Surface Protectors

DP-LBF-I1.36.DE and DP-LBF-I1.36.IE

Manual



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1 Safety 4
1.1 Validity 4
1.2 Symbols Used 4
1.3 System Operator and Personnel 5
1.4 Pertinent Laws, Standards, Directives, and further Documentation 5
1.5 Delivery, Transport, and Storage 5
1.6 Intended Use 5
1.7 Mounting and Installation in Hazardous Areas 5
1.8 Housing 6
1.9 Repair and Servicing 6
1.10 Disposal 7
2 Product Specifications 8
2.1 Overview and Application 8
2.2 Component Overview 8
2.3 Dimensions 11
3 Installation and Commissioning 12
3.1 Mounting 12
3.2 Connection 13
3.3 Shielding and Grounding the Cable Shield 13
4 Dismounting the Surge Protector 14

1 Safety

1.1 Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

1.2 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:



Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.



Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.



Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols



Note

This symbol brings important information to your attention.



Tip

This symbol brings an useful tip to your attention.



Example

This symbol provides an example of the issue described.



Action

1. This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

2026-01

1.3 System Operator and Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the device. The trained and qualified personnel must have read and understood the instruction manual.

1.4 Pertinent Laws, Standards, Directives, and further Documentation

Observe directives, standards, and national laws applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

1.5 Delivery, Transport, and Storage

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Always store the device in a clean and dry location. Observe the permissible storage temperature (see datasheet).

1.6 Intended Use

The modular FieldConnex® Surge Protectors protect fieldbus equipment safely from damages caused by surge voltages or lightning strikes.

The surge protectors are designed for use in the fieldbus communication system according to IEC 61158-2 as Foundation Fieldbus and PROFIBUS PA.

Both versions DP-LBF-I1.36.DE and DP-LBF-I1.36.IE are suitable for mounting in Zone 1 or Zone 2. The associated apparatus circuit may be led into Zone 0 if the intrinsically safe fieldbus power circuit is certified accordingly.

It can also be used in intrinsically safe fieldbus installations in accordance with the FISCO and Entity model, as well as in DART fieldbus systems by Pepperl+Fuchs. The surge protectors are mountable on a DIN mounting rail only.

For use in hazardous areas Class I Div 1, Class I Zone 1, Class I Div 2, and Class 1 Zone 2 refer to installation drawing 116-0361.

1.7 Mounting and Installation in Hazardous Areas

The surge protectors may be used in intrinsically safe fieldbus systems according to the FISCO or Entity concept. The surge protector itself may be installed in hazardous area Zone 2 and Zone 1, Gas Groups IIC, IIB, IIA.

Connection between a surge protector and earth must have a minimum core cross section of 4 mm^2. If the fieldbus cable of a surge protector leads into Zone 0, the cable length must be limited to 1 meter. If led into Zone 0, the fieldbus cable must be protected against interferences caused by lightning. The shield of the fieldbus cable must not lead into Zone 0 if it is not safely earthed like an equipotential bonding conductor according to IEC 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

The lines connected to the surge protector must be shielded or covered by a metal coating or be passed within a metal pipe.

The dielectric strength of at least 500 V of the intrinsically safe circuit of the device is limited only by the overvoltage protection. The terminals 5, 6, 7, and 8 are considered to be connected to earth.

The device has to be installed into a metal housing, or into a housing that is certified for this kind of use.

When the device is used in a fieldbus system according to FISCO, the power supply must have infallible galvanic isolation and may not be connected to earth. Alternatively the power supply must be infallibly connected to the potential equalizing system within the hazardous area.

For use in the type of protection Ex ec the device must be installed in an enclosure see chapter 1.8.

Observe the installation instructions according to IEC/EN 60079-14.

Instructions for Zone 1

The devices may only be installed and operated in zone 1 if mounted in an enclosure for which an EU-type-examination certificate according to 2014/34/EU for at least category 2G exists.

Instructions for Zone 2

The device may only be installed and operated in Zone 2 if it has been mounted in a surrounding enclosure with degree of protection IP54 according to IEC/EN 60529. The surrounding enclosure must correspond to equipment protection level Gc.

Instructions for Zone 21

The device may only be installed and operated in Zone 21 if mounted in a surrounding enclosure, which corresponds to equipment protection level Db.

Instructions for Zone 22

The device may only be installed and operated in Zone 22 if mounted in a surrounding enclosure, which corresponds to equipment protection level Dc.

For use in hazardous areas Class I Div 1, Class I Zone 1, Class I Div 2, and Class 1 Zone 2 refer to installation drawing 116-0361.

1.8 Housing

If additional housings are needed for installation in hazardous areas, the following points must be considered / evaluated:

To ensure the degree of protection:

- The housing must not be damaged, distorted or corroded.
- All seals must be undamaged and correctly fitted.
- All screws of the housing/housing cover must be tightened with the appropriate torque.
- All cable glands must be suitably sized for the incoming cable diameters.
- All cable glands must be tightened with the appropriate torque.
- All unused cable glands must be sealed and closed with appropriate sealing plugs or stopping plugs.

1.9 Repair and Servicing

The device must not be repaired, changed, or manipulated. In case of failure, always replace the device with an original device.

2026-01

1.10 Disposal

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

2 Product Specifications

2.1 Overview and Application

The FieldConnex® Surge Protector protects fieldbus components and control units from damage caused by voltage surges and lightning strikes. Voltages between the fieldbus leads 'plus' and 'minus', and between either lead and ground are limited safely. The surge protector is designed for use in fieldbus communication topologies according to IEC 61158-2. It conforms to IEC 60079: FISCO and Entity concepts and is DART-enabled.

The surge protector allows the coordinated use in an EMC-oriented Lightning Protection Zones Concept in accordance with IEC 61312-1. The protective effect is adapted to the EMC interference immunity (conducted high energy interference impulses) for fieldbus measuring, control, and equipment.

The FieldConnex® Surge Protector consists of a base part and a protection module. It can be configured according to the maintenance concept of the plant with choices of modules as shown in the following table:

Type Code	Module Type	Comment	Application
		On removal of protection module …	
DB-LBF-I1	Base	… communication continues	Replacement of the protection module during operation
DB-LBF-I1.I	Base	… communication interrupts	Replacement of the protection module only offline
		Connection of shield to earth ...	
DP-LBF-I1.36.DE	Protection	... direct	For double-sided grounding
DP-LBF-I1.36.IE	Protection	... via gas discharge tube	For single-point grounding

Table 2.1 FieldConnex® Surge Protector Components and Attributes

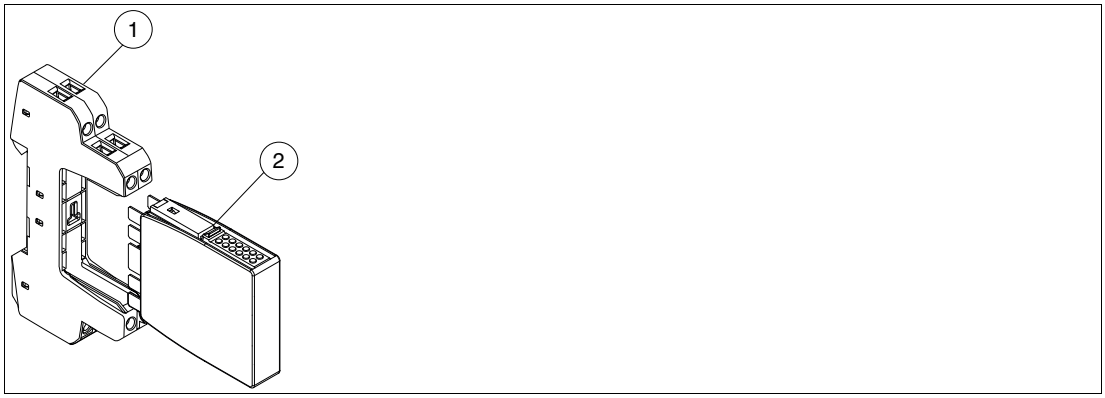
Base parts and protection modules are separately available. The two grounding methods support all cable shield grounding concepts used in fieldbus applications today.

2.2 Component Overview

The modular surge protector DP-LBF-I1* always consists of two parts:

- Base part
- Protection module

The two protection modules may be combined with two different base parts with or without communication interruption while the protection module is removed.



1 Base part

2 Protection module

DP-LBF-I1.36* Protection Module Overview

The protection module contains the electronic components, e.g., the gas discharge tube to provide surge protection. In the event of a surge or lightning strike, the DP-LBF-I1.36.IE module discharges both leads and the cable shield to earth. In normal operation, the shield is isolated from earth. For fieldbus installation where single-point grounding in the control room is required, the DP-LBF-I1.36.IE protection module is used at the coupler's end on trunk and spur. The DP-LBF-I1.36.DE module connects the fieldbus cable shield directly to earth.

Part name	Description
DP-LBF-I1.36.DE	Fieldbus cable shield connects directly to earth
DP-LBF-I1.36.IE	Fieldbus cable shield connects indirectly to earth via gas discharge tube (GDT)

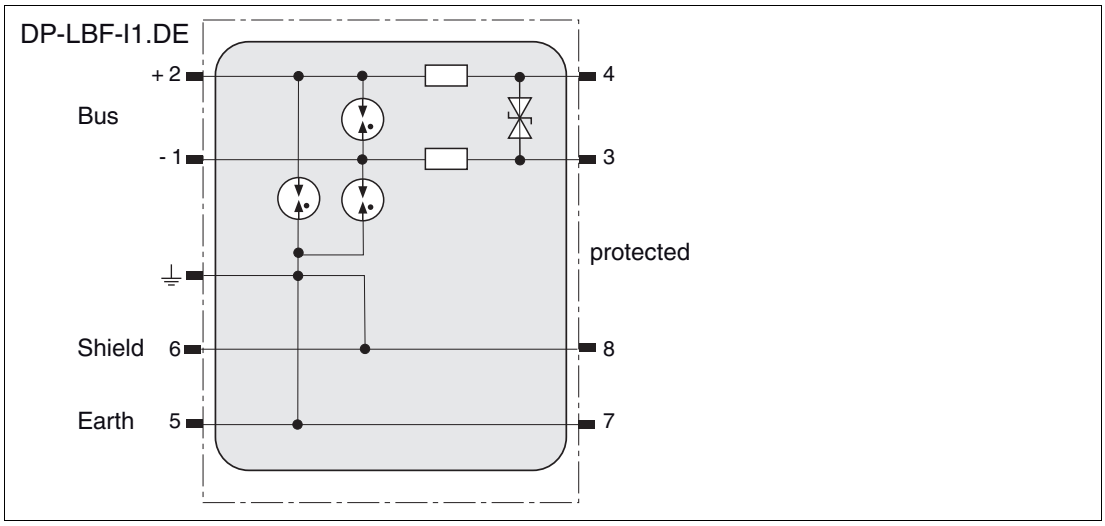


Figure 2.1 DP-LBF-I1.36.DE

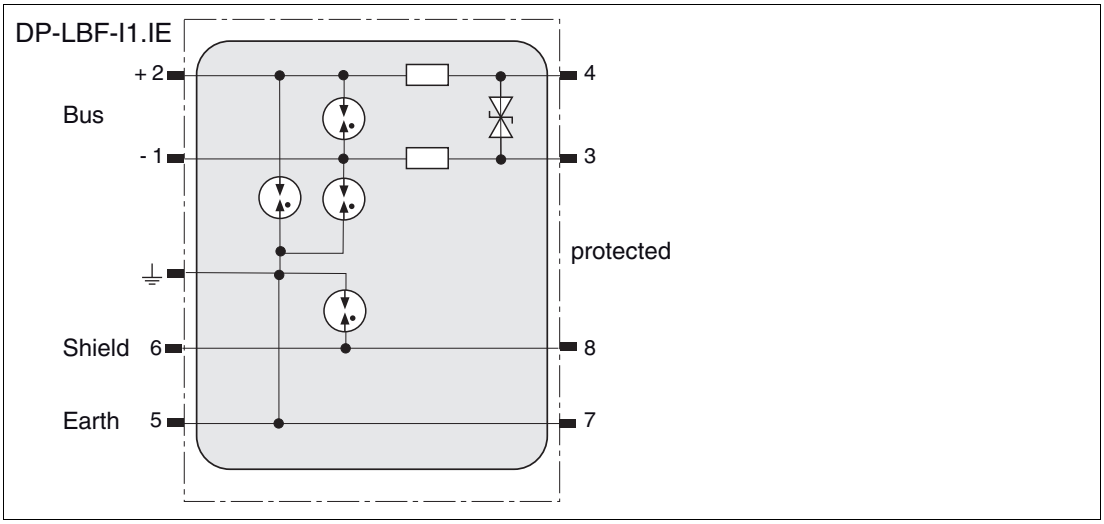


Figure 2.2 DP-LBF-I1.36.IE

DB-LBF-I1* Base Part Overview

The DB-LBF-I1* base parts serve as mechanical support for the DP-LBF-I1.36* protection modules. Electronic modules lead surge currents through the base parts to the DIN rail. Provided the DIN rail is installed isolated from earth, a dedicated terminal allows to connect the earth via an external wire to the base module. The DB-LBF-I1 version keeps the communication with the signal lines up while the electronic module is removed from the base module. The DB-LBF-I1.I version interrupts communication with the signal lines when the electronic module is removed.

Part name	Description
DB-LBF.I1	Base part without signal interruption during removal of the protection module.
DB-LBF.I1.I	Base part with signal interruption during removal of the protection module.

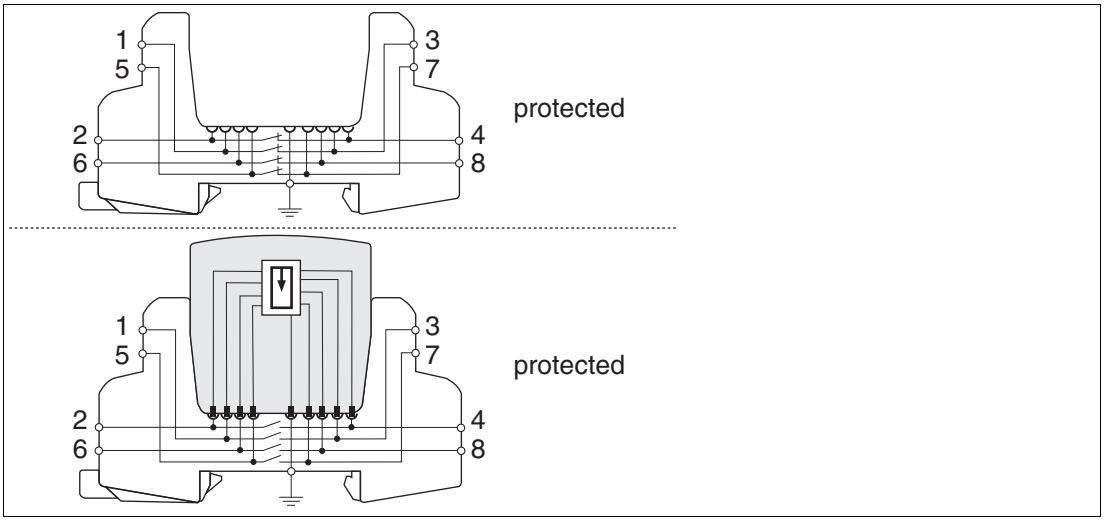


Figure 2.3 DB-LBF-I1

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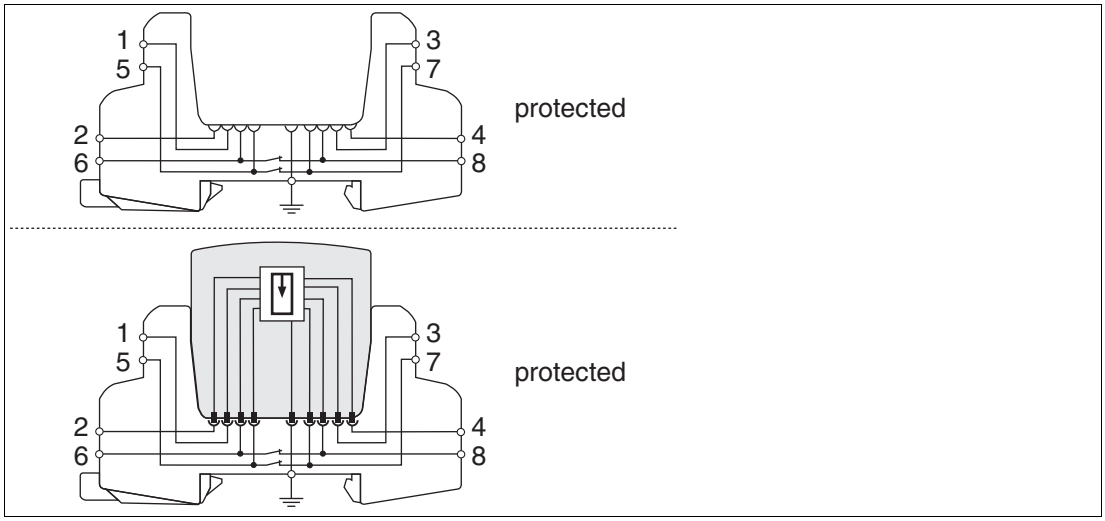
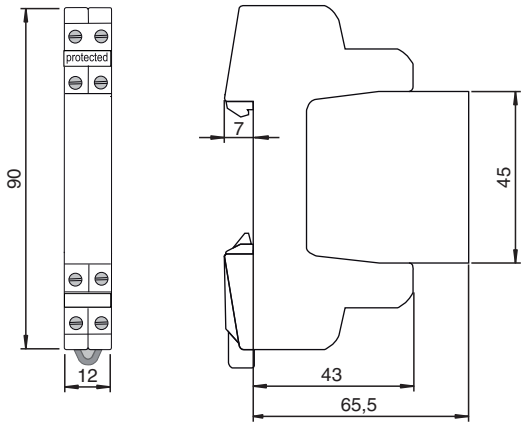


Figure 2.4 DB-LBF-I1.I

2.3 Dimensions



3 Installation and Commissioning

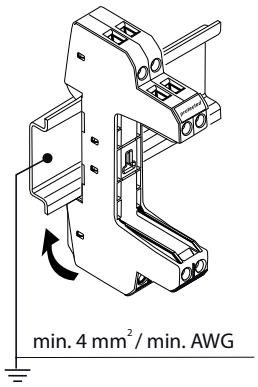
3.1 Mounting

Warning!
Electrostatic charge
Electrostatic charged surfaces may cause an ignition spark.
Clean surfaces with a damp cloth to prevent electrostatic charge.

Mounting the Base Part on a DIN Rail

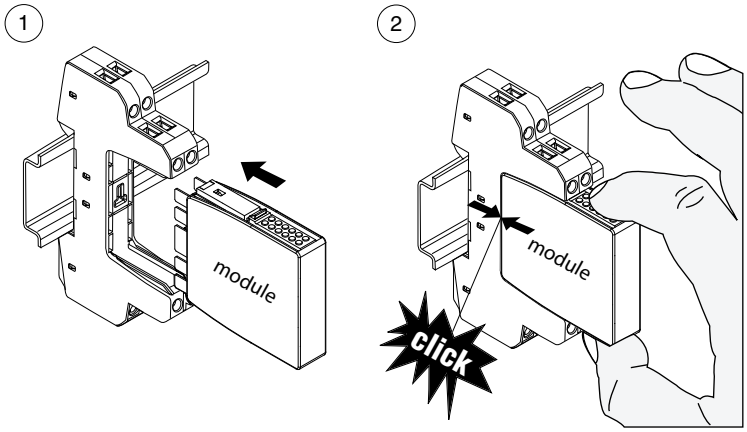
The surge protectors are to be mounted on a 35 mm Din rail compliant with DIN EN 60715.

1. Place the base part on the DIN rail
2. Gently press the base part to the DIN rail until it is locked in place



Mounting the Protection Module

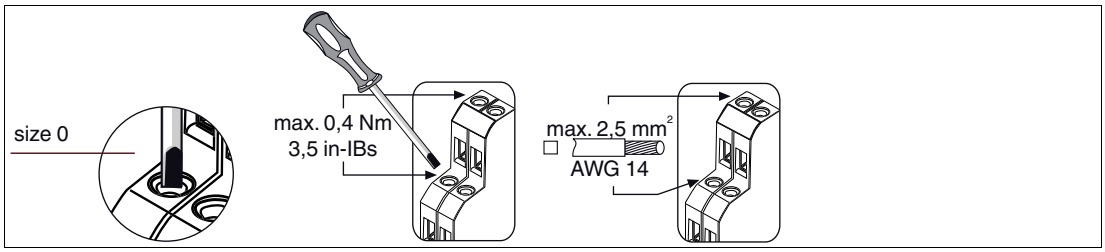
1. Carefully insert the protection module into the base part.
2. Press until the protection module is locked in place.
Ensure that there is no space left between the protection module and the base part.



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3.2 Connection

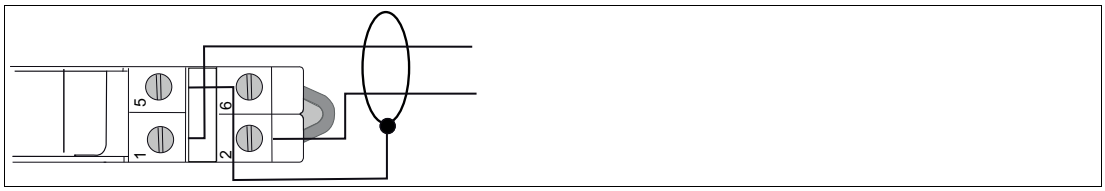


Note

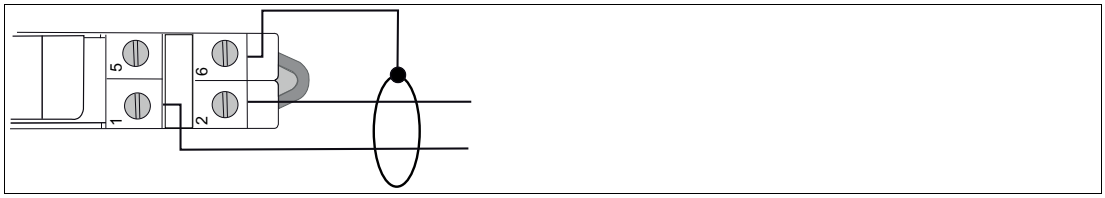
Keep the cable for connecting the protected field device as short as possible.

3.3 Shielding and Grounding the Cable Shield

Cable Shield: Direct Grounding



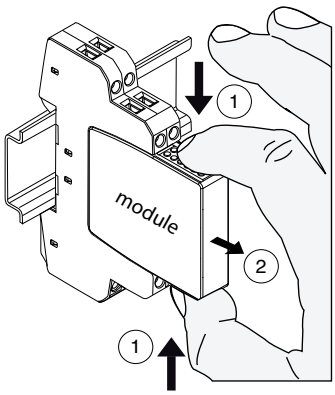
Cable Shield: Indirect Grounding



4 Dismounting the Surge Protector

Dismounting the Protection Module

1. Push down the quick-lock taps
2. Hold the quick-lock taps and pull off the protection module



Dismounting the Base Part

1. Lift up the latch with a screwdriver
2. Pull off the base part from the DIN rail

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