



Surge Protection Solutions



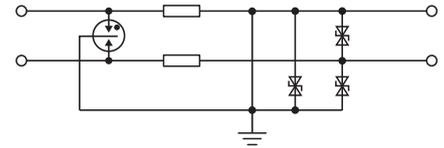
908837 (US) / 208599 (EU) 11/2010
Edition



Surge Protection Barriers provide protection for today's sensitive electronic instrumentation – protection from the destructive effects of lightning and the transient surges that accompany this phenomenon. Surge Protection Barriers are used in a wide range of applications including measurement and control, instrumentation, power, and communication. The undesired consequences of surges include both equipment damage and equipment malfunction or lockup. Damage occurs when excessive surge voltage flashes over or punctures semiconductor junctions. Semiconductors are also sensitive to accumulated over-voltage stress. Successive surges chip away at the insulating layers in a process often referred to as "electronic rust". When the equipment finally fails it is often not attributed to surges because the accumulative minor events actually caused the failure rather than a recent catastrophic event such as a localized lightning strike.

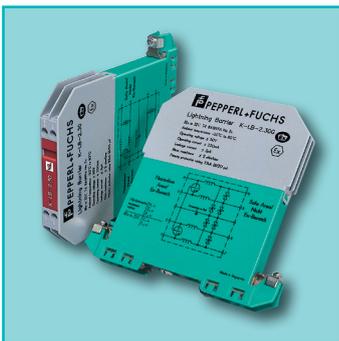
Operating principle

The Surge Protection Barrier incorporates line-to-line (differential mode) and line-to-earth (common mode) protection. This is achieved by integrating suitable "switching" elements into the Surge Protection Barrier and guaranteeing proper connection to ground. Gas discharge tubes are used in the first switching stage of a Surge Protection Barrier. They are able to clamp high voltages and divert high currents, but their slow response time still allows dangerously high energy levels to pass through. Therefore, a second element must be implemented to control the remaining energy. This silicon avalanche Transient Voltage Suppressor (TVS) diode type responds to lower voltage and current levels extremely fast, clamps the voltages to non-damaging levels, and diverts the surge currents to ground. Both protection stages are decoupled with inductance elements.



Surge Protection

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- Surge Protection Barriers for standard and hazardous area applications
- Protection for instrumentation, power, and communications
- Plug-in designs for terminal wiring reduction
- Hybrid design incorporates protection for power surge and lightning transient protection



Surge Protection

DIN Rail Mount Modules

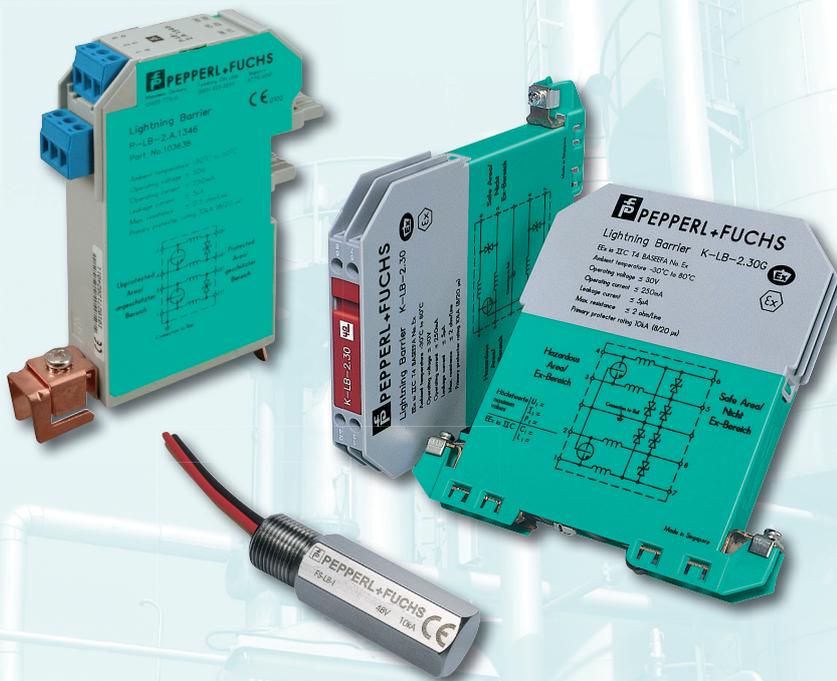
Field Mount Modules

Plug-In Modules

Accessories



Surge Protection



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Surge Protection

DIN Rail Mount
ModulesField Mount
ModulesPlug-In
Modules

Accessories





Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Introduction

To protect the signal lines of field devices and systems in the cabinet against lightning. Pepperl+Fuchs covers the complete range of Surge Protection Barriers.

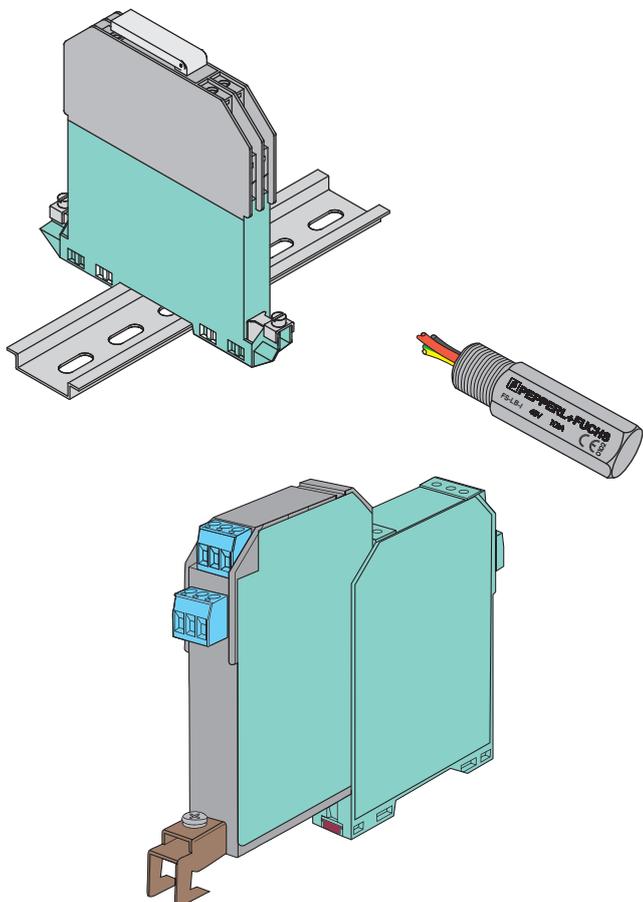


Figure 1 Various Surge Protection Barriers

Housing types

Depending on the location you have to protect, we offer 3 different versions of Surge Protection Barriers.

DIN rail mount modules (K-LB-*.**)

- Compact housing, 12.5 mm wide
- Protection of field devices and control devices
- Single and dual channel versions
- Grounded versions for Zener Barrier applications



Figure 2 Surge protection K-LB-*.**.

Field mount modules (F*-LB-I)

- Screw in type for field devices
- Protection of field devices
- 1/2 NPT, M20 and PG13.5 thread versions
- Floating versions



Figure 3 Surge protection F*-LB-I

Plug-in modules (P-LB-*.**.*)

- Plug-in version for the 20 mm devices of the K-System
- Protection of K-System inputs
- For isolated barriers and signal conditioners
- Single and dual channel versions

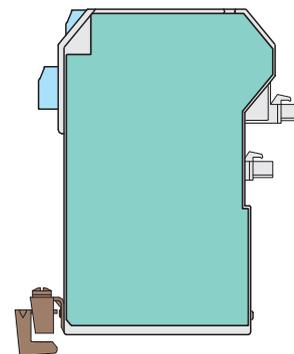


Figure 4 Surge protection P-LB-*.**..

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Mounting and grounding

The correct installation of the Surge Protection Barrier is very important. It must be ensured that the unprotected wiring does not influence the wiring on the protected side. Proper cable routing should ensure a sufficient cable distance between wires of the unprotected, earth connected and protected side. Depending on the mounting place, there are different possibilities for mounting and earthing.

Topology

To protect the electrical equipment in both the control room and the hazardous area, two Surge Protection Barriers must be integrated into the intrinsically safe circuit loop. Following the international standard EN 60079-14, intrinsically safe circuits can either be connected "at one point to the equipotential bonding system if this exists over the whole area in which the intrinsically safe circuits are installed" or "isolated from earth". International Standard EN 60079-14 states "if intrinsically safe apparatus (field devices, Surge Protection Barriers and intrinsically safe barriers) do not withstand the electrical strength test with at least 500 V from earth, a connection to earth at the apparatus is to be assumed".

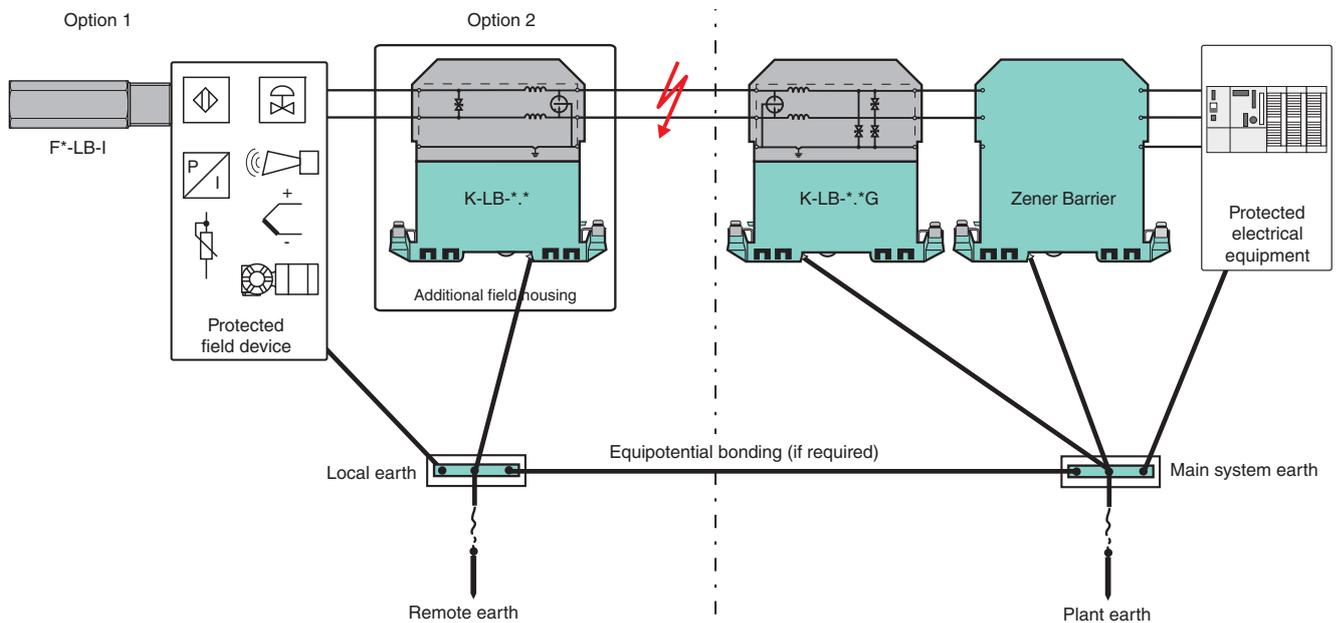


Figure 5 One point ground connection



Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

DIN rail mount modules (K-LB-*.)**

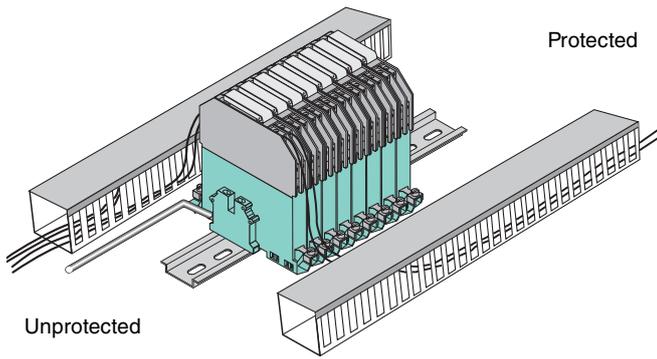


Figure 6 DIN rail mount module grounding

Field mount modules (F*-LB-I)

The screw-in F*-LB-I is screwed directly into the field device using the spare cable entry. Three wires are connected in parallel to the field device's signals and earth line.

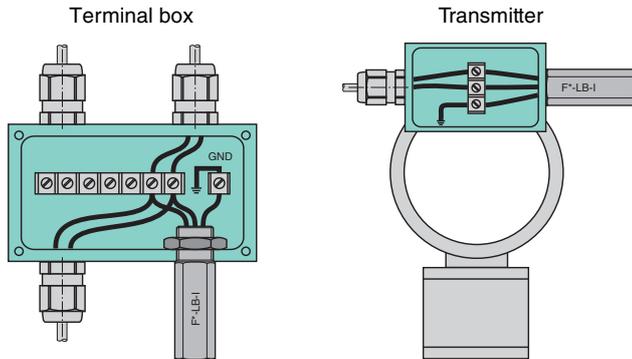


Figure 7 Field mount module grounding

Plug-in modules (P-LB-*.)**

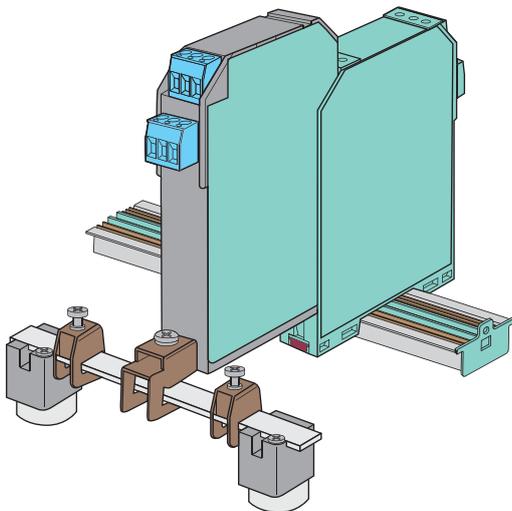


Figure 8 Plug-in module grounding

Protection

Unprotected signal loop

Since lightning-induced signals show pulse characteristics, standard circuit breakers or fuses are not able to sufficiently protect the electrical equipment. It can also be used for protection against other sources causing transient voltages like devices changing voltages or currents during switching events or exhibiting a non-linear behavior. These other sources are energy storing inductive loads, such as transformers, motors and drives. They can induce high transient voltages and surge currents on conductors that can damage connected equipment. Each electronic device in the loop should be protected with a Surge Protection Barrier.

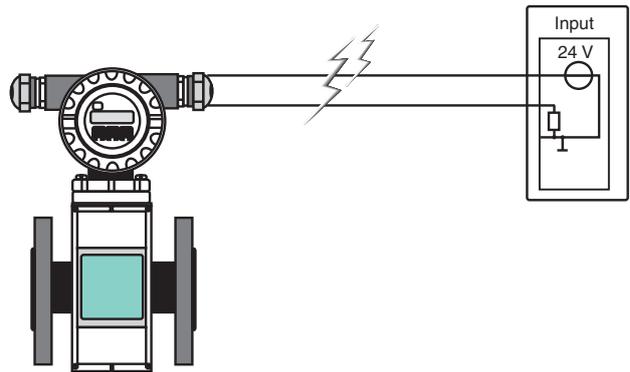


Figure 9 Unprotected signal loop

Protection of the field device

Two options are available for the protection of the field device:

Option 1

The standard DIN Rail mounted K-LB-*.** is located close to the field device. It should be placed within a field enclosure and mounted on a grounded rail. The Surge Protection Barrier must be locally bonded to control the local potential between the signal cables and the structure.

Option 2

The screw-in F*-LB-I is screwed directly into the field device using the spare cable entry. Three wires are connected in parallel to the field device's signals and earth line. This will ensure a line-to-line and line-to-earth protection.

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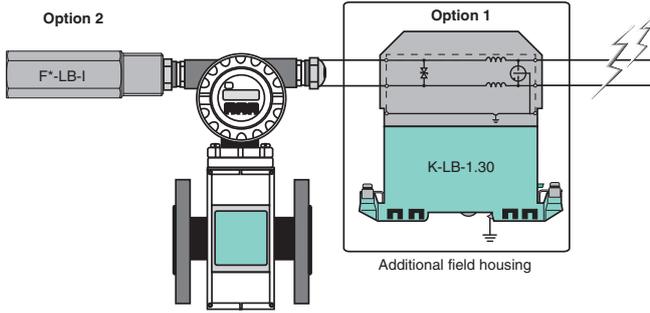


Figure 10 Protection of the field device

Protection of control side (cabinet)

Protection without isolation

To protect the Zener Barrier, a non-isolated, separately mounted Surge Protection Barrier must be installed and connected to the intrinsically safe side of the Zener Barrier. The barrier's earth connection is made, following the described guidelines, to the main system earth in parallel to the equipment and Zener Barrier earth cable.

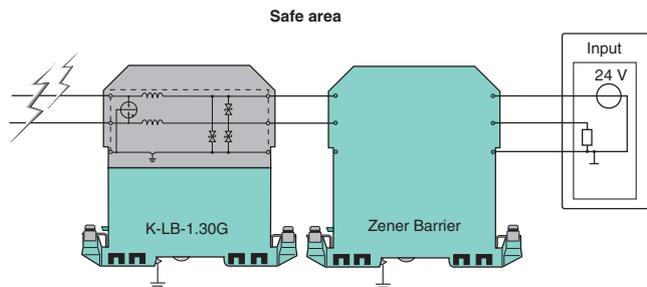


Figure 11 Protection without isolation

Protection with isolation

The entire intrinsically safe circuit is isolated from earth. The intrinsically safe barrier is an isolated barrier and no connection to the main system earth is necessary. To maintain the intrinsically safe measurement loop galvanically isolated from earth, an isolated Surge Protection Barrier must be installed at both ends of the loop. This must be close to the isolated barrier, connected to its intrinsically safe side in the safe area and close to the field device in the hazardous area, but outside Zone 0.

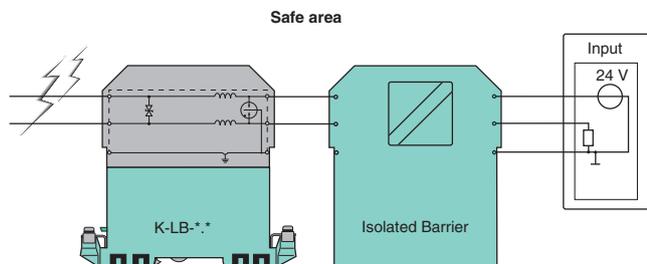


Figure 12 Protection with isolation

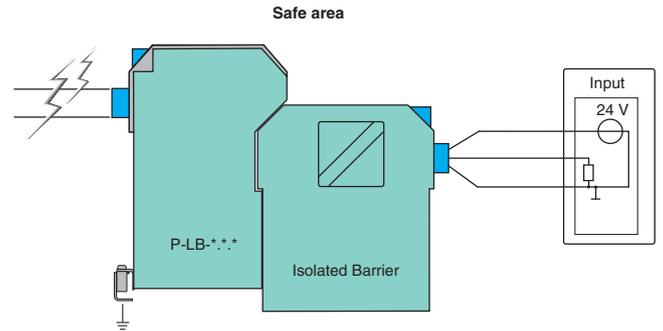
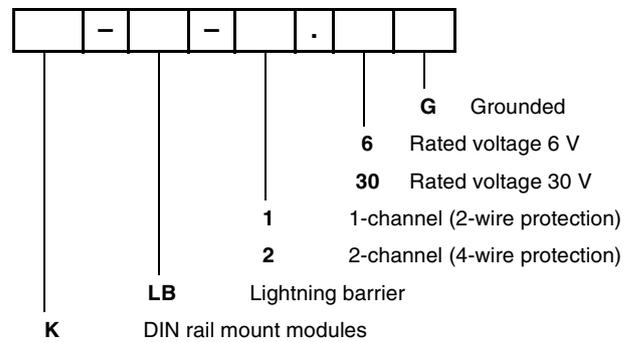


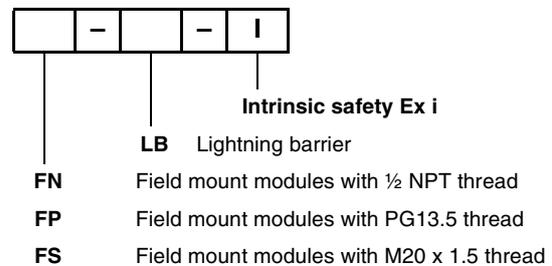
Figure 13 Protection with isolation

Model number description

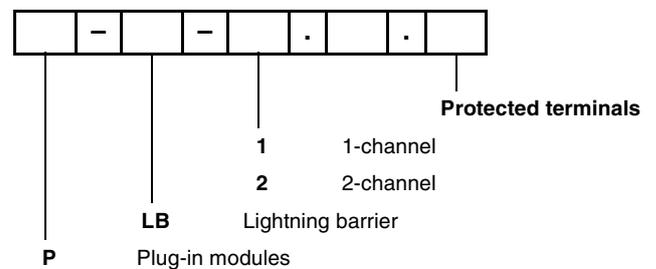
DIN rail mount modules



Field mount modules



Plug-in modules



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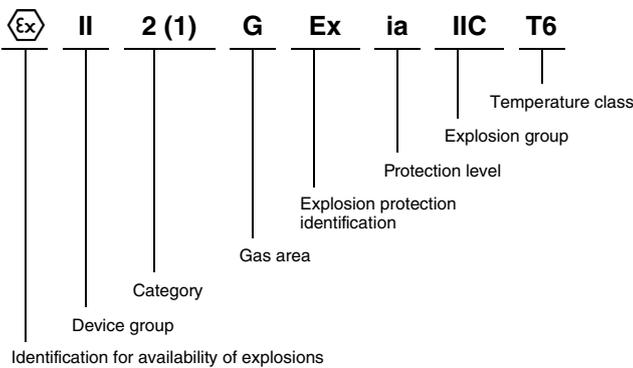
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PROTECTING YOUR PROCESS

Surge Protection
DIN Rail Mount Modules
Field Mount Modules
Plug-In Modules
Accessories

Safety Information for K-LB-*.** DIN rail mount modules

The highest ignition protection class to be reached is



The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

Surge Protection Barriers are used as modules positioned upstream in the circuit from the corresponding electrical equipment. They make it possible to protect against overvoltages originating from various causes (lightning strikes, switching processes, etc.). This is achieved by diverting the transient current and limiting the voltage throughout the duration of the overvoltage surge. Various modules are available for protecting 2 or 4 conductors.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Intrinsic safety circuits that were operated with circuits of other types of protection may not be used as intrinsically safe circuits afterwards.

Application

Surge Protection Barriers themselves can be installed within the hazardous area of Zone 1. They can be used for intrinsically safe circuits up to Ex ia IIC. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

Surge Protection Barriers are **not** used to separate intrinsically safe circuits from non-intrinsically safe circuits.

Surge Protection Barriers must **not** be installed in dust Ex-zones.

Installation and commissioning in connection with hazardous areas

Commissioning and installation must be performed only by specialists who are trained specifically for this purpose.

The quality of the ground is a significant precondition for problem-free overvoltage protection. Short connections and large cable cross-sections are basic requirements for effective protection. These requirements can be fulfilled through the use of appropriate accessories (see data sheets).

Potential compensation must be set up for Surge Protection Barriers of types K-LB-*.G along the intrinsically safe circuits inside and outside of the hazardous area

Surge Protection Barriers modules are designed in the IP20 protection class in accordance with EN 60529 and must be protected against adverse environmental conditions such as splashed water or dirt beyond pollution degree 2.

Depending on the ignition protection class, the circuits of Surge Protection Barriers may be directed in Zone 1 or 0. Special attention must be paid to a secure separation from all non-intrinsically safe circuits in this context. A shortest path distance of at least 50 mm must be maintained between intrinsically safe and non-intrinsically safe conducting terminal blocks during assembly. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.

The respective maximum values of the field device, the Surge Protection Barriers and the corresponding electrical equipment as defined by explosion protection must be observed for interconnecting with intrinsically safe electrical equipment (proof of intrinsic safety). EN 60079-14/ IEC 60079-14 must be observed (where appropriate).

Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

The EC-Type Examination Certificates or standard certificates/approvals should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

The use of this device must not change the ignition protection category of the supplying circuit. Thus, for example, ib circuits must not enter Zone 0, even if they are controlled via this device – unless otherwise stated in the related approval.

Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

Isolation coordinates for devices with Ex-certificate in accordance with EN 50020 and EN 60079-11

The devices are assessed for pollution degree 2 and overvoltage category II according to EN 50178.

For additional details, see data sheets.

Ambient conditions

Ambient temperature

-30 °C to 60 °C (-22 °F to 140 °F) for Ex application, please observe EC-Type Examination Certificate

Storage temperature

-30 °C to 80 °C (-22 °F to 176 °F)

Relative humidity

max. 75 % without moisture condensation



Surge Protection

DIN Rail Mount Modules

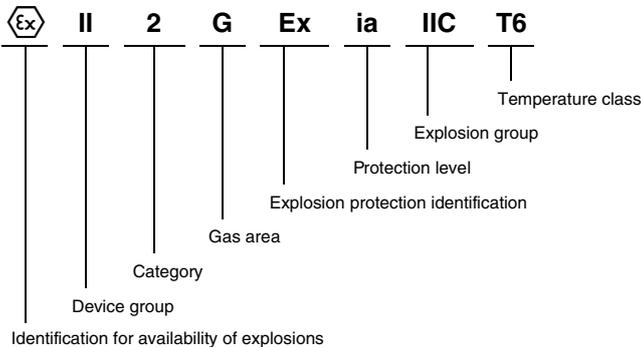
Field Mount Modules

Plug-In Modules

Accessories

Safety Information for F*-LB-I field mount modules

The highest ignition protection class to be reached is



The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

Surge Protection Barriers are used as protective modules for intrinsically safe field devices and the corresponding electrical equipment. They make it possible to protect against overvoltages originating from various causes (lightning strikes, switching processes, etc.). This is achieved by diverting the transient current and limiting the voltage throughout the duration of the overvoltage surge.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Intrinsic safety circuits that were operated with circuits of other types of protection may not be used as intrinsically safe circuits afterwards.

Application

Surge Protection Barriers themselves can be installed within the hazardous area of Zone 1. They can be used for intrinsically safe circuits up to Ex ia IIC. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

Surge Protection Barriers must **not** be installed in dust Ex-zones.

Installation and commissioning in connection with hazardous areas

Commissioning and installation must be performed only by specialists who are trained specifically for this purpose.

The quality of the ground is a significant precondition for problem-free overvoltage protection. Short connections and large cable cross-sections are basic requirements for effective protection.

Depending on the ignition protection class, the circuits of Surge Protection Barriers may be directed in Zone 1 or 0. Special attention must be paid to a secure separation from all non-intrinsically safe circuits in this context. A shortest path distance of at least 50 mm must be maintained between intrinsically safe and non-intrinsically safe conducting terminal blocks during assembly. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.

The respective maximum values of the field device, the Surge Protection Barriers and the corresponding electrical equipment as defined by explosion protection must be observed for interconnecting with intrinsically safe electrical equipment (proof of intrinsic safety). EN 60079-14/ IEC 60079-14 must be observed (where appropriate).

The EC-Type Examination Certificates or standard certificates/approvals should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

The use of this device must not change the ignition protection category of the supplying circuit. Thus, for example, ib circuits must not enter Zone 0, even if they are controlled via this device – unless otherwise stated in the related approval.

Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

Ambient conditions

Ambient temperature

-30 °C to 60 °C (-22 °F to 140 °F) for Ex application, please observe EC-Type Examination Certificate

Storage temperature

-30 °C to 80 °C (-22 °F to 176 °F)

Relative humidity

max. 75 % without moisture condensation

Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Safety Information for P-LB-*.**. plug-in modules

The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

Plug-in terminal modules are used as modules positioned upstream in the circuit from the corresponding electrical equipment. They make it possible to protect against overvoltages originating from various causes (lightning strikes, switching processes, etc.). This is achieved by diverting the transient current and limiting the voltage throughout the duration of the overvoltage surge. Various modules are available for protecting 2, 3, 4 or 6 conductors. The assignment of input connections of plug-in terminal modules/intrinsically safe equipment (binary or analog signals) corresponds to that of the following related equipment (see the corresponding data sheets). Plug-in terminal modules should only be used in combination with a device of the K-System.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Intrinsic safety circuits that were operated with circuits of other types of protection may not be used as intrinsically safe circuits afterwards.

Application

Plug-in terminal modules can be installed within the hazardous area of Zone 2/Div. 2. They can be used for intrinsically safe circuits up to Ex ia IIC. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

Plug-in terminal modules are **not** used to separate intrinsically safe circuits from non-intrinsically safe circuits.

Plug-in terminal modules must **not** be installed in dust Ex-zones.

Installation and commissioning in connection with hazardous areas

Commissioning and installation must be performed only by specialists who are trained specifically for this purpose.

The quality of the ground is a significant precondition for problem-free overvoltage protection. Short connections and large cable cross-sections are basic requirements for effective protection. These requirements can be fulfilled through the use of appropriate accessories (see data sheets).

Plug-in terminal modules are designed in the IP20 protection class in accordance with EN 60529 and must be accordingly protected against adverse environmental conditions such as splashed water or dirt beyond pollution degree 2.

Plug-in terminal modules can be installed inside the hazardous area of Zone 2/Div. 2. Since plug-in terminal modules are always used in combination with devices of the K-System, the devices of the K-System must, in this case, be suitable for use in Zone 2/Div. 2. The devices of the K-System must then be installed only in Zone 2/Div. 2 if a corresponding Declaration of Conformity for a named location or a manufacturer's Declaration of Conformity is present. For information on whether this condition has been met, please refer to the data sheets for the devices of the K-System. The instruction manual, the Declaration of Conformity of a named location or the manufacturer's Declaration of Conformity of devices of the K-System and the information in them must be followed.

Depending on the ignition protection class, the circuits of plug-in terminal modules may be directed in Zone 1 or 0. Special attention must be paid to a secure separation from all non-intrinsically safe circuits in this context. A shortest path distance of at least 50 mm must be maintained between intrinsically safe and non-intrinsically safe conducting terminal blocks during assembly. The ignition protection class is determined by the connected intrinsically safe circuit of the corresponding electrical equipment.

The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.

The respective maximum values of the field device, the plug-in terminal modules and the corresponding electrical equipment as defined by explosion protection must be observed for interconnecting with intrinsically safe electrical equipment (proof of intrinsic safety). EN 60079-14/IEC 60079-14 must be observed (where appropriate).



Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories



The EC-Type Examination Certificates or standard certificates/approvals should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

The terminal modules must be installed in such a way that they are protected from electrostatic charge.

The use of this device must not change the ignition protection category of the supplying circuit. Thus, for example, ib circuits must not enter Zone 0, even if they are controlled via this device – unless otherwise stated in the related approval.

Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

Isolation coordinates for devices with Ex-certificate in accordance with EN 50020 and EN 60079-11

The devices are assessed for pollution degree 2 and overvoltage category II according to EN 50178.

Ambient conditions

Ambient temperature

-20 °C to 60 °C (-4 °F to 140 °F)

Storage temperature

-30 °C to 80 °C (-22 °F to 176 °F)

Relative humidity

max. 75 % without moisture condensation

Technical data

For additional details, see data sheets.

DIN Rail Mount Modules

Model Number	Channels	Rated Voltage (V)	Grounded	Page
K-LB-1.30	1	30		501
K-LB-2.30	2	30		502
K-LB-1.6	1	6		503
K-LB-2.6	2	6		504
K-LB-1.30G	1	30	■	505
K-LB-2.30G	2	30	■	506
K-LB-1.6G	1	6	■	507
K-LB-2.6G	2	6	■	508

Field Mount Modules

Model Number	Channels	Rated Voltage (V)	Thread	Page
FN-LB-I	1	48	½ NPT	509
FS-LB-I	1	48	M20 x 1.5	510
FP-LB-I	1	48	PG13.5	511



Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories





Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Plug-In Modules

Model Number	Channels	Rated Voltage (V)	For Terminals	Page
P-LB-1.A.13	1	30	1, 3	512
P-LB-2.A.1346	2	30	1, 3; 4, 6	513
P-LB-1.B.12	1	30	1, 2	514
P-LB-2.B.1245	2	30	1, 2; 4, 5	515
P-LB-1.C.123	1	30	1, 2, 3	516
P-LB-2.D.123456	2	30	1, 2, 3; 4, 5, 6	517
P-LB-1.E.23	1	30	2, 3	518
P-LB-2.C.2356	2	30	2, 3; 5, 6	519
P-LB-1.D.1234	1	30	1, 2, 3, 4	520
P-LB-1.F.1236	1	30	1, 2, 3, 6	521

Accessories for DIN Rail Mount Modules

Model Number	Description	Page
NS 35/7.5	35 mm DIN Rail	523
USLKG5	Terminal Block	523
ZH-ES/LB	Insertion Strip	523
ZH-Z.BT	Label Carrier	523

Accessories for Plug-in Modules

Model Number	Description	Page
ZH-Z.AB/SS	Mounting Block	523
ZH-Z.AK16	Connector	523
ZH-Z.AR.85	Spacing Roller	523
ZH-Z.NLS-Cu3/10	Grounding Rail	523

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Technical data

Supply	
Connection	terminals 7, 8; 1, 2
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 μA
On-state voltage	≤ 45 V
Ground insulation	500 V breakdown voltage
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- DIN rail mount module
- For 30 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Provides 500 V DC of isolation
- Uninterruptable operation (auto reset)

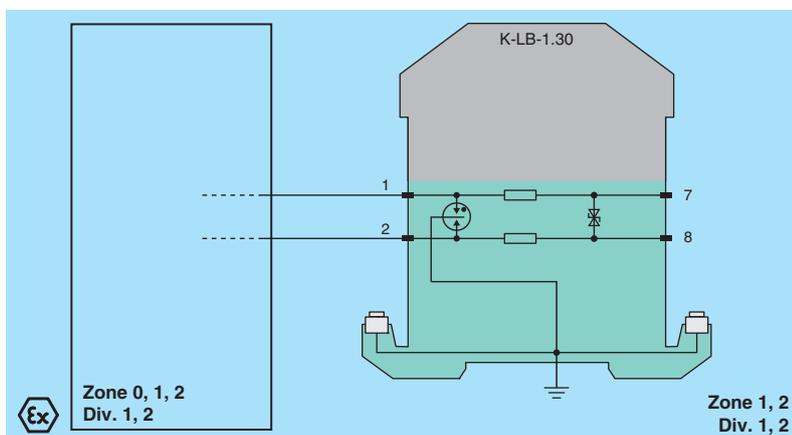
Function

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.

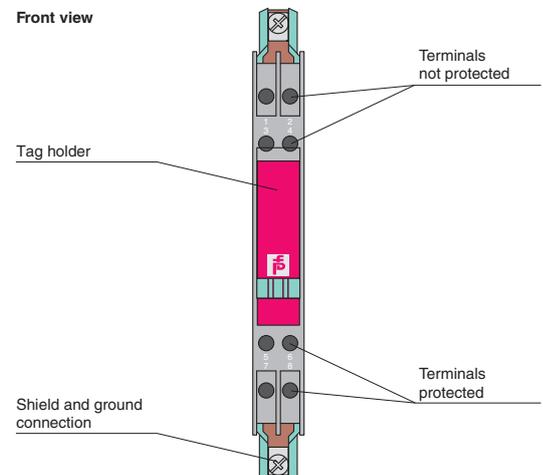
This barrier provides low 45 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have more than 500 V isolation-to-ground, such as intrinsic safety isolated barriers, signal conditioners and most field instruments. For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Diagrams



Front view



Features

- 2-channel
- DIN rail mount module
- For 30 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Provides 500 V DC of isolation
- Uninterruptable operation (auto reset)

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 low 45 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have more than 500 V isolation-to-ground, such as intrinsic safety isolated barriers, signal conditioners and most field instruments.

For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Technical data

Supply

Connection	terminals 1, 2; 7, 8/3, 4; 5, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	500 V breakdown voltage

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
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Mechanical specifications

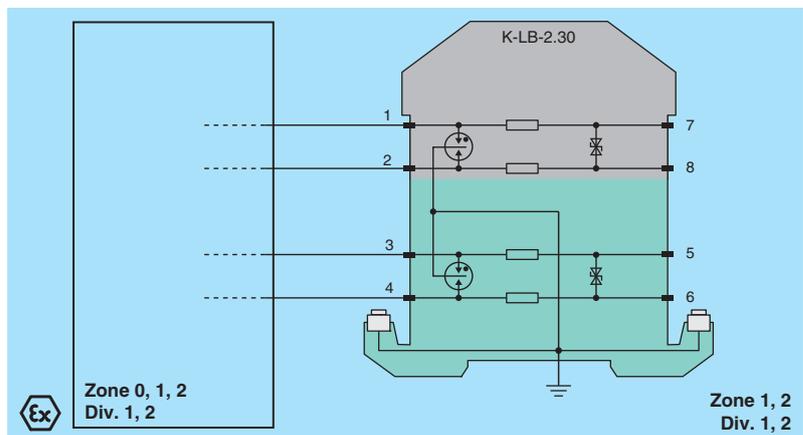
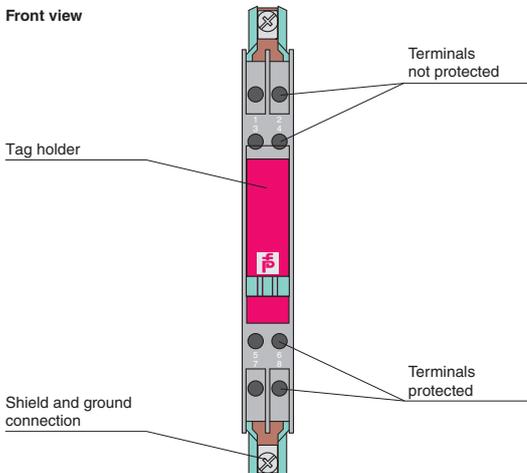
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)

Data for application in connection with Ex-areas

EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Supply	
Connection	terminals 7, 8; 1, 2
Rated voltage	≤ 6 V
Rated current	≤ 250 mA
Leakage current	≤ 10 μA
On-state voltage	≤ 12 V
Ground insulation	500 V breakdown voltage
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)
Data for application in connection with Ex-areas	see page 522 for entity parameters
EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- DIN rail mount module
- For 6 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Provides 500 V DC of isolation
- Uninterruptable operation (auto reset)

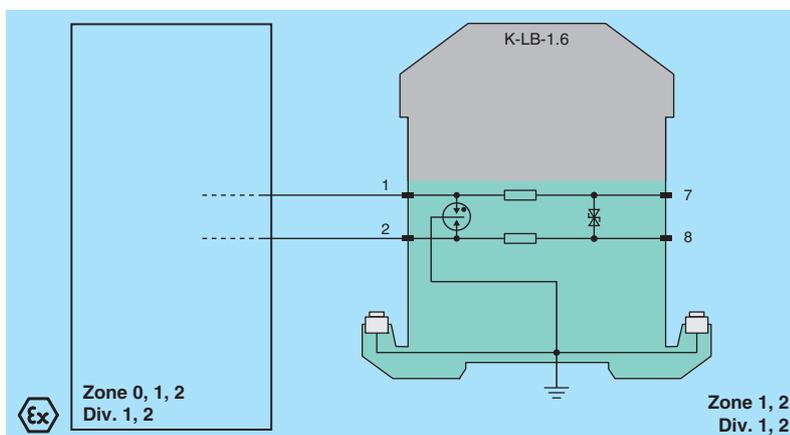
Function

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.

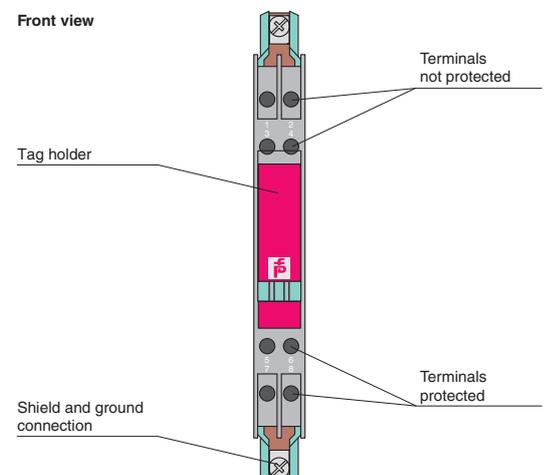
This barrier provides low 12 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have more than 500 V isolation-to-ground, such as intrinsic safety isolated barriers, signal conditioners and most field instruments. For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Diagrams



Front view





Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Features

- 2-channel
- DIN rail mount module
- For 6 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Provides 500 V DC of isolation
- Uninterruptable operation (auto reset)

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 low 12 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have more than 500 V isolation-to-ground, such as intrinsic safety isolated barriers, signal conditioners and most field instruments.

For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Technical data

Supply

Connection	terminals 1, 2; 7, 8/3, 4; 5, 6
Rated voltage	≤ 6 V
Rated current	≤ 250 mA
Leakage current	≤ 10 µA
On-state voltage	≤ 12 V
Ground insulation	500 V breakdown voltage

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
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Mechanical specifications

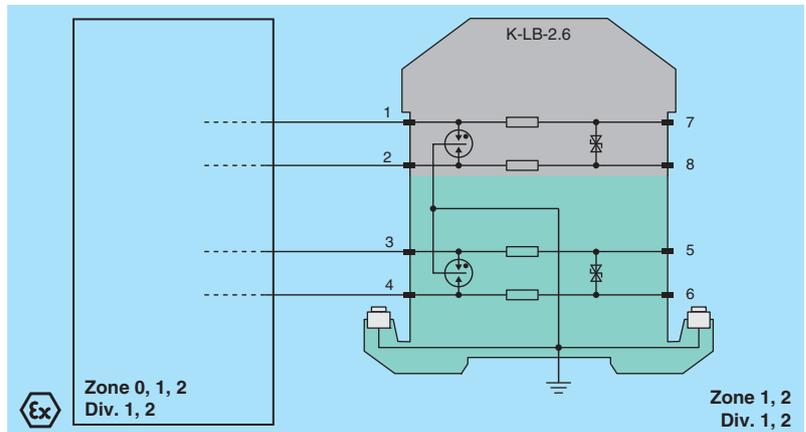
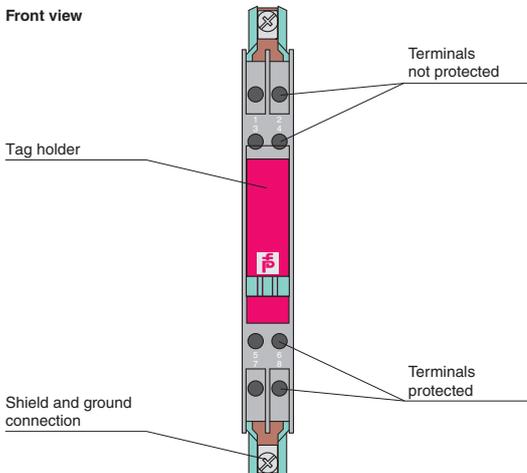
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)

Data for application in connection with Ex-areas

EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010



Technical data	
Supply	
Connection	terminals 7, 8; 1, 2
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)
Data for application in connection with Ex-areas	see page 522 for entity parameters
EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- DIN rail mount module
- For 30 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Uninterruptable operation (auto reset)

Function

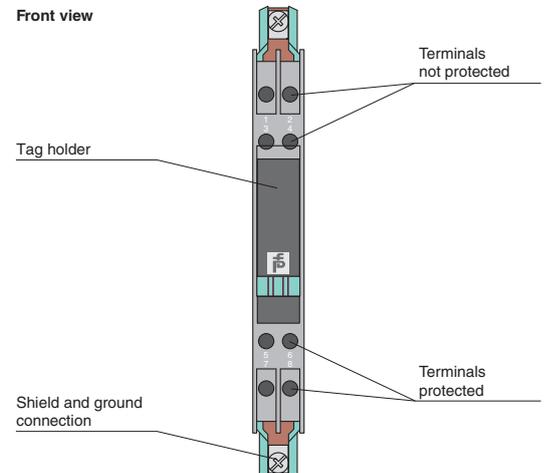
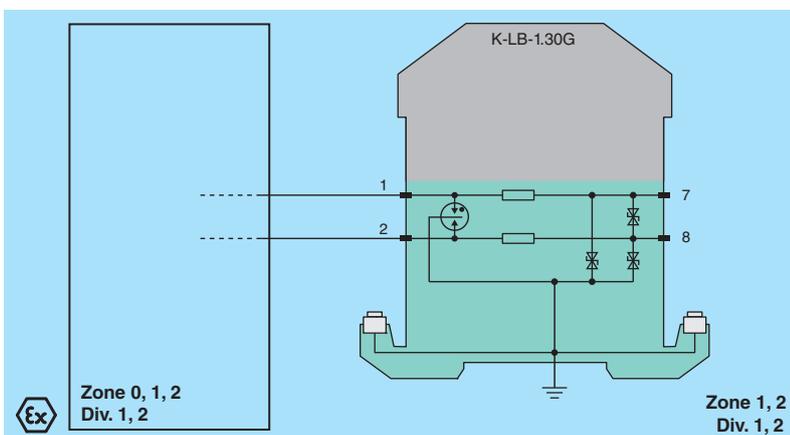
This Surge Protection Barrier limits induced transients of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

This barrier provides a low line-to-line and line-to-ground clamping voltage for the protected instrument. It also protects instruments that have less than 500 V isolation-to-ground, such as Zener Barriers, standard I/O cards, and some field instruments.

For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Diagrams



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Subject to modifications without notice

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PEPPERL+FUCHS 505
PROTECTING YOUR PROCESS

Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Features

- 2-channel
- DIN rail mount module
- For 30 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Uninterruptable operation (auto reset)

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 a low line-to-line and line-to-ground clamping voltage for the protected instrument. It also protects instruments that have less than 500 V isolation-to-ground, such as Zener Barriers, standard I/O cards, and some field instruments.

For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Technical data

Supply

Connection	terminals 1, 2; 7, 8/3, 4; 5, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
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Mechanical specifications

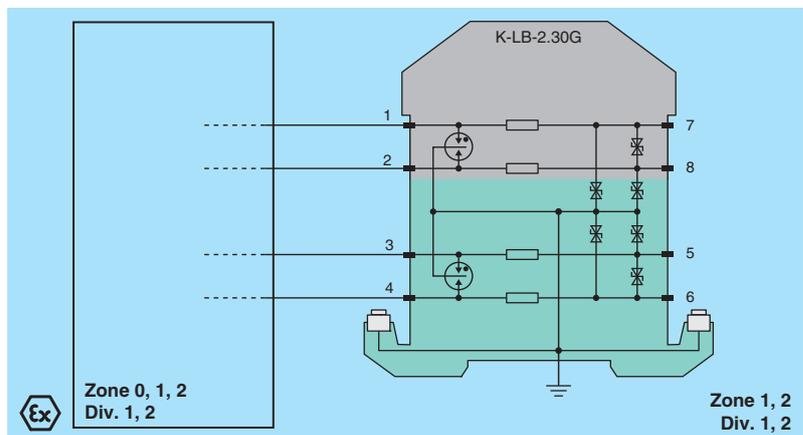
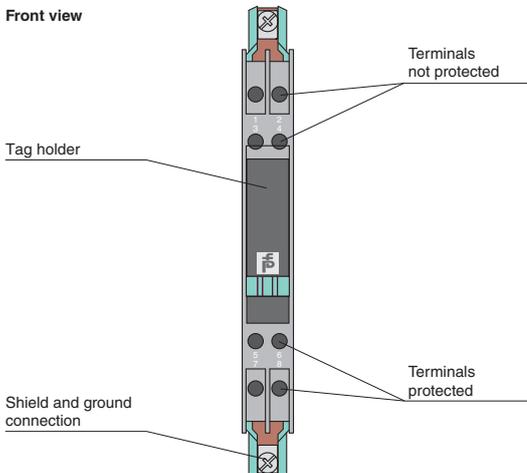
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)

Data for application in connection with Ex-areas

EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	Ex II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Supply	
Connection	terminals 7, 8; 1, 2
Rated voltage	≤ 6 V
Rated current	≤ 250 mA
Leakage current	≤ 5 μA
On-state voltage	≤ 12 V
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)
Data for application in connection with Ex-areas	see page 522 for entity parameters
EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- DIN rail mount module
- For 6 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Uninterruptable operation (auto reset)

Function

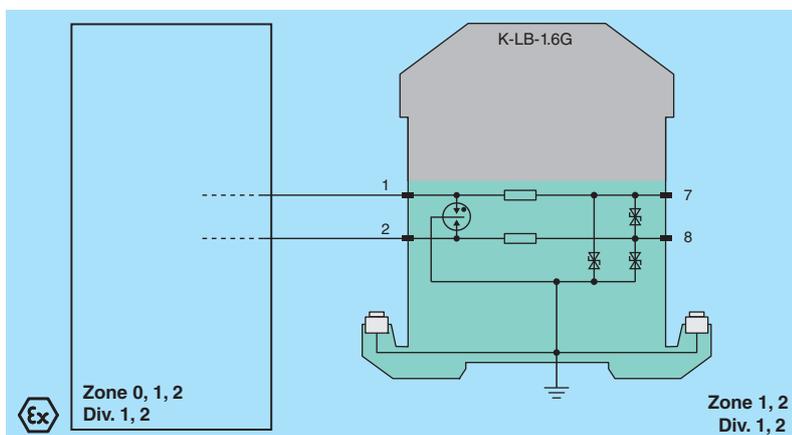
This Surge Protection Barrier limits induced transients of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level for the duration of the surge.

This barrier provides a low line-to-line and line-to-ground clamping voltage for the protected instrument. It also protects instruments that have less than 500 V isolation-to-ground, such as Zener Barriers, standard I/O cards, and some field instruments.

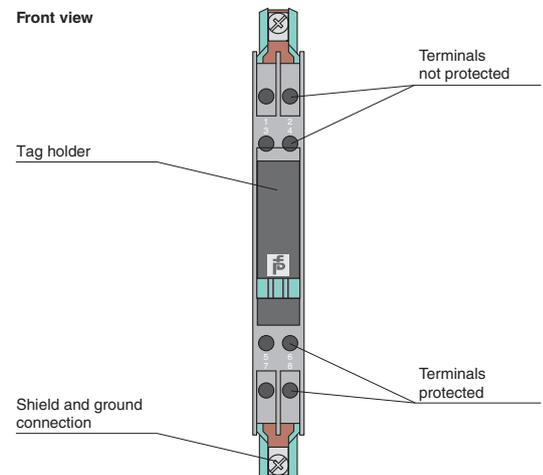
For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Diagrams



Front view





Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Features

- 2-channel
- DIN rail mount module
- For 6 V IS or Non-IS applications
- Protects field or control circuit inputs
- Surge protection up to 10 kA
- Uninterruptable operation (auto reset)

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 a low line-to-line and line-to-ground clamping voltage for the protected instrument. It also protects instruments that have less than 500 V isolation-to-ground, such as Zener Barriers, standard I/O cards, and some field instruments.

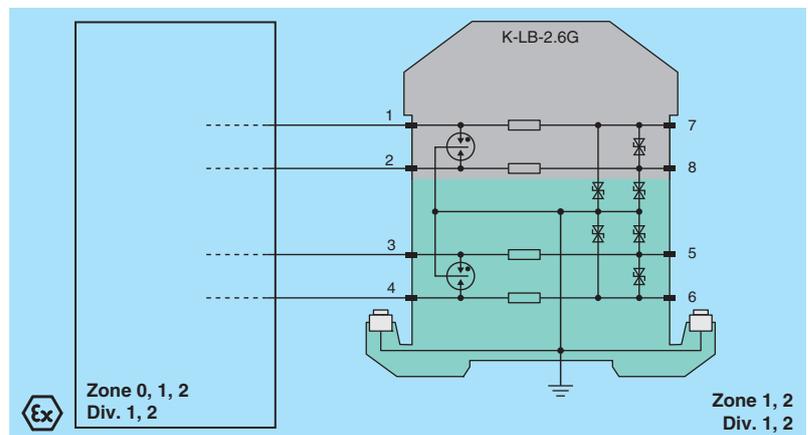
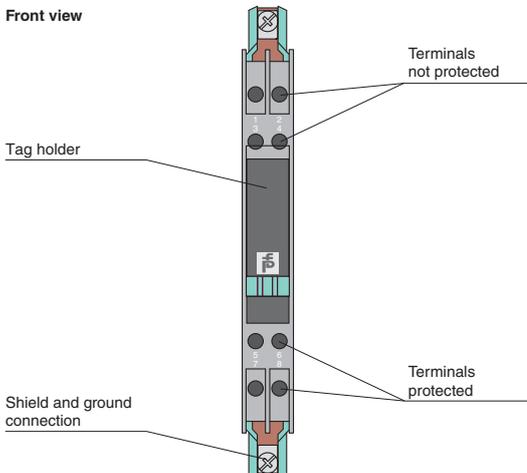
For additional information, refer to the manual and www.pepperl-fuchs.com.

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.

Technical data

Supply	
Connection	terminals 1, 2; 7, 8/3, 4; 5, 6
Rated voltage	≤ 6 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 12 V
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Dimensions	12.5 x 114 x 110 mm (0.5 x 4.5 x 4.3 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 00 ATEX 2176X
Group, category, type of protection, temperature classification	⊕ II 2(1)G Ex ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Supply	
Rated voltage	≤ 48 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 85 V
Ground insulation	≥ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Housing material	stainless steel 1.4401 (AISI 316) surface all over polished
Protection degree	IP20
Cable	
Length L	0.4 m
Mass	approx. 200 g
Dimensions	AF22 x 77 mm (0.9 x 3 in)
Mounting	½ NPT thread
Data for application in connection with Ex-areas	see page 522 for entity parameters
EC-Type Examination Certificate	PTB 00 ATEX 2175
Group, category, type of protection, temperature classification	⊕ II 2G EEx ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- Field mount module
- ½ NPT thread
- Stainless steel housing
- Discharge current 10 kA
- 500 V isolation from earth
- Suitable for hazardous area

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.

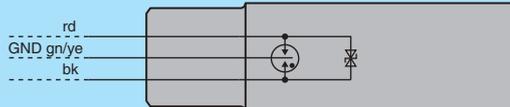
This barrier provides 85 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have less than 500 V isolation-to-ground.

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 www.pepperl-fuchs.com.

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.

Diagrams



 Zone 1, 2
Div. 1, 2



Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories



Features

- 1-channel
- Field mount module
- M20 x 1.5 thread
- Stainless steel housing
- Discharge current 10 kA
- 500 V isolation from earth
- Suitable for hazardous area

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 www.pepperl-fuchs.com.

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.

Technical data

Supply

Rated voltage	≤ 48 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 85 V
Ground insulation	≥ 500 V breakdown voltage

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
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Mechanical specifications

Housing material	stainless steel 1.4401 (AISI 316) surface all over polished
Protection degree	IP20

Cable

Length L	0.4 m
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Mass	approx. 200 g
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Dimensions	AF22 x 77 mm (0.9 x 3 in)
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Mounting	M20 x 1.5 thread
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Data for application in connection with Ex-areas	see page 522 for entity parameters
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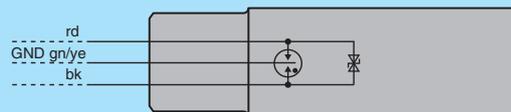
EC-Type Examination Certificate	PTB 00 ATEX 2175
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Group, category, type of protection, temperature classification	⊕ II 2G EEx ia IIC T6
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CSA approval

Control drawing	116-0187 (cCSAus)
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Diagrams



Edition 11/2010 908837 (US) / 208599 (EU)

Technical data

Supply	
Rated voltage	≤ 48 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 85 V
Ground insulation	≥ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-30 ... 60 °C (-22 ... 140 °F) for Ex application, please observe EC-Type Examination Certificate
Mechanical specifications	
Housing material	stainless steel 1.4401 (AISI 316) surface all over polished
Protection degree	IP20
Cable	
Length L	0.4 m
Mass	approx. 200 g
Dimensions	AF22 x 77 mm (0.9 x 3 in)
Mounting	PG13.5 thread
Data for application in connection with Ex-areas	see page 522 for entity parameters
EC-Type Examination Certificate	PTB 00 ATEX 2175
Group, category, type of protection, temperature classification	⊕ II 2G EEx ia IIC T6
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- Field mount module
- PG13.5 thread
- Stainless steel housing
- Discharge current 10 kA
- 500 V isolation from earth
- Suitable for hazardous area

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.

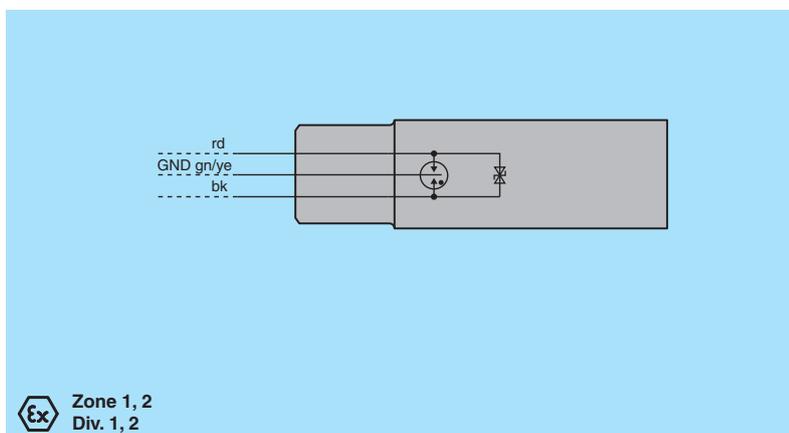
This barrier provides 85 V line-to-line and 500 V line-to-ground clamping voltage for the protected instruments. It also protects instruments that have less than 500 V isolation-to-ground.

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 www.pepperl-fuchs.com.

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.

Diagrams



Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

512

Features

- 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)

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 www.pepperl-fuchs.com.

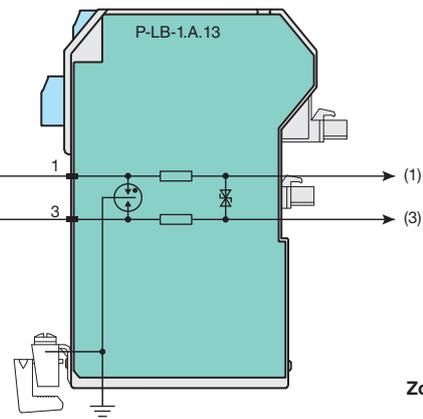
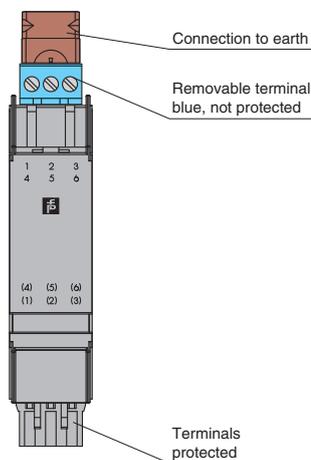
Note: Surge Protection Barriers must always be connected to a solid and effective ground and be at the same equipotential level as the instrument it is protecting. The ground system must comply with all applicable regulations.

Technical data

Signal lines	
Connection	terminals 1, 3
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	Ex II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Signal lines	
Connection	terminals 1, 3; 4, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	⊕ II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 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)

Function

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

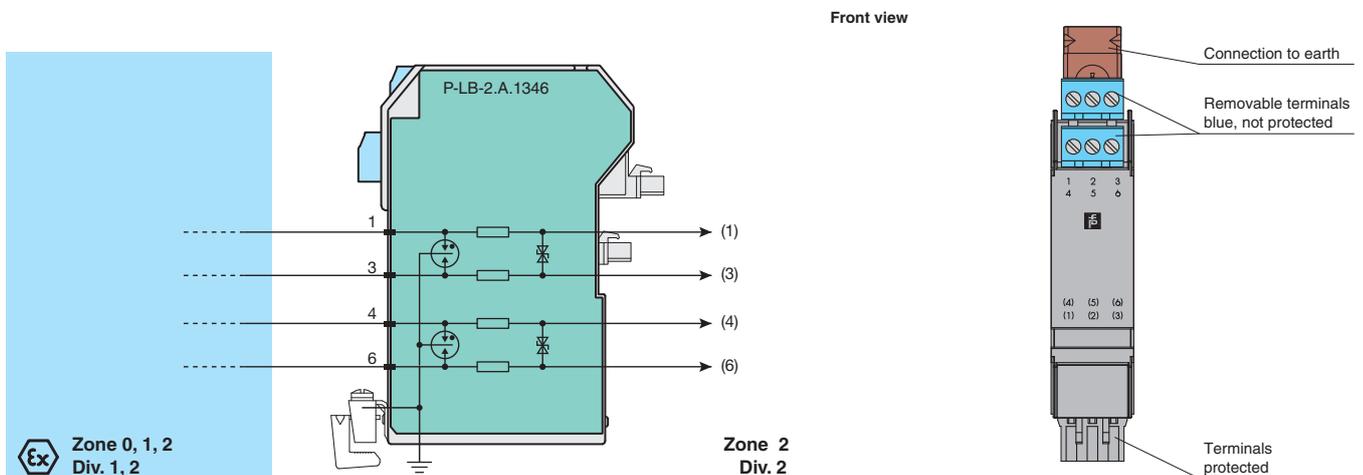
By simply snapping the barriers into a standard KF module, the modules are safely protected against voltage surges of different origin (e. g. lightning stroke, switching impulse, etc.). This is achieved by diverting the transient current to ground and limiting the signal line voltage to a safe level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

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.

Diagrams



Edition 908837 (US) / 208599 (EU) 11/2010

⊕ Zone 0, 1, 2
Div. 1, 2

Zone 2
Div. 2

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Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Surge Protection

DIN Rail Mount Modules

Field Mount Modules

Plug-In Modules

Accessories

Features

- 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)**

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.

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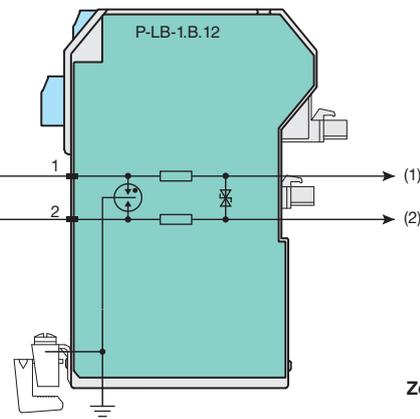
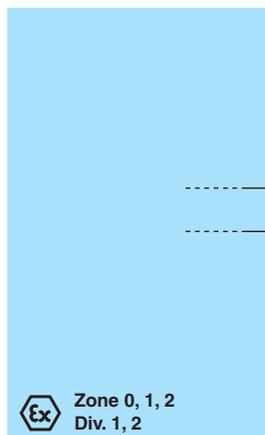
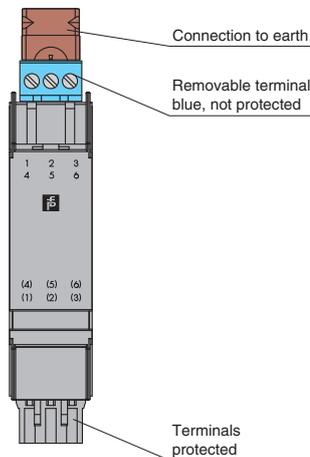
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Technical data

Signal lines	
Connection	terminals 1, 2
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	Ex II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Zone 2
Div. 2

Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Signal lines	
Connection	terminals 1, 2; 4, 5
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	⊕ II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 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)

Function

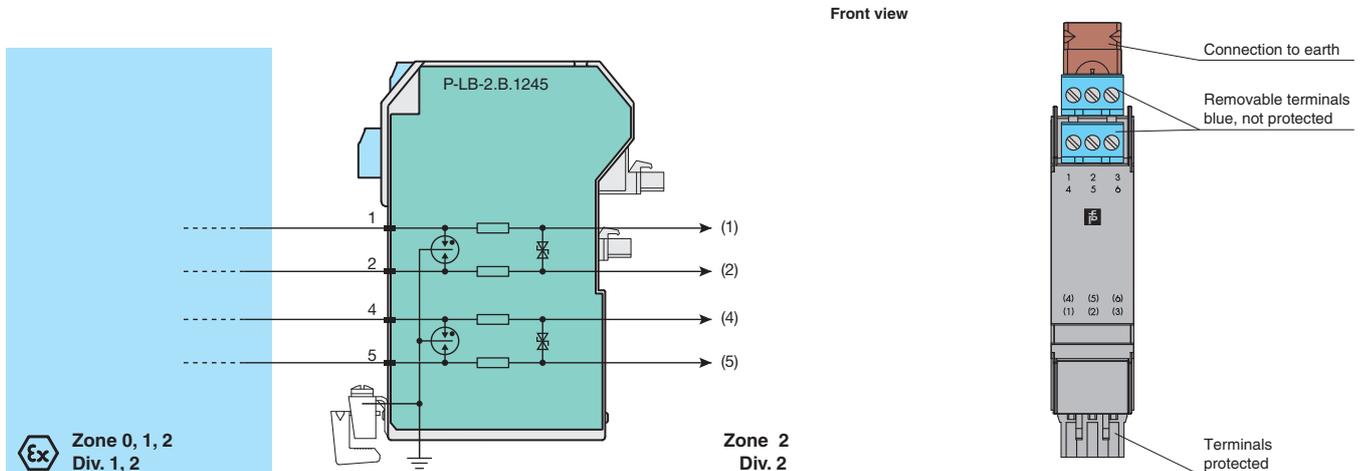
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Diagrams

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Accessories

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Accessories

Features

- 1-channel
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- Analog or digital signal inputs
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- Protects leads 1, 2 and 3 of KF modules
- Uninterruptable operation (auto reset)

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.

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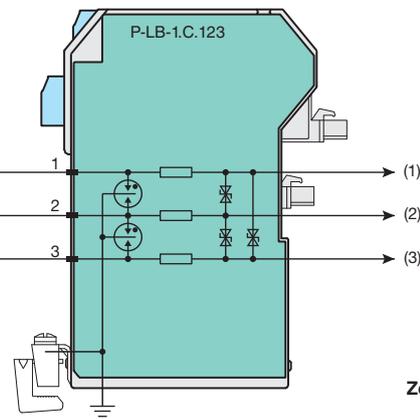
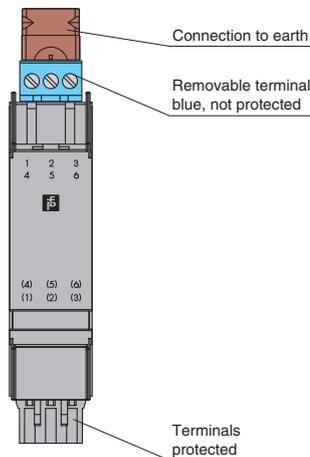
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Technical data

Signal lines	
Connection	terminals 1, 2, 3
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
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Group, category, type of protection	Ex II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Technical data

Signal lines	
Connection	terminals 1, 2, 3; 4, 5, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 μA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
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Control drawing	116-0187 (cCSAus)

Features

- 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)

Function

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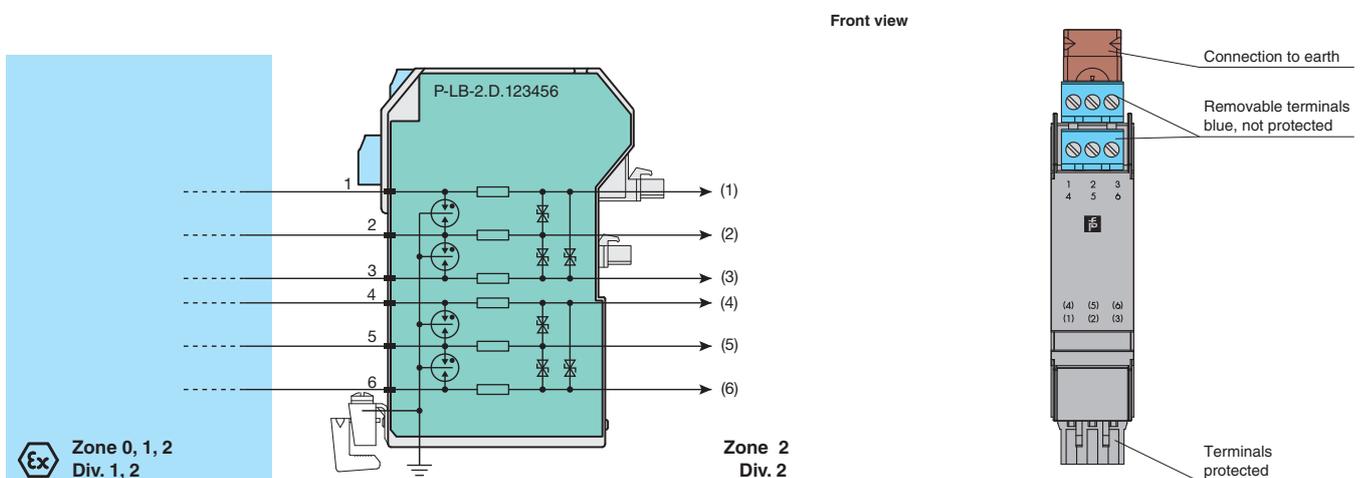
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Diagrams



Edition 908837 (US) / 208599 (EU) 11/2010

Zone 0, 1, 2
Div. 1, 2

Zone 2
Div. 2

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Surge Protection

DIN Rail Mount Modules

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Accessories

Surge Protection

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Features

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
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- Protects leads 2 and 3 of KF modules
- Uninterruptable operation (auto reset)

Function

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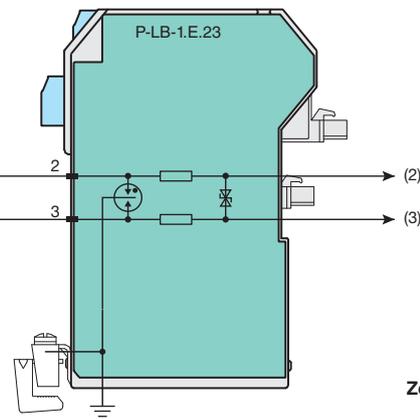
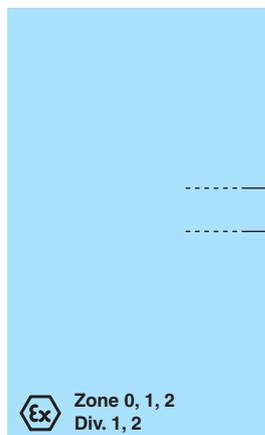
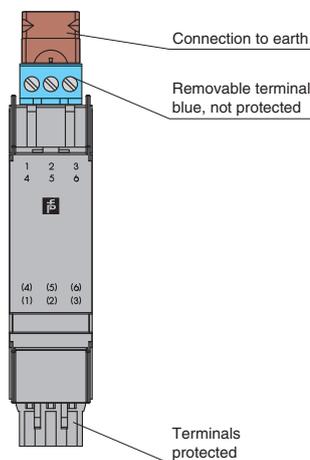
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Technical data

Signal lines	
Connection	terminals 2, 3
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	Ex II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Signal lines	
Connection	Terminals 2, 3; 5, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 μA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
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CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 2-channel
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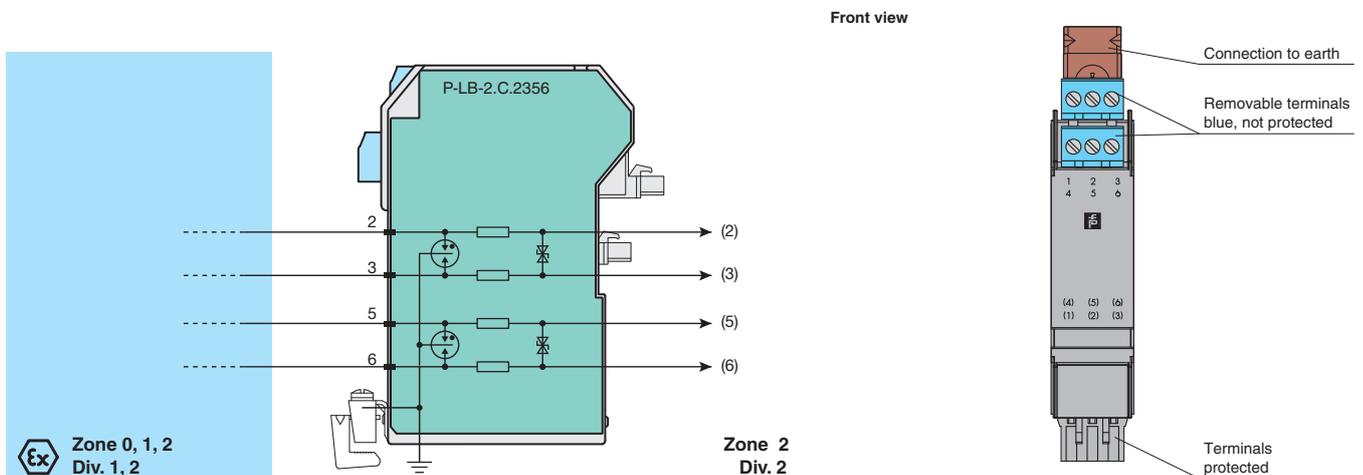
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Diagrams



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Zone 0, 1, 2
Div. 1, 2

Zone 2
Div. 2

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Accessories

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Features

- 1-channel
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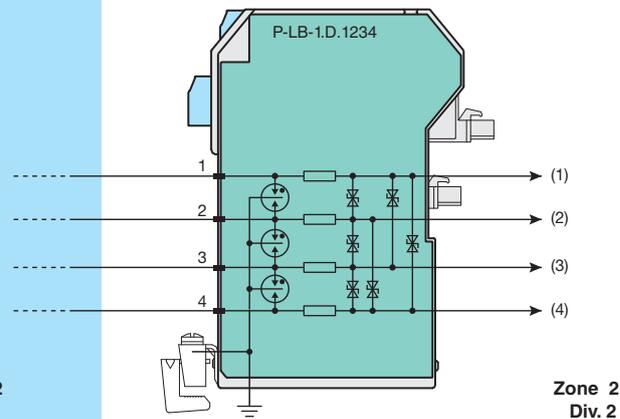
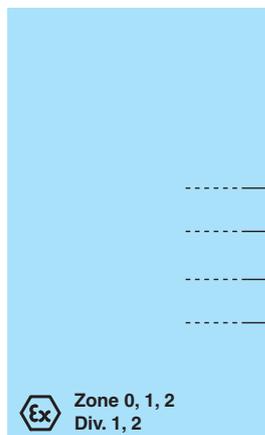
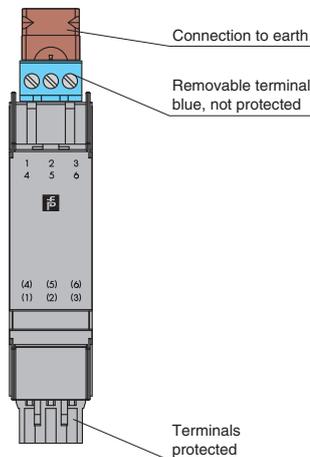
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Technical data

Signal lines	
Connection	terminals 1, 2, 3, 4
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 µA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 70 g
Dimensions	20 x 62 x 115 mm (0.8 x 2.4 x 4.5 in)
Data for application in connection with Ex-areas	
EC-Type Examination Certificate	PTB 02 ATEX 2044
Group, category, type of protection	Ex II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Diagrams

Front view



Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Signal lines	
Connection	terminals 1, 2, 3, 6
Rated voltage	≤ 30 V
Rated current	≤ 250 mA
Leakage current	≤ 5 μA
On-state voltage	≤ 45 V
Ground insulation	≤ 500 V breakdown voltage
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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Group, category, type of protection	⊕ II (1)G [EEx ia] IIC
CSA approval	
Control drawing	116-0187 (cCSAus)

Features

- 1-channel
- Plugs directly in to field side of KF modules
- Analog or digital signal inputs
- Surge protection up to 10 kA
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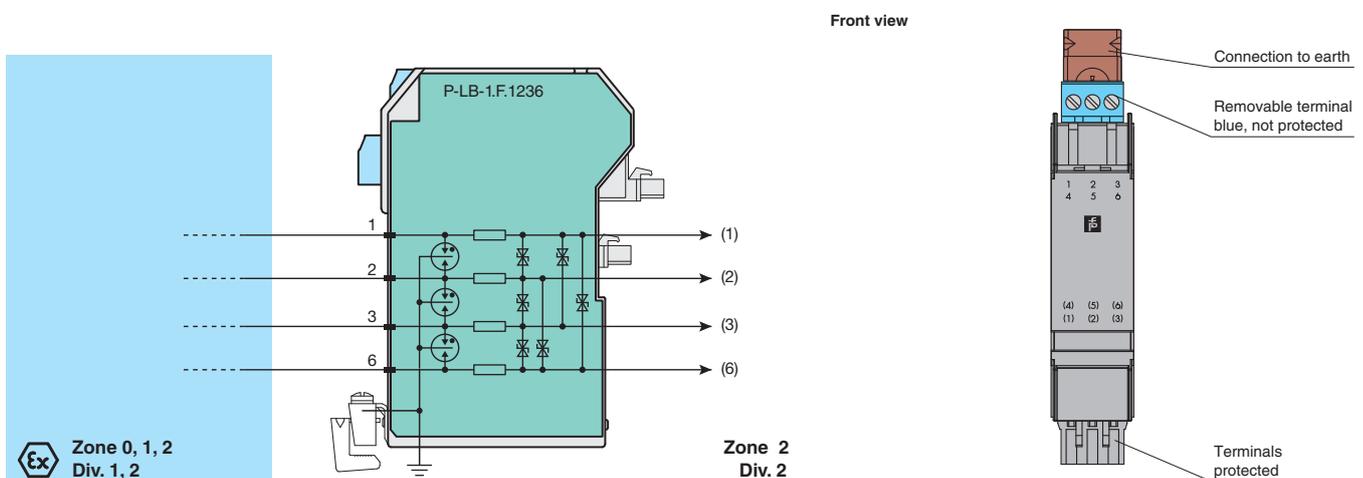
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Accessories

ATEX Entity Parameters

Model Number	Terminals	U_i (V)	I_i (mA)
K-LB-1.30	1, 2	30	250
K-LB-2.30	1, 2; 3, 4	30	250
K-LB-1.6	1, 2	6	250
K-LB-2.6	1, 2; 3, 4	6	250
K-LB-1.30G	1, 2	30	250
K-LB-2.30G	1, 2; 3, 4	30	250
K-LB-1.6G	1, 2	6	250
K-LB-2.6G	1, 2; 3, 4	6	250
FN-LB-I	red, black	50	–
FP-LB-I	red, black	50	–
FS-LB-I	red, black	50	–
P-LB-1.A.13	1, 3	30	250
P-LB-2.A.1346	1, 3; 4, 6	30	250
P-LB-1.B.12	1, 2	30	250
P-LB-2.B.1245	1, 2; 4, 5	30	250
P-LB-1.C.123	1, 2, 3	30	250
P-LB-2.D.123456	1, 2, 3; 4, 5, 6	30	250
P-LB-1.E.23	2, 3	30	250
P-LB-2.C.2356	2, 3; 5, 6	30	250
P-LB-1.D.1234	1, 2, 3, 4	30	250
P-LB-1.F.1236	1, 2, 3, 6	30	250

CSA Entity Parameters

Model Number	Terminals	V_{max} (V)	I_{max} (mA)
K-LB-1.30	1, 2	40	250
K-LB-2.30	1, 2; 3, 4	40	250
K-LB-1.6	1, 2	40	250
K-LB-2.6	1, 2; 3, 4	40	250
K-LB-1.30G	1, 2	40	250
K-LB-2.30G	1, 2; 3, 4	40	250
K-LB-1.6G	1, 2	40	250
K-LB-2.6G	1, 2; 3, 4	40	250
FN-LB-I	red, black	48	250
FP-LB-I	red, black	48	250
FS-LB-I	red, black	48	250
P-LB-1.A.13	1, 3	40	250
P-LB-2.A.1346	1, 3; 4, 6	40	250
P-LB-1.B.12	1, 2	40	250
P-LB-2.B.1245	1, 2; 4, 5	40	250
P-LB-1.C.123	1, 2, 3	40	250
P-LB-2.D.123456	1, 2, 3; 4, 5, 6	40	250
P-LB-1.E.23	2, 3	40	250
P-LB-2.C.2356	2, 3; 5, 6	40	250
P-LB-1.D.1234	1, 2, 3, 4	40	250
P-LB-1.F.1236	1, 2, 3, 6	40	250

**35 mm DIN Rail
NS 35/7.5**

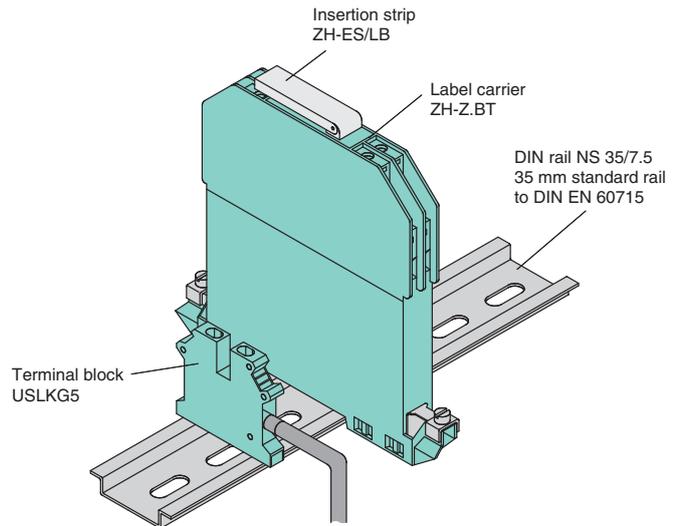
**Insertion Strip
ZH-ES/LB**

**Label Carrier
ZH-Z.BT**

**Terminal Block
USLKG5**

Function

DIN rail mount module grounding



**Mounting Block
ZH-Z.AB/SS**

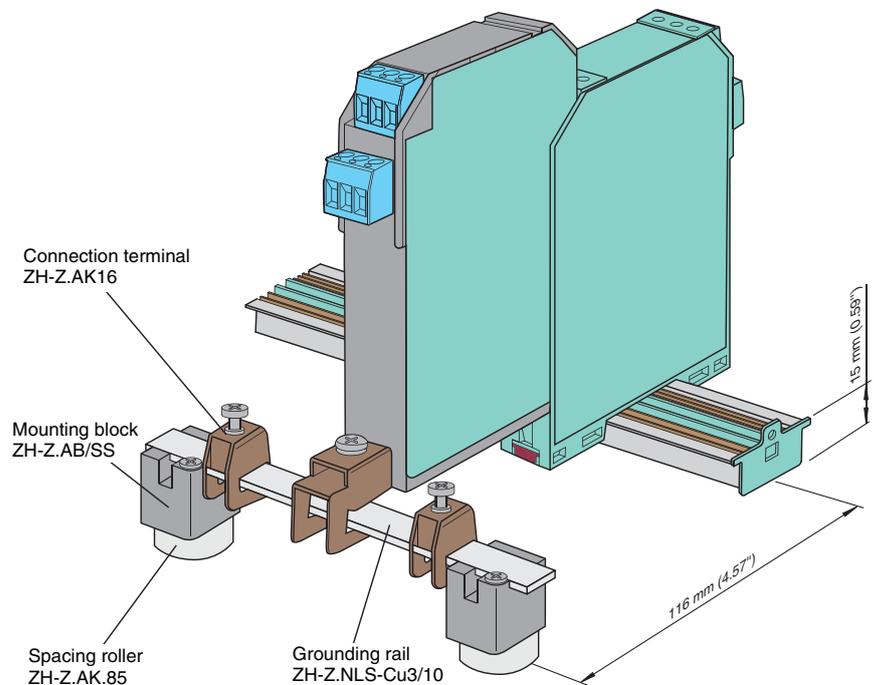
**Connector
ZH-Z.AK16**

**Spacing Roller
ZH-Z.AR.85**

**Grounding Rail
ZH-Z.NLS-Cu3/10**

Function

Plug-in module grounding



Notes

When mounting on 35 mm DIN rail:

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

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



Surge Protection

DIN Rail Mount
Modules

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