1 kA per line (2x)
Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_{n}$ max. 1400 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 900 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with ha	zardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704 E501881
Breakdown voltage	$U_BR$	30 45 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.



### **Matching System Components**

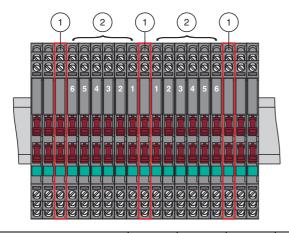
 USLKG6N	Terminal block for equipotential bonding

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-2144.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508









CE EX SIL 3 CUL US



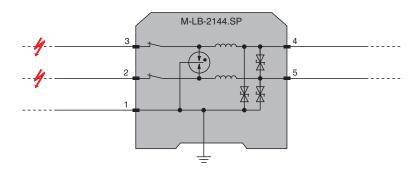
### **Function**

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 HART transparent.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection

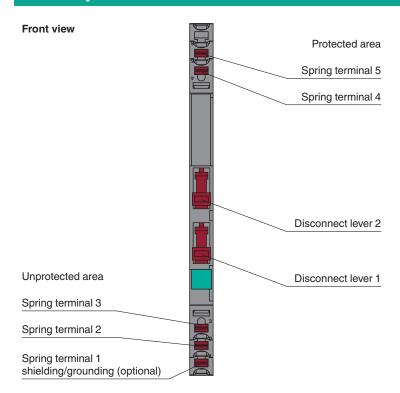


Zone 2 Div. 2

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see derating tables
Leakage current		< 6 $\mu$ A at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Technical Data		
Maximum continuous operating voltage	U <sub>c</sub>	30 V DC
Series resistance		$\leq$ 3 $\Omega$ 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 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_{n}$ max. 60 V line-earth for nominal discharge current $I_{n}$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 700 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with haz	ardous a	reas
Certificate		KIWA 19 ATEX 0002 X
Marking		
Temperature class		T6, T5 or T4, restrictions see derating tables
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704 E501881
Breakdown voltage	U <sub>BR</sub>	30 45 V line-line at 100 V/s acc. to UL 497B 30 45 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0002X
IECEx marking		Ex ec IIC T6T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals, where applicable.



### **Matching System Components**

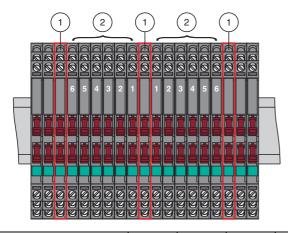
- Table	USLKG6N	Terminal block for equipotential bonding
-		

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **Derating of the Rated Current**

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

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

Linear interpolation allowed, extrapolation not allowed.

#### **Derating for Mounting According to UL**

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T4 or in a non-hazardous area.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	400 mA	325 mA	250 mA	175 mA	100 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T5.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C	80 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.

This derating is valid for mounting in Zone 2 or Division 2 areas requiring temperature class T6.

Max. ambient temperature	40 °C	50 °C	60 °C	70 °C
I <sub>r</sub>	280 mA	210 mA	140 mA	70 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-Ex-2112.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 1 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508











### **Function**

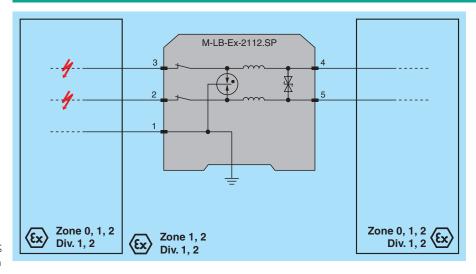
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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

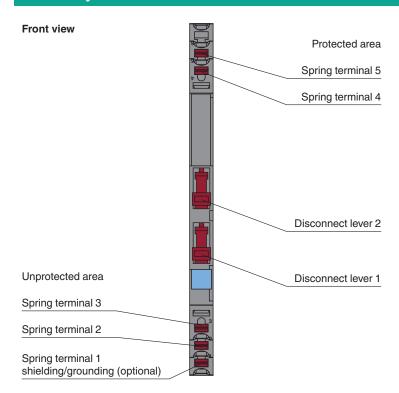


General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	I <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$< 5~\mu A~$ at 1 V and 25 °C (77 °F) , line-line
Nominal voltage		1 V DC

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Maximum continuous operating voltage	Uc	6 V DC
Series resistance		$\leq$ 3 $\Omega$ 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 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_n$ max. 1400 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 400 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li>         ⊕ II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb     </li> <li>         ⊕ II (1)D [Ex ia Da] IIIC     </li> <li>         ⊕ I (M1) [Ex ia Ma] I     </li> </ul>
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	6 V
Current	l <sub>i</sub>	500 mA , restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
International approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	l <sub>i</sub>	400 mA , restrictions see control drawing
Breakdown voltage	$U_{BR}$	6 12 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/µs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manu where applicable.

### **Assembly**



### **Matching System Components**

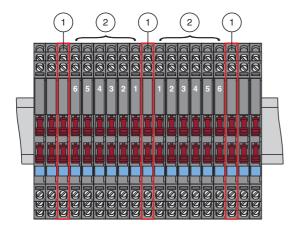
- Malle	USLKG6N	Terminal block for equipotential bonding

M-LB-2800	Insulation spacer for surge protection system M-LB-2000

#### **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
l <sub>i</sub> (l <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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <sub>r</sub> )	280 mA	224 mA	168 mA	112 mA	56 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.





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

- Surge protection barrier for 2 signal lines
- Nominal voltage 1 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

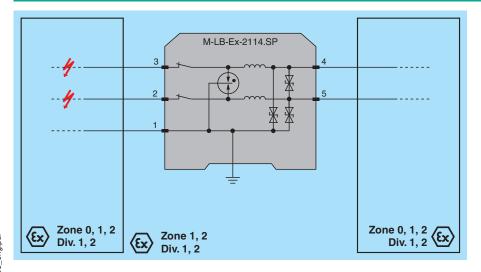
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables 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

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Maximum continuous operating voltage

 $\,U_c\,$ 

6 V DC  $\leq$  3  $\Omega$  per line

**Technical Data** 

Series resistance

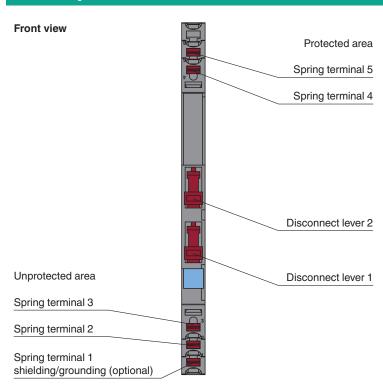
Series resistance		≤ 3 Ω per line
Impulse rating		1 kV/0.5 kA (category C1) 10 kV/5 kA (category C2) 1 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{imp}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	l <sub>n</sub>	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 12 V line-line for nominal discharge current $I_n$ 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
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20 , after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with haza	ardous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li>I 2(1)G Ex ia [ia Ga] IIC T6T4 Gb</li> <li>II (1)D [Ex ia Da] IIIC</li> <li>I (M1) [Ex ia Ma] I</li> </ul>
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	6 V
Current	li	500 mA, restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
International approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	li	400 mA , restrictions see control drawing
Breakdown voltage	$U_{BR}$	6 12 V line-line at 100 V/s acc. to UL 497B 6 12 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/µs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC
		[Ex ia Ma] I

### **Technical Data**

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

### **Assembly**



### **Matching System Components**



USLKG6N

Terminal block for equipotential bonding

### **Accessories**



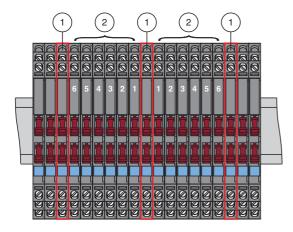
M-LB-2800

Insulation spacer for surge protection system M-LB-2000

#### **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
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <sub>r</sub> )	280 mA	224 mA	168 mA	112 mA	56 mA	0 mA

Linear interpolation allowed, extrapolation not allowed.





# Surge Protection Barrier M-LB-Ex-2142.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

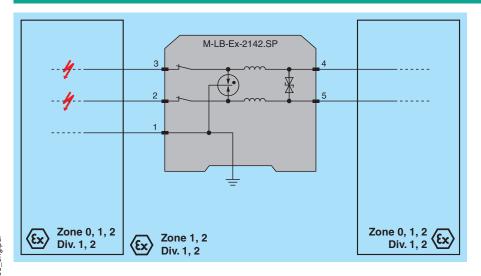
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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**

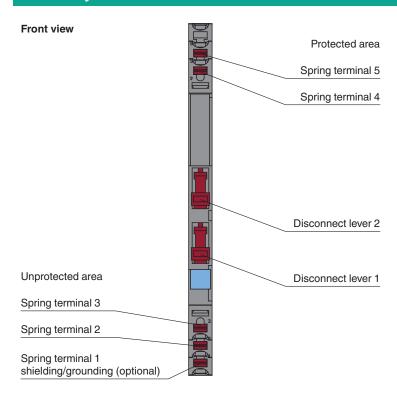
General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 4, 5 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$<$ 3 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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Technical Data		
Maximum continuous operating voltage	U <sub>c</sub>	30 V DC
Series resistance	- 0	≤ 3 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 μs)	I <sub>imp</sub>	1 kA per line (2x)
Nominal discharge current (8/20 µs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $I_n$ max. 1400 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 500 ms
Insertion loss		$\leq$ 3 dB at 0 900 kHz in 100 $\Omega$ system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		<ul> <li>☑ II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb</li> <li>☑ II (1)D [Ex ia Da] IIIC</li> <li>☑ I (M1) [Ex ia Ma] I</li> </ul>
Temperature class		T6, T5 or T4 , restrictions see derating tables
Voltage	Ui	30 V
Current	l <sub>i</sub>	500 mA , restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μH
Directive conformity		- P
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020, EN 60079-11:2012
International approvals		,
UL approval		E501704 E501881
Control drawing		116-0479
Current	l <sub>i</sub>	400 mA , restrictions see control drawing
Breakdown voltage	$U_{BR}$	30 45 V line-line at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.

### **Assembly**



### **Matching System Components**

- Malle	USLKG6N	Terminal block for equipotential bonding					

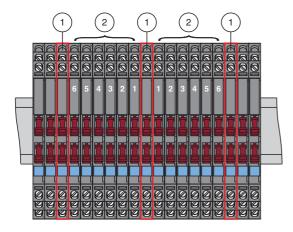
M-LB-2800	Insulation spacer for surge protection system M-LB-2000

### **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
$l_i(l_r)$	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
$I_i(I_r)$	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	
l <sub>i</sub> (l <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.



## Surge Protection Barrier M-LB-Ex-2144.SP

- Surge protection barrier for 2 signal lines
- Nominal voltage 24 V DC
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Connection via spring terminals with push-in connection technology
- DIN rail mountable
- Up to SIL 3 acc. to IEC/EN 61508













### **Function**

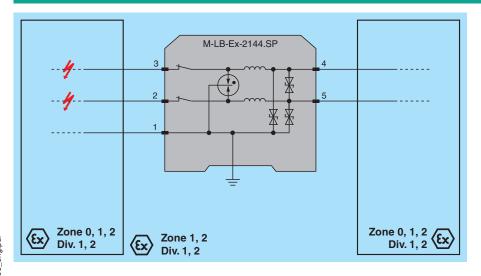
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

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 unprotected area: terminals 2, 3 shielding/grounding: terminal 1 (optional)
Rated current	l <sub>r</sub>	500 mA , restrictions see derating tables UL : 400 mA , restrictions see control drawing
Leakage current		$<$ 6 $\mu\text{A}$ at 24 V and 25 °C (77 °F) , line-line
Nominal voltage		24 V DC

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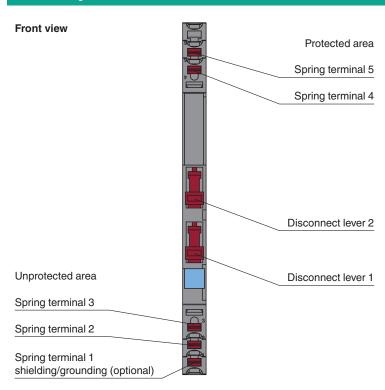
Maximum continuous operating voltage	Uc	30 V DC
Series resistance	O <sub>C</sub>	≤ 3 Ω per line
Impulse rating		1 kV/0.5 kA (category C1)
impuise raung		10 kV/5 kA (category C1) 10 kV/5 kA (category C2) 1 kA (category D1)
Impulse discharge current (10/350 μs)	$I_{\text{imp}}$	1 kA per line (2x)
Nominal discharge current (8/20 μs)	In	5 kA per line (10x)
Total discharge current (8/20 μs)	I <sub>total</sub>	20 kA (1x), overstressed fault mode 3 acc. to IEC 61643-21
Voltage protection level	Up	max. 45 V line-line for nominal discharge current $\rm I_n$ max. 60 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 500 ms
Insertion loss		≤ 3 dB at 0 700 kHz in 100 Ω system
Conformity		
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
Ambient conditions		
Ambient temperature		-40 80 °C (-40 176 °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
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20, after mounting of the insulation spacer
Connection		spring 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
Oata for application in connection with hazar	dous a	reas
EU-type examination certificate		KIWA 19 ATEX 0003 X
Marking		© II 2(1)G Ex ia [ia Ga] IIC T6T4 Gb © II (1)D [Ex ia Da] IIIC © I (M1) [Ex ia Ma] I
Temperature class		T6, T5 or T4, restrictions see derating tables
Voltage	Ui	30 V
Current	li	500 mA, restrictions see derating tables
Internal capacitance	Ci	negligible
Internal inductance	Li	20 μΗ
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012
nternational approvals		
UL approval		E501704 E501881
Control drawing		116-0479
Current	li	400 mA , restrictions see control drawing
Breakdown voltage	$U_BR$	30 45 V line-line at 100 V/s acc. to UL 497B 30 45 V line-earth at 100 V/s acc. to UL 497B < 1000 V at 100 V/μs acc. to UL 497B
IECEx approval		•
IECEx certificate		IECEx KIWA 19.0003X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb [Ex ia Da] IIIC

## **Technical Data**

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

## **Assembly**



## **Matching System Components**



USLKG6N

Terminal block for equipotential bonding

### **Accessories**



M-LB-2800

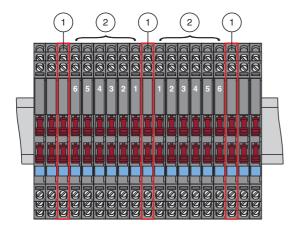
Insulation spacer for surge protection system M-LB-2000

### **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	
l <sub>i</sub> (l <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	
$I_{i}(I_{r})$	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
l <sub>i</sub> (l <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.

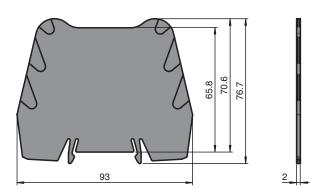


Insulation spacer for surge protection system M-LB-2000

## **Function**

The component is used to terminate terminal sections or to separate individual terminal sections from each other. The component is mounted on a 35 mm DIN mounting rail according to EN 60715.

#### **Dimensions**



## **Technical Data**

Ambient conditions	
Ambient temperature	-40 80 °C (-40 176 °F)
Storage temperature	-40 85 °C (-40 185 °F)
Relative humidity	max. 95 %, without condensation
Mechanical specifications	
Material	Polyamide (PA)
Mass	approx. 40 g
Dimensions	2 x 93 x 77 mm (0.08 x 3.7 x 3 inch) (W x H x D)
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001



## M-LB-4212

- Surge protection for 2 signal lines
- Nominal voltage 5 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508















### **Function**

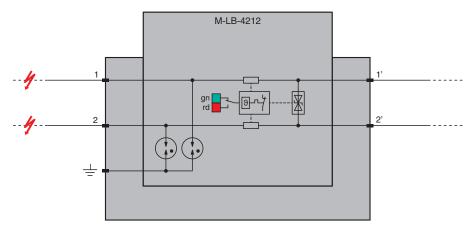
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



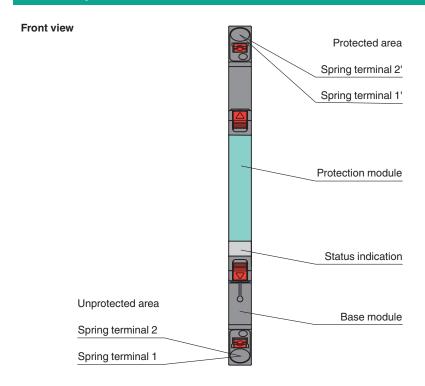
Zone 2

#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 10 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		5 V
Maximum continuous operating voltage	$U_{c}$	6 V AC and 8.5 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155078\_eng.pdf

Technical Data		
Nominal load current	IL	0.75 A at 70 °C (158 °F)
Series resistance	·L	1 $\Omega$ per line
Impulse discharge current (10/350 µs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 42 V line-line for nominal discharge current I <sub>n</sub> max. 600 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	100 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazar	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		ⓑ II 3G Ex ec IIC T4 Gc
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



M-LB-4800	Separation Wall
M-LB-4212.M	Protection Module for Surge Protection Barrier



## M-LB-4214

- Surge protection for 2 signal lines
- Nominal voltage 5 V
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CUL US





### **Function**

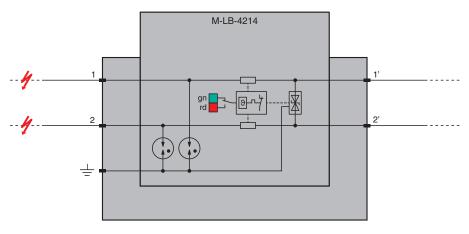
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



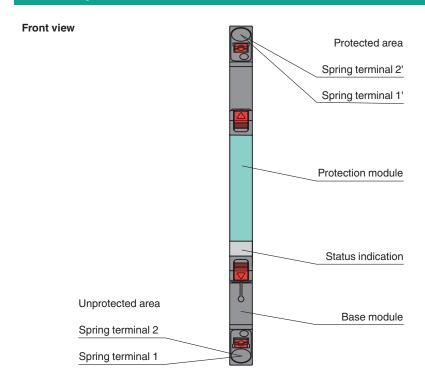
Zone 2

#### **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 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 5 $\mu A$ bei $U_c$ , line-line $<$ 5 $\mu A$ bei $U_c$ , line-earth
Nominal voltage		5 V
Maximum continuous operating voltage	Uc	6 V AC and 8.5 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155079\_eng.pdf

Technical Data		
Nominal load current	IL	0.75 A at 70 °C (158 °F)
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 50 V line-line for nominal discharge current I <sub>n</sub> max. 70 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	100 MHz , line-line
Indicators/settings	- G	
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



M-LB-4800	Separation Wall
M-LB-4214.M	Protection Module for Surge Protection Barrier



## M-LB-4242

- Surge protection for 2 signal lines
- Nominal voltage 24 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508















### **Function**

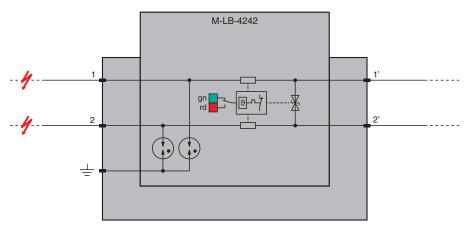
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2

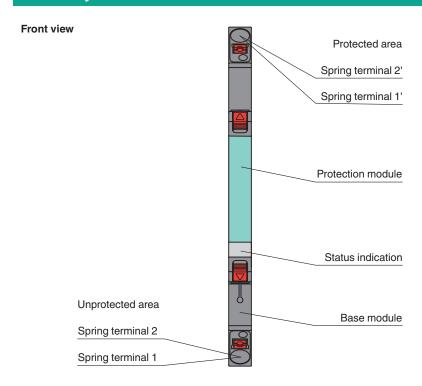
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	Uc	25.4 V AC and 36 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155080\_eng.pdf

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Technical Data		
Nominal load current	IL	0.75 A at 70 °C (158 °F)
Series resistance		1 Ω per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 57 V line-line for nominal discharge current $\rm I_n$ max. 600 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	5.8 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



## **Accessories**



M-LB-4800 Separation Wall



## M-LB-4244

- Surge protection for 2 signal lines
- Nominal voltage 24 V
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CUL US





### **Function**

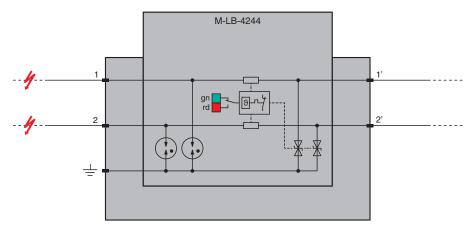
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



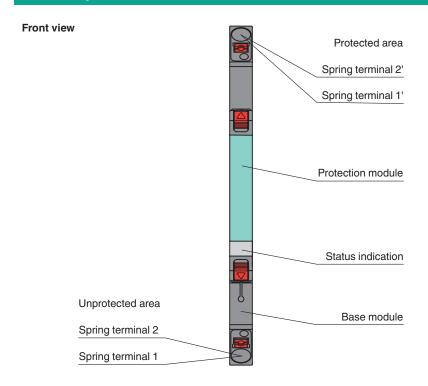
Zone 2

#### **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 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 10 nA bei $U_c$ , line-line $<$ 70 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	$U_{c}$	23.3 V AC and 33 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155081\_eng.pdf

Technical Data		
Nominal load current	ΙL	0.75 A at 70 °C (158 °F)
Series resistance	·L	1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)		20 kA
Total discharge current (8/20 μs)	I <sub>max</sub>	10 kA
Voltage protection level	I <sub>total</sub>	max. 90 V line-line for nominal discharge current I <sub>n</sub>
voltage protection level	O <sub>p</sub>	max. 75 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	f <sub>G</sub>	3.4 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 $\%$ , without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



	M-LB-4400	Fault Status Module	
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M-LB-4800	Separation Wall



## M-LB-Ex-4242

- Surge protection for 2 signal lines
- Nominal voltage 24 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 μs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- 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 consists of base module and protection module. The protection module can be replaced without tools.

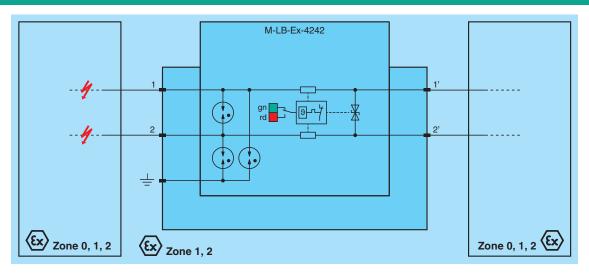
The device is HART transparent.

The device has a status indication at the front.

The device has a states indicated at the north.

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		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	Uc	25.4 V AC and 36 V DC

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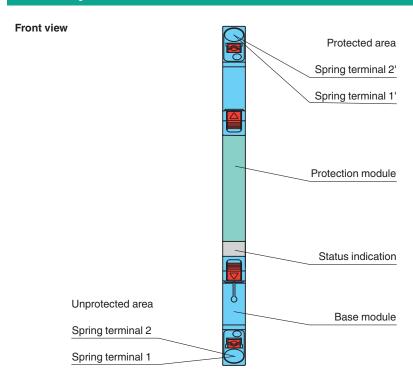
Technical Data		
Nominal load current	IL	0.5 A at 80 °C (176 °F)
Series resistance	-	1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 65 V line-line for nominal discharge current I <sub>n</sub> max. 1100 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_G$	3.5 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F) For usage in hazardous area observe the EU-type examination certificate.
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haz	ardous a	
EU-type examination certificate		TÜV 22 ATEX 8880 X
Marking		© II (1)2G Ex ia [ia Ga] IIC T6T4 Gb © II 2G Ex ib IIC T6T4 Gb © II (1)D [Ex ia Da] IIIC
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	Ui	30 V
Current	l <sub>i</sub>	500 mA , restrictions see certificate
Power	Pi	5.32 W
Internal capacitance	Ci	negligible
Internal inductance	Li	negligible
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018, EN 60079-11:2012
nternational approvals		
IECEx approval		
IECEx certificate		IECEx TUR 22.0050X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb Ex ib IIC T6T4 Gb [Ex ia Da] IIIC
		[Ex id Da] IIIO

## **Technical Data**

Supplementary information

Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.

## **Assembly**



## **Matching System Components**



M-LB-4400

Fault Status Module

## **Accessories**



M-LB-4800

Separation Wall



## M-LB-4272

- Surge protection for 2 signal lines
- Nominal voltage 180 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 12.5 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508















## **Function**

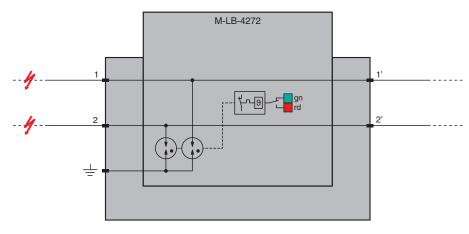
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2

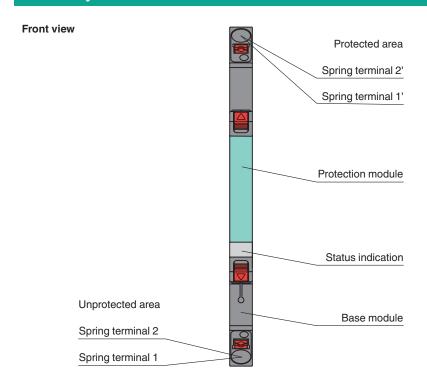
#### **Technical Data**

	2
	non-grounded
	SIL 3
	protected area: terminals 1', 2' unprotected area: terminals 1, 2
	$<$ 50 nA bei $U_{c}$ , line-line $<$ 50 nA bei $U_{c}$ , line-earth
	180 V
$U_c$	127 V AC and 180 V DC
	$U_c$

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155083\_eng.pdf

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Technical Data		
Nominal load current	IL	1.2 A at 80 °C (176 °F)
Series resistance		$0 \Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	12.5 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 1100 V line-line for nominal discharge current I <sub>n</sub> max. 800 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	150 MHz , line-line
Indicators/settings	1G	130 IVII IZ , III IG-III IG
•		ctatus dienlay
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	ardous a	
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		,
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



M-LB-4400 Fault Status Module

## Accessories



M-LB-4800 Separation Wall



## M-LB-4224

- Surge protection for 2 signal lines
- Nominal voltage 12 V
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508















### **Function**

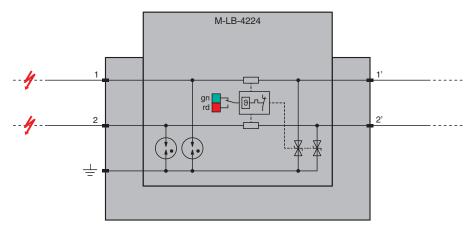
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2

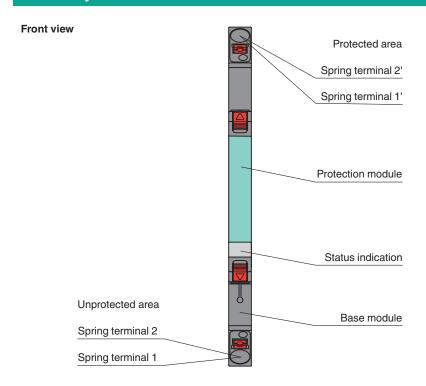
#### **Technical Data**

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 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 10 nA bei $U_c$ , line-line $<$ 70 nA bei $U_c$ , line-earth
Nominal voltage		12 V
Maximum continuous operating voltage	$U_{c}$	10.6 V AC and 15 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155084\_eng.pdf

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Technical Data		
Nominal load current	IL	0.75 A at 70 °C (158 °F)
Series resistance		1 Ω per line
Impulse discharge current (10/350 μs)	$I_{imp}$	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 48 V line-line for nominal discharge current $I_n$ max. 45 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	1.4 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



And And	M-LB-4400	Fault Status Module

M-LB-4800	Separation Wall



## M-LB-4254

- Surge protection for 2 signal lines
- Nominal voltage 48 V
- Surge protection barrier for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CUL US





### **Function**

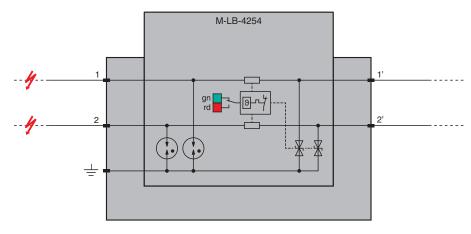
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



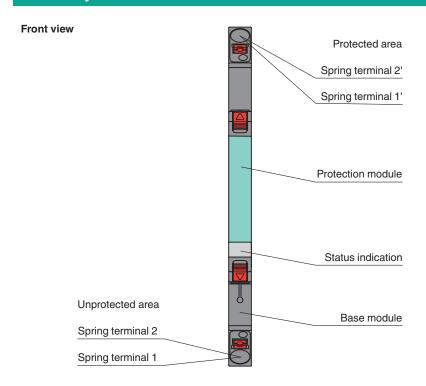
Zone 2

#### **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 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 20 nA bei $U_{c}$ , line-line $<$ 100 nA bei $U_{c}$ , line-earth
Nominal voltage		48 V
Maximum continuous operating voltage	$U_c$	38.1 V AC and 54 V DC

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155085\_eng.pdf

Technical Data		
Nominal load current	IL	0.75 A at 70 °C (158 °F)
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 140 V line-line for nominal discharge current I <sub>n</sub> max. 90 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	f <sub>G</sub>	5 MHz , line-line
Indicators/settings	·G	O WITE, IIIIO IIIIO
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



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M-LB-4800	Separation Wall
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## M-LB-4222

- Surge protection for 2 signal lines
- Nominal voltage 12 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CUL US





### **Function**

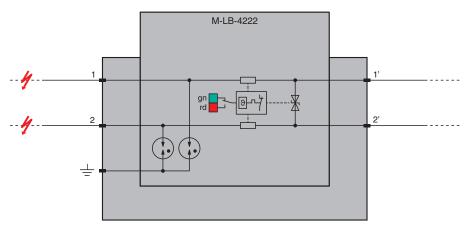
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2

#### **Technical Data**

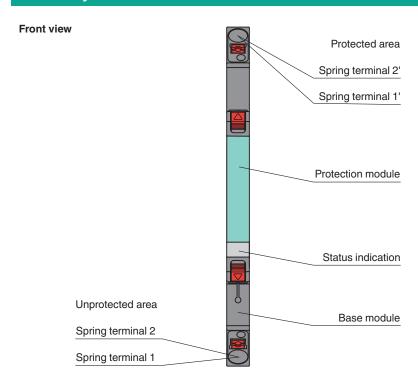
	2
	non-grounded
	SIL 3
	protected area: terminals 1', 2' unprotected area: terminals 1, 2
	$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
	12 V
U <sub>c</sub>	10.6 V AC and 15 V DC
	$U_c$

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Technical Data		
Nominal load current	Ι <sub>L</sub>	0.75 A at 70 °C (158 °F)
Series resistance		1 Ω per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 32 V line-line for nominal discharge current $\rm I_n$ max. 600 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	2.6 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. $ \\$

## **Assembly**



## **Matching System Components**

M-LB-4400 Fault Status Module	
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M-LB-4800	Separation Wall



## M-LB-4252

- Surge protection for 2 signal lines
- Nominal voltage 48 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CUL US





## **Function**

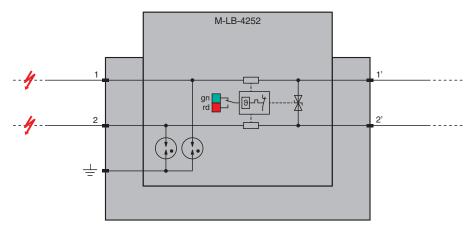
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

### Connection



Zone 2

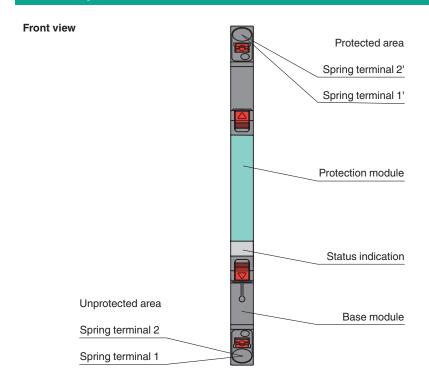
#### **Technical Data**

	2
	non-grounded
	SIL 3
	protected area: terminals 1', 2' unprotected area: terminals 1, 2
	$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
	48 V
$U_c$	39.6 V AC and 56 V DC
	$U_c$

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Technical Data		
Nominal load current	Ι <sub>L</sub>	0.75 A at 70 °C (158 °F)
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 90 V line-line for nominal discharge current $\rm I_n$ max. 600 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	3.6 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 35 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. $ \\$





M-LB-4400 Fault Status Module

## Accessories



M-LB-4800 Separation Wall



# Surge Protection Barrier

## M-LB-4282

- Surge protection for 2 signal lines
- Nominal voltage 230 V
- Surge protection barrier for non-grounded signal lines
- Max. surge current (8/20 µs) 6 kA
- Uninterruptable operation (auto reset)
- Status indication
- Modular design, pluggable
- Up to SIL 3 acc. to IEC/EN 61508

# **C E SIL** 3

#### **Function**

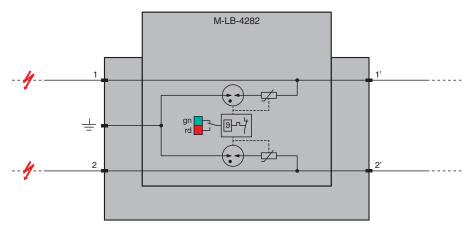
The device limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal loop voltage during the duration of the overvoltage pulse.

The device consists of base module and protection module. The protection module can be replaced without tools.

The device has a status indication at the front.

The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

#### Connection



Zone 2

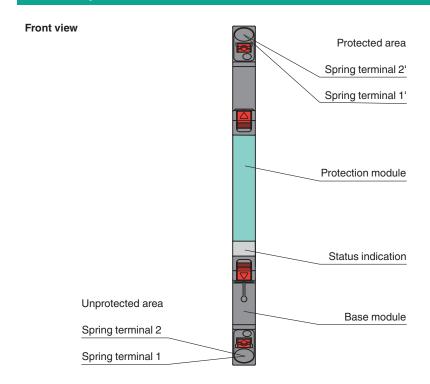
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		protected area: terminals 1', 2' unprotected area: terminals 1, 2
Leakage current		$<$ 50 nA bei $U_{c}$ , line-line $<$ 50 nA bei $U_{c}$ , line-earth
Nominal voltage		230 V
Maximum continuous operating voltage	$U_c$	250 V AC and 320 V DC

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Technical Data		
Nominal load current	IL	3 A at 80 °C (176 °F)
Series resistance		$0 \Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	0.5 kA per line
Nominal discharge current (8/20 μs)	In	3 kA per line
Total discharge current (8/20 μs)	I <sub>total</sub>	6 kA
Voltage protection level	$U_p$	max. 1100 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	200 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 $\%$ , without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals with push-in connection technology
Core cross section		0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material		
Housing		Polyamide PA 6.6
Mass		approx. 40 g
Dimensions		6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



# **Matching System Components**

M-LB-4400 Fault Status Module

## Accessories



M-LB-4800 Separation Wall



#### M-LB-4212.M

- Protection module for 2 signal lines
- Nominal voltage 5 V
- Protection module for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 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.

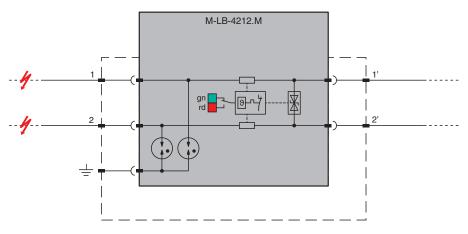
The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

## Connection



Zone 2

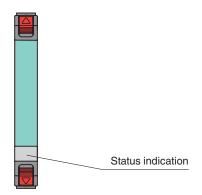
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 10 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		5 V
Maximum continuous operating voltage	Uc	6 V AC and 8.5 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155089\_eng.pdf

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Technical Data		
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 42 V line-line for nominal discharge current I <sub>n</sub> max. 600 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_G$	100 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with haz	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		II 3G Ex ec IIC T4 Gc
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.





#### M-LB-4214.M

- Protection module for 2 signal lines
- Nominal voltage 5 V
- Protection module for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CULUS





#### **Function**

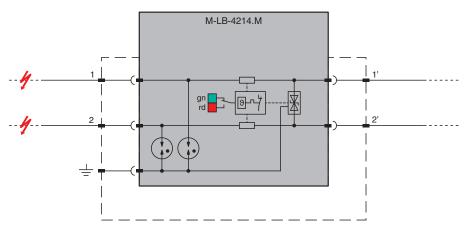
The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



Zone 2

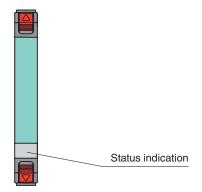
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<5~\mu A$ bei $U_c$ , line-line $<5~\mu A$ bei $U_c$ , line-earth
Nominal voltage		5 V
Maximum continuous operating voltage	$U_c$	6 V AC and 8.5 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

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Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	l <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 50 V line-line for nominal discharge current $I_n$ max. 70 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Cut-off frequency	f <sub>G</sub>	100 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
oata for application in connection with haz	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuswhere applicable.





#### M-LB-4242.M

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









SIL 3 CULUS





#### **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.

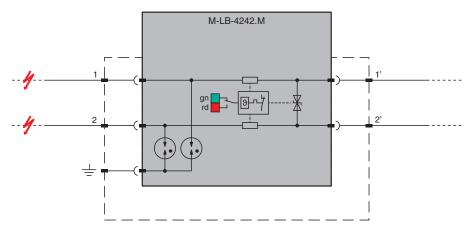
The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

## Connection



Zone 2

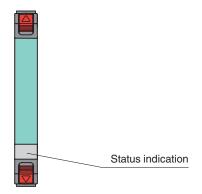
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	Uc	25.4 V AC and 36 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

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Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	$I_{imp}$	1.5 kA per line
Nominal discharge current (8/20 μs)	$I_n$	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 57 V line-line for nominal discharge current $\rm I_n$ max. 600 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	5.8 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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
mbient conditions		
Ambient temperature		-40 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
ata for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
		Observe the certificates, declarations of conformity, instruction manuals, and manu





#### M-LB-4244.M

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















## **Function**

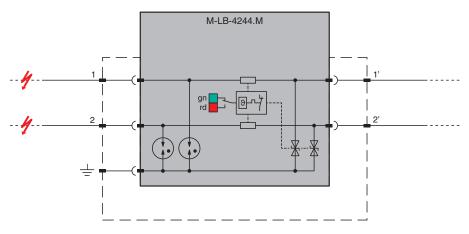
The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

## Connection



Zone 2

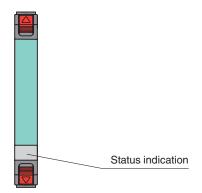
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 10 nA bei $U_c$ , line-line $<$ 70 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	Uc	23.3 V AC and 33 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

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Technical Data		
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	total U <sub>p</sub>	max. 90 V line-line for nominal discharge current In
voltage protection level	O <sub>p</sub>	max. 75 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	3.4 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with haz	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		II 3G Ex ec IIC T4 Gc
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		·
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		,
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.





## M-LB-Ex-4242.M

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













#### **Function**

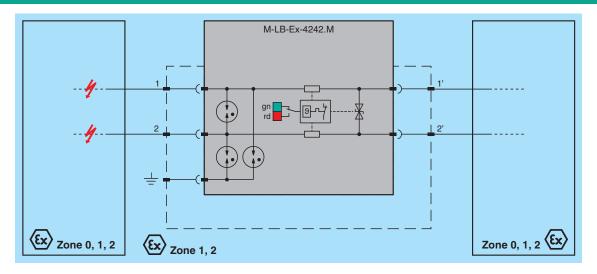
The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device. The device is HART transparent.

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



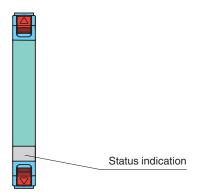
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		24 V
Maximum continuous operating voltage	U <sub>c</sub>	25.4 V AC and 36 V DC

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Technical Data		
Nominal load current	IL	0.5 A at 80 °C (176 °F)
Series resistance	٠.ـ	1 $\Omega$ per line
Impulse discharge current (10/350 µs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)		10 kA
Voltage protection level	I <sub>total</sub> U <sub>p</sub>	max. 65 V line-line for nominal discharge current I <sub>n</sub>
voltage protection level	O <sub>p</sub>	max. 1100 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	3.5 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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
A contributed a constitution of		IEC 61643-21:2001+A1:2008+A2:2012
Ambient conditions		40 00 °C ( 40 176 °F)
Ambient temperature		-40 80 °C (-40 176 °F) For usage in hazardous area observe the EU-type examination certificate.
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with hazar	rdous a	reas
EU-type examination certificate		TÜV 22 ATEX 8880 X
Marking		<ul> <li>II (1)2G Ex ia [ia Ga] IIC T6T4 Gb</li> <li>II 2G Ex ib IIC T6T4 Gb</li> <li>II (1)D [Ex ia Da] IIIC</li> </ul>
Temperature class		T6 for ambient temperature ≤ 50 °C T5 for ambient temperature ≤ 70 °C T4 for ambient temperature ≤ 80 °C
Voltage	Ui	30 V
Current	l <sub>i</sub>	500 mA , restrictions see certificate
Power	P <sub>i</sub>	5.32 W
Internal capacitance	Ci	negligible
Internal inductance	L <sub>i</sub>	negligible
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018, EN 60079-11:2012
International approvals		
IECEx approval		
IECEx certificate		IECEx TUR 22.0050X
IECEx marking		Ex ia [ia Ga] IIC T6T4 Gb Ex ib IIC T6T4 Gb [Ex ia Da] IIIC
General information		





## M-LB-4272.M

- Protection module for 2 signal lines
- Nominal voltage 180 V
- Protection module for non-grounded signal lines
- Max. surge current (8/20 µs) 12.5 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 61508















#### **Function**

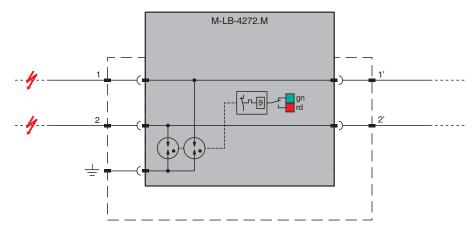
The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



Zone 2

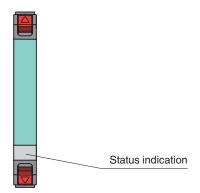
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 50 nA bei $U_{c}$ , line-line $<$ 50 nA bei $U_{c}$ , line-earth
Nominal voltage		180 V
Maximum continuous operating voltage	Uc	127 V AC and 180 V DC
Nominal load current	IL	1.2 A at 80 °C (176 °F)

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Technical Data		
Series resistance		$0 \Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	12.5 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 1100 V line-line for nominal discharge current $I_n$ max. 800 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	150 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 % , without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with haz	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		II 3G Ex ec IIC T4 Gc
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.





#### M-LB-4224.M

- Protection module for 2 signal lines
- Nominal voltage 12 V
- Protection module for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CULUS





## **Function**

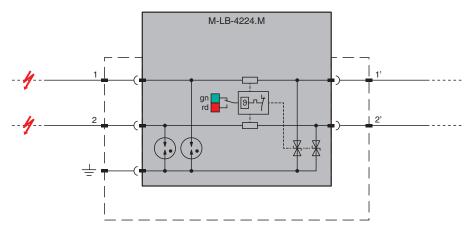
The protection module limits induced transients of different causes, e. g. lightning or switching operations. The limitation is achieved by diverting the current to earth and limiting the signal circuit voltage during the duration of the overvoltage pulse.

The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



Zone 2

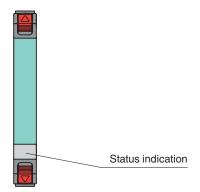
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 10 nA bei $U_c$ , line-line $<$ 70 nA bei $U_c$ , line-earth
Nominal voltage		12 V
Maximum continuous operating voltage	Uc	10.6 V AC and 15 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155095\_eng.pdf

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Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	$I_{imp}$	1.5 kA per line
Nominal discharge current (8/20 μs)	In	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 48 V line-line for nominal discharge current $I_n$ max. 45 V line-earth for nominal discharge current $I_n$
Impulse reset time		< 30 ms
Cut-off frequency	f <sub>G</sub>	1.4 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
ata for application in connection with haza	rdous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manu





#### M-LB-4254.M

- Protection module for 2 signal lines
- Nominal voltage 48 V
- Protection module for grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 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.

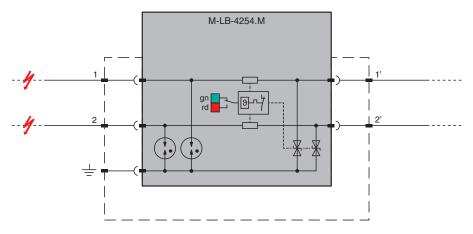
The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



Zone 2

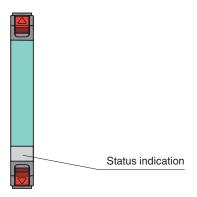
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		< 20 nA bei $U_c$ , line-line < 100 nA bei $U_c$ , line-earth
Nominal voltage		48 V
Maximum continuous operating voltage	Uc	38.1 V AC and 54 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155096\_eng.pdf

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Technical Data		
Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	In	5 kA per line
Max. surge current (8/20 µs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 140 V line-line for nominal discharge current I <sub>n</sub> max. 90 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_G$	5 MHz , line-line
Indicators/settings		
Display elements		status display operating state (green) fault indication (red)
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 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
Mechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
Data for application in connection with haz	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manual where applicable.





#### M-LB-4222.M

- Protection module for 2 signal lines
- Nominal voltage 12 V
- Protection module for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 61508









SIL 3 CULUS





#### **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.

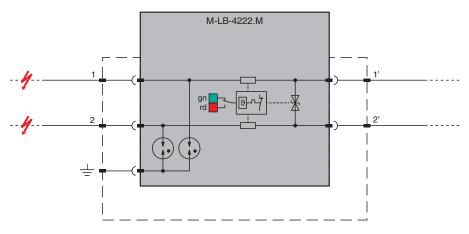
The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



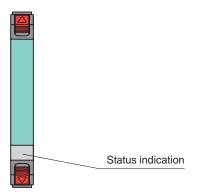
Zone 2

#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		12 V
Maximum continuous operating voltage	$U_c$	10.6 V AC and 15 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155097\_eng.pdf

Fechnical Data		
Series resistance		1 Ω per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 µs)	In	5 kA per line
Max. surge current (8/20 µs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 µs)	I <sub>total</sub>	10 kA
Voltage protection level	U <sub>p</sub>	max. 32 V line-line for nominal discharge current I <sub>n</sub> max. 600 V line-earth for nominal discharge current I <sub>n</sub>
Impulse reset time		< 30 ms
Cut-off frequency	$f_{G}$	2.6 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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
mbient conditions		
Ambient temperature		-40 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
ata for application in connection with haza	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
		EX ec IIC T4 Gc
IECEx certificate		





#### M-LB-4252.M

- Protection module for 2 signal lines
- Nominal voltage 48 V
- Protection module for non-grounded signal lines
- Max. surge current (8/20 µs) 20 kA
- Uninterruptable operation (auto reset)
- Status indication
- Mounting on base module, pluggable
- Up to SIL 3 acc. to IEC/EN 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.

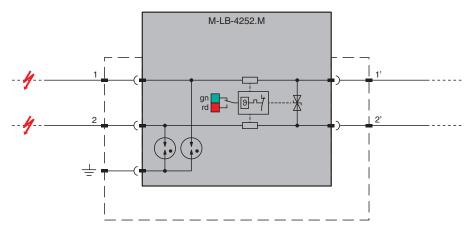
The device is a spare part for the corresponding 2-part surge protection barrier. The device is not to be used as a stand-alone device.

The device has a status indication at the front

The device has a status indication at the front.

The device can be replaced without tools by locking levers.

#### Connection



Zone 2

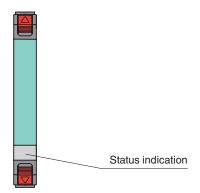
#### **Technical Data**

General specifications		
Number of protected signal lines		2
Topology		non-grounded
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Electrical specifications		
Connection		via base module
Leakage current		$<$ 30 $\mu A$ bei $U_c$ , line-line $<$ 10 nA bei $U_c$ , line-earth
Nominal voltage		48 V
Maximum continuous operating voltage	U <sub>c</sub>	39.6 V AC and 56 V DC
Nominal load current	IL	0.75 A at 70 °C (158 °F)

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Series resistance		1 $\Omega$ per line
Impulse discharge current (10/350 μs)	I <sub>imp</sub>	1.5 kA per line
Nominal discharge current (8/20 μs)	I <sub>n</sub>	5 kA per line
Max. surge current (8/20 μs)	I <sub>max</sub>	20 kA
Total discharge current (8/20 μs)	I <sub>total</sub>	10 kA
Voltage protection level	Up	max. 90 V line-line for nominal discharge current $\rm I_n$ max. 600 V line-earth for nominal discharge current $\rm I_n$
Impulse reset time		< 30 ms
Cut-off frequency	$f_G$	3.6 MHz , line-line
ndicators/settings		
Display elements		status display operating state (green) fault indication (red)
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
mbient conditions		
Ambient temperature		-40 80 °C (-40 176 °F)
Storage temperature		-40 80 °C (-40 176 °F)
Relative humidity		max. 95 %, without condensation
Corrosion resistance		acc. to ISA-S71.04, severity level G3
lechanical specifications		
Degree of protection		IP20
Connection		via base module
Material		
Housing		Polyamide PA 6.6
Mass		approx. 14 g
Dimensions		6 x 45 x 54 mm (0.24 x 1.77 x 2.15 inch) (W x H x D)
Mounting		pluggable in base module for mounting on 35 mm DIN mounting rail
ata for application in connection with haza	ardous a	reas
Certificate		TÜV 22 ATEX 8881 X
Marking		
Temperature class		T4 for ambient temperature ≤ 80 °C
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN IEC 60079-7:2015+A1:2018
nternational approvals		
UL approval		E501704
IECEx approval		
IECEx certificate		IECEx TUR 22.0051X
IECEx marking		Ex ec IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuwhere applicable.





# Fault Status Module M-LB-4400

- Two-part monitoring device
- Device set with transmitter/receiver and reverse unit
- Fault indication via LED
- Status indication output











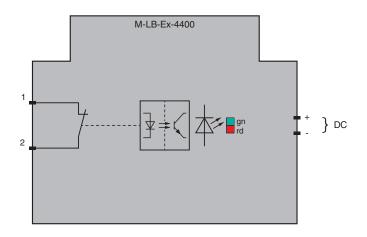
#### **Function**

The fault status module monitors the status of several surge protection barriers. The device set consists of 2 parts, the visual transmitter/receiver and the visual reverse unit.

The device has a status indication at the front.

The status indication is transmitted to the control via the remote signalling contact. The status indication output is performed as normally-closed contact.
The device is mounted on a 35 mm DIN mounting rail according to EN 60715.

#### **Connection**



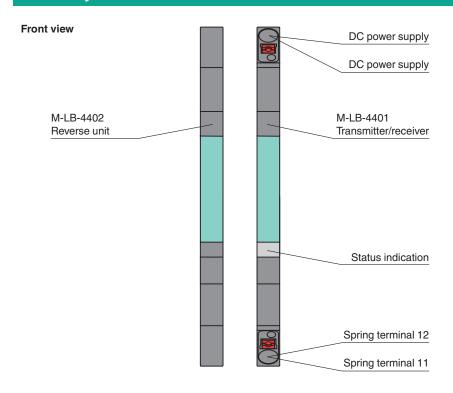
Zone 2

## **Technical Data**

Input		
Voltage range		6 35 V DC
Rated current	l <sub>r</sub>	≤ 10 mA
Output		
Connection		terminals 11, 12
Switching power		48 V DC/500 mA/P <sub>max</sub> 300 mW
Output		signal; remote signalling contact (NC contact)
Leakage current		< 1 μΑ
Resistor		contact resistance : $< 2.5 \Omega$
Test cycle		continuous
Indicators/settings		

Release date: 2023-06-20 Date of issue: 2023-06-20 Filename: 70155100\_eng.pdf

Technical Data	
Display elements	status display operating state (green) fault indication (red)
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
Ambient conditions	
Ambient temperature	-30 70 °C (-22 158 °F)
Storage temperature	-30 70 °C (-22 158 °F)
Relative humidity	max. 95 %, without condensation
Corrosion resistance	acc. to ISA-S71.04, severity level G3
Mechanical specifications	
Degree of protection	IP20
Connection	spring terminals with push-in connection technology
Core cross section	0.2 2.5 mm <sup>2</sup> one wire 0.2 2.5 mm <sup>2</sup> fine-strand
Material	
Housing	Polyamide PA 6.6
Mass	approx. 52 g
Dimensions	6 x 90 x 69 mm (0.24 x 3.5 x 2.7 inch) (W x H x D)
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardo	ous areas
Certificate	TÜV 22 ATEX 8882 X
Marking	II 3G Ex ec IIC T4 Gc
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2018, EN IEC 60079-7:2015+A1:2018
International approvals	
UL approval	E223772
IECEx approval	
IECEx certificate	IECEx TUR 22.0052X
IECEx marking	Ex ec IIC T4 Gc
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable.



# **Matching System Components**

M-LB-	-4272	Surge Protection Barrier
M-LB-	-4282	Surge Protection Barrier
M-LB-	-4252	Surge Protection Barrier
M-LB-	-4222	Surge Protection Barrier
M-LB-	-4254	Surge Protection Barrier
M-LB-	-4224	Surge Protection Barrier
M-LB-	-4212	Surge Protection Barrier
M-LB-	-4214	Surge Protection Barrier
M-LB-	-4242	Surge Protection Barrier
M-LB-	-4244	Surge Protection Barrier
M-LB-	-Ex-4242	Surge Protection Barrier

# **Matching System Components**



M-LB-4800

Separation Wall

### По вопросам продаж и поддержки обращайтесь:

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