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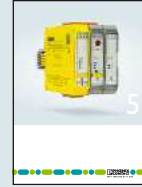
Surge protection, power supplies, and device circuit breakers

2019/2020



Terminal blocks

- Terminal blocks



Interface technology and switching devices

- Electronic switching devices and motor control
- Measurement and control technology
- Monitoring
- Relay modules
- System cabling for controllers



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- Sensor/actuator cabling
- Cables and lines
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- Marking and labeling
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- Installation and mounting material



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- Charging technology for electromobility



Surge protection, power supplies, and device circuit breakers

- Surge protection and interference suppression filters
- Power supplies and UPS
- Protective devices



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Table of contents

Illustrated product range overview

4

Access the right product more quickly from here

COMPLETE line

6

The comprehensive solution for the control cabinet

Surge protection and interference suppression filters

8



Power supplies and UPS

224



Device circuit breakers

358



Technical information

402

Index

418



Surge protection and interference suppression filters

Damage caused by surge voltages

The number of electrical devices damaged or destroyed by surge voltages is increasing year on year. This can prove expensive in terms of repairs and downtimes. In an industrial environment, the hazards are not just restricted to systems and devices. Building technology applications and even residential buildings may be affected.

Interference voltages

Switching operations triggered mechanically or electronically generate pulse-like and high-frequency interference voltages. These voltages spread in an unimpeded manner across the cable network. All the devices within this cable network are affected. Data errors, uncontrolled functions, and system crashes can result, with electronic and data processing devices at particular risk.

i Your web code: #0142

Basics	10
<hr/>	
Surge protection for the power supply	14
Selection guide	20
Applications	24
Type 1+2 combined lightning current and surge arrester	34
Type 1+2 combined lightning current and surge arrester special	42
Type 2 surge protective device	53
Type 3 device protection	82
Surge protection for NEMA systems	90
Isolating spark gap	102
<hr/>	
Surge protection for measurement and control technology	104
Selection guide	108
Applications	110
Protection for current loops	116
Protection for digital signals	128
Protection for resistance-dependent measurements	143
Single-stage protective devices	148
Protection for Ex applications	152
<hr/>	
Surge protection for information technology and telecommunications	160
Selection guides	162
Applications	164
Protection for data interfaces	166
Protection for fieldbus systems	170
Protection for telecommunications interfaces	186
<hr/>	
Surge protection for transceiver systems	194
Selection guide	196
Applications	198
Protection for antenna systems	200
Protection for TV and radio systems	204
<hr/>	
Interference suppression filters	206
<hr/>	
ImpulseCheck	212
<hr/>	
Lightning current measurement	214
<hr/>	
Test devices	218
<hr/>	
Accessories for surge protection	222

Surge voltage – What is it?



Lightning discharge

It is above all lightning strikes (lightning electromagnetic pulse, LEMP) that have the greatest potential for damage among all the causes of occurrence.

They cause transient overvoltages that can extend across great distances and are often associated with high-amplitude surge currents.

Even the indirect effects of a lightning strike can lead to a surge voltage of several kilovolts and result in a surge current of tens of thousands of amperes. In spite of the very brief duration, such an event can lead to total failure or even the destruction of the entire system.

Switching operations

Switching operations (switching electromagnetic pulse, SEMP) can generate induced surge voltages that spread to supply lines. In the case of large switch-on currents or short circuits, very high currents can flow within a few milliseconds. These short-term current changes can lead to transient overvoltages.

Electrostatic discharge

Electrostatic discharge (ESD) occurs if exposed conductive parts with different electrostatic potential approach each other and result in a charge exchange. A sudden charge exchange leads to a brief surge voltage. This presents a hazard, especially for sensitive electronic components.

Surge voltage – What are the effects?

Regardless of what causes a surge voltage, the consequences are the same:

- Device destruction
- System downtimes
- Total failure of controllers

Device failure or defects caused by surge voltages are more frequent than expected. For non-private systems the consequences of a failure are generally much more serious, such as downtimes or data loss. The failure of a device or a machine that is used in a professional environment often leads to costs that are many times higher than repairing the defective device.

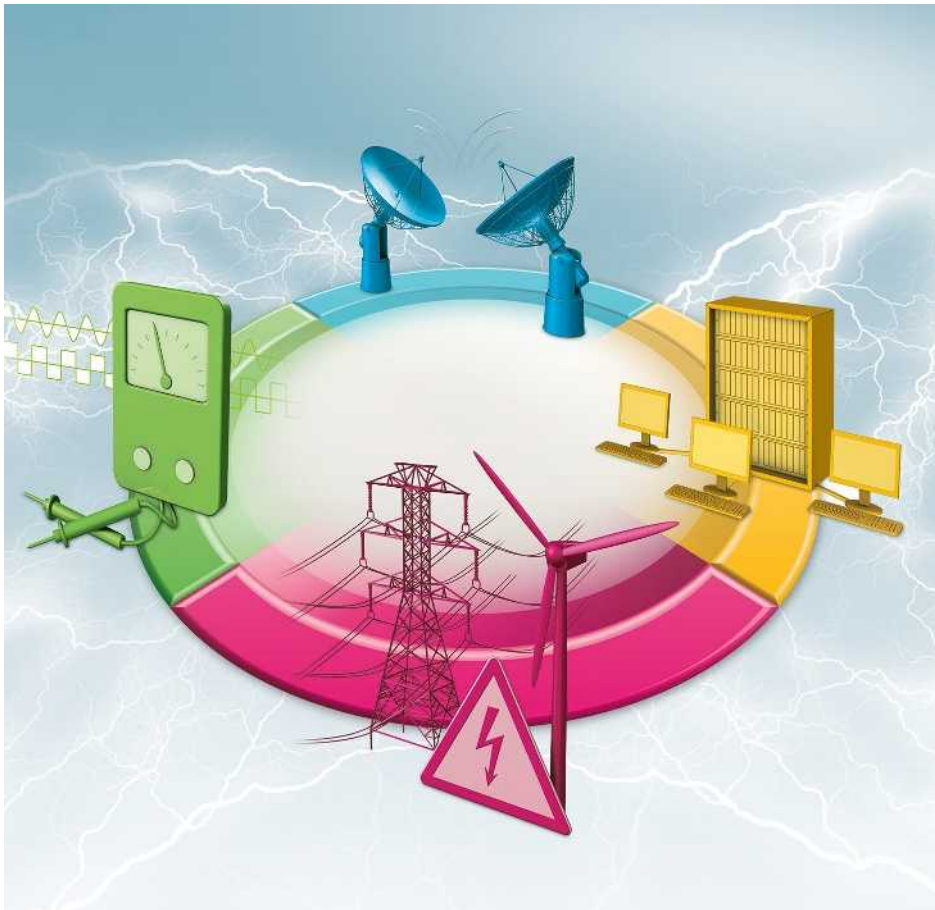
Surge voltage – How can you provide correct protection?

Effective surge protection starts with assessing the potential risk and identifying all the devices within the item to be protected.

The resulting protection concept takes into account all the interfaces of the power supply unit as well as those for data and telecommunications. This is the only way to comprehensively and effectively protect all the end devices, for example, within a data network, production plant or building installation. Combining high-quality protective devices with innovative arrester technology, surge protective devices ensure a high degree of system availability and safety in all areas of electrical engineering.

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The protective circle principle



A clear illustration of the lightning protection zone concept is the protective circle.

An imaginary circle is drawn around the object to be protected. A surge protective device should be installed at all points where cables intersect this circle.

The area within the protective circuit is therefore protected in such a way that conducted surge voltage couplings are prevented.

The protective circle must include all electrical and electronic transmission lines in the following areas:

- Power supply
- Measurement and control technology
- Information technology
- Transceiver systems



Surge protection for power supplies



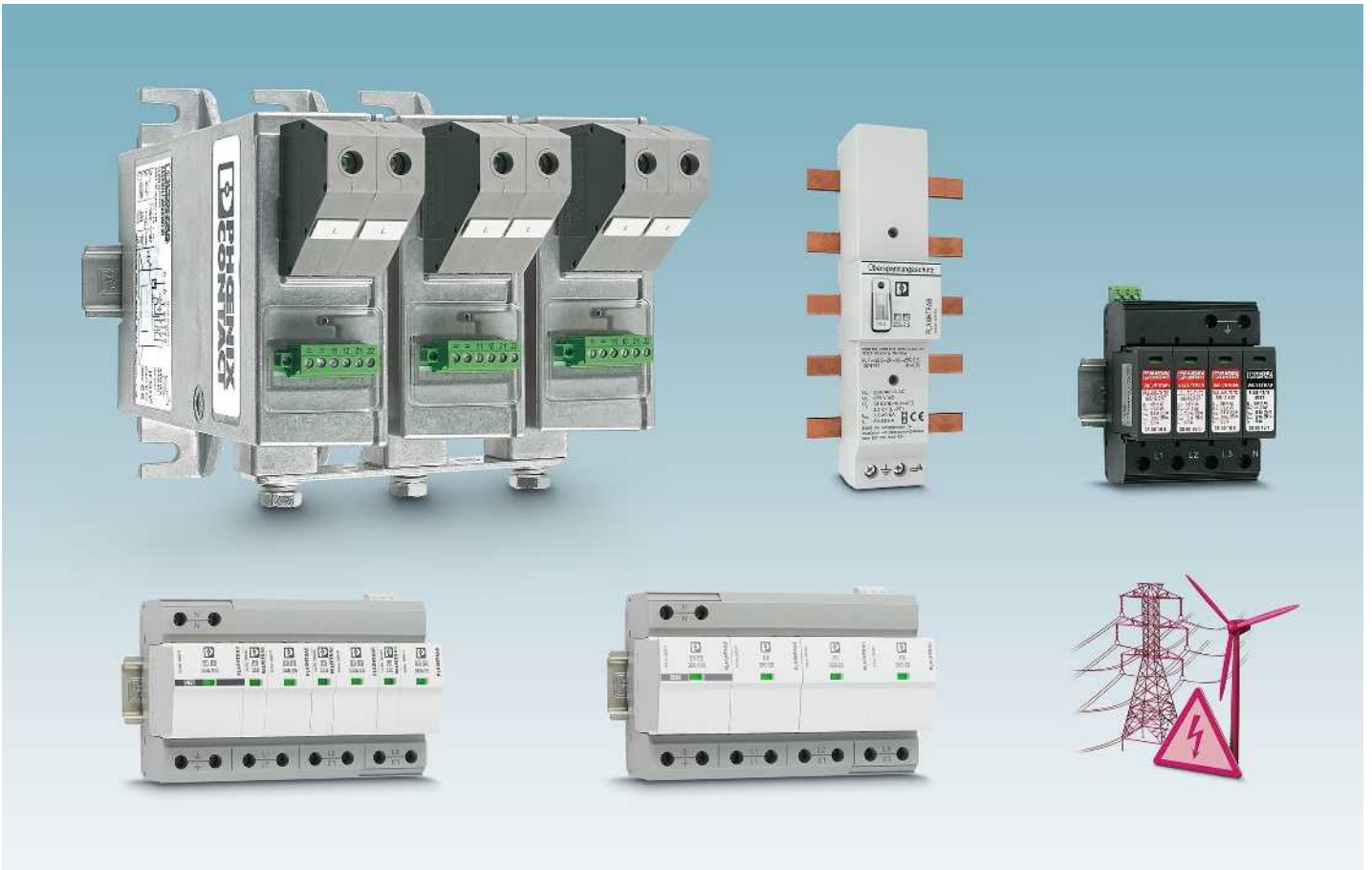
Surge protection for MCR technology



Surge protection for information technology



Surge protection for transceiver systems



Surge protection for power supplies

Type 1+2 combined lightning current and surge arrester

Type 1+2 surge protective devices must satisfy the most stringent requirements in terms of amplitude and specific energy from surge currents, as they are supposed to protect against the effects of direct lightning strikes. In the typical installation environment of the main distribution, the demand placed on the short-circuit current rating is also often very high. In order to be able to meet these requirements, powerful technology is required, such as spark gap technology.

Type 2 surge protective device

Type 2 surge protective devices are generally installed in sub-distributions or machine control cabinets. These SPDs must be able to discharge induced surge voltages from indirect lightning strikes or switching operations but not handle direct lightning strikes. As such, the energy input is significantly reduced. In any case, induced surge voltages caused by switching operations are often very dynamic. Here, a technology with fast response behavior stands up to the test, e.g., varistor technology.

Type 3 device protection

Type 3 surge protective devices are generally installed immediately upstream of the end device to be protected. Due to differing installation environments, type 3 SPDs are available in a very wide range of designs.

- Devices for DIN rail mounting
- Devices for installation in sockets, cable ducts, and underfloor systems
- Attachment plug for sockets

Combined lightning current and surge arrester or combined lightning current and surge arrester special?

Lightning currents are simulated with surge currents in the 10/350 μ s pulse shape. Switching surge voltages and remote lightning strikes are simulated with surge currents in the 8/20 μ s pulse shape.

As per the requirements of product standard IEC 61643-11, a type 2 SPD must only be able to discharge 8/20 pulses. A type 1 SPD is designed for 8/20 μ s pulses as well as 10/350 μ s pulses. In this sense, every type 1 SPD is also a type 2 SPD. The fact that a type 1 SPD satisfies test classification II is a redundant piece of information and does not constitute an additional qualification. These types of SPDs are often referred to as combined lightning current and surge arresters (type 1+2 SPDs).

This is an arrester that satisfies both test classifications.

In the case of a combined lightning current and surge arrester special, such as the FLT-SEC-T1+T2, however, a voltage-switching spark gap (type 1+2 SPD) is coordinated directly with a voltage-limiting varistor (type 2 SPD) that is connected in parallel. Two autonomous protective devices ensure optimum response behavior, the best possible system protection, and a long service life for the components.



Surge protection for MCR technology

The range of different applications presents a particular challenge to surge protection for measurement and control technology. Different signal types, interfaces, and fieldbus systems require a tailor-made product and a wide product range. Various protective circuits are therefore available that are specially optimized for the application.

Primarily, a distinction is made between two signal types: independent closed loops and signals with a common reference conductor or a shared return conductor.

The independent closed loops are often designed so that they are isolated from the ground potential for immunity to interference.



Surge protection for information technology

In the area of information technology, the various interfaces operate with low signal levels at high frequencies. This makes them particularly sensitive to surge voltages and can lead to the destruction of electronic components in IT systems. The surge protective devices must therefore also have high-quality signal transmission behavior; as otherwise, malfunctions can be expected in the data transmission.

Possible interfaces include the following:

- Ethernet
- Serial interfaces
- Telecommunications interfaces



Surge protection for transceiver systems

Typical areas of application in the field of transceiver systems are the antenna connections of television and radio receivers, video communication, and mobile phone systems. Antenna cables which extend beyond a building and are usually very long, plus the antennas themselves, are directly exposed to atmospheric discharge. Surge voltages can even reach the sensitive interfaces of transceiver systems via this cable path.



Clear insight into the system

ImpulseCheck is the world's first intelligent assistance system for surge protection in the field of mains protection. The module allows you to measure the state of health of every single protective device via cloud connection and provides new digital services.

Optimum protection for sensitive systems

In many cases, SPDs can limit surge voltages and discharge surge currents without your system sustaining any damage. Depending on the number, duration, and amplitude of the surge currents, SPDs may be pushed to their very limits and fail. Other faults in the electrical installation, such as short circuits or ground faults, can also contribute to the failure of SPDs. A failure is indicated by a status indicator on the SPD itself and additional remote signaling, if necessary.

The current, actual load on the SPDs can only be determined by performing an electrical test on the individual modules. However, this is laborious and only provides an insight into the state of the SPDs at the time of testing.

How does ImpulseCheck work?

ImpulseCheck enables the continuous monitoring of SPDs. Thanks to external sensor cables, the system can be easily installed or retrofitted in both new and existing systems. It takes just a few simple steps to attach up to 4 sensors to the connecting cables of the monitored SPD.

Surge currents with a very high time resolution are captured on each channel. Both high-frequency events and sustained currents are measured reliably. Electromagnetic interference is detected, allocated a time stamp, and transmitted to PROFICLOUD. Important parameters are evaluated and indicated from the signal curves for surge current events. In addition, the remote indication contact of the monitored SPD can be evaluated.

For Phoenix Contact SPDs, the actual load is determined at all times based on the recorded events. The determined status (green, yellow, red) is displayed in PROFICLOUD as well as on the device itself. This allows you to respond proactively before an SPD actually fails.

Benefit from digital added value

The cloud-based evaluation of measured data enables the direct use of new digital services. Status messages regarding surge protection can be displayed on any web-enabled device. For example, you can configure custom notifications for various events in PROFICLOUD or create standard-compliant status reports at the push of a button.

Thanks to the ongoing further development of new and existing devices for PROFICLOUD as well as the platform itself, it will be possible to network a wide range of applications and services in the future.

i Your web code: #2095



Keeping the pulse of your system

Benefit from predictive maintenance: thanks to real-time measurement of electromagnetic interference and surge currents, you can continuously monitor the condition of the system and the surge protection. This makes the remaining service life expectancy (state of health) of the protective devices transparent, so that maintenance services become more predictable.



Status reports at the push of a button

Depending on the system type, the IEC 62305-3 standard requires that surge protective devices are tested at specific intervals. Thanks to the real-time monitoring, you know the SPD's state and can generate status reports at any time at the push of a button – even between the predetermined test intervals. This provides you with all the necessary information, whenever you need it.



Benefit from digital added value and services

The cloud-based analysis of measured values enables completely new automated processes. Combine the values from surge voltage events in the cloud with local weather data or location information, for example. Use this information for your logistics or export the data for your own evaluation.



Safe Energy Control (SEC) range

The surge protective devices in the SEC product range represent an easy-to-install product range which combines maximum performance and superior durability. Electronic consumers are reliably protected and maintenance costs are reduced. The surge protective devices are characterized by their easy, cost-effective, and space-saving installation.

Uninterrupted protection for your system

Ensure uninterrupted system operation by using surge protective devices from the SEC range. By using technologically leading spark gaps and products with safe disconnect device, you can implement a consistent and safe protection concept. The type 1, 2, and 3 surge protective devices are all pluggable. Testing and maintenance work is therefore made much easier.

Protection for life

The high-quality products in the SEC range are particularly durable thanks to their high, laboratory-tested quality. This is demonstrated by international certificates. Even in the most lightning-prone location in the world, the surge protective devices in the SEC product range will provide protection for decades to come.

Efficiency in control cabinet manufacturing

Plan your control cabinets more efficiently and easily with the SEC range. Installation is cost-effective and space-saving, thanks to the uniform compact design of the surge protective devices, which do not need a backup fuse. The world's smallest type 2 protective device and the world's first type 3 surge protection with Push-in connection technology are emblematic of this.

i Your web code: **#0143**



New spark gaps

The newly developed spark gaps in the type 1 arresters are isolated and extremely powerful thanks to the use of technology with no line follow current. This increases the durability of the components in your system.



Type 1+2 combined lightning current and surge arrester with integrated arrester backup fuse

The FLT-SEC-HYBRID... combines surge protection and a backup fuse in a single connector. It is no longer necessary to install a separate arrester backup fuse. This saves space and reduces installation costs.



The power package

Maximum discharge capacity in an extremely compact design. And all for continuous voltages up to 440 V. The ideal type 1+2 combined lightning current and surge arrester for use in industry and wind turbine generators.



Lightning and surge protection

Reliable protection and minimal installation effort, thanks to the narrowest coordinated combination or true type 1 spark gaps and type 2 varistor arresters.



Ultra narrow

With an overall width of just 12.5 mm per channel, the type 2 surge protective devices provide outstanding protection in a minimum amount of space – they can be used up to 315 A in the branch without a backup fuse.



Powerful type 3 device protection

The world's first type 3 surge protective device with Push-in fast connection technology provides optimum protection for industrial power supply.



Type 1+2 combined lightning current and surge arrester for harsh industrial environments

With a rated voltage of 800 V AC, a discharge capacity of 35 kA per channel, and a robust housing design, POWERTRAB is ideal for harsh industrial environments and use in 690 V IT networks, such as in wind turbine generators.



Type 1+2 combined lightning current and surge arrester for lightning protection level III and IV

The VAL-MS T1/T2 ... varistor-based combination protective devices meet the requirements of lightning protection class III and IV and also provide the voltage protection level of a type 2 surge protective device.



Type 2 surge protection for higher nominal voltages

With VAL-MS..., corresponding arresters are available for power supplies with higher supply voltages, such as in wind turbine generators or when discharge currents > 30 kA per channel are required.



Type 3 device protection in an extremely compact design

Ideal for protecting end devices, type 3 device protection is used in deep installation boxes, cable ducts or underfloor systems.



Type 3 device protection as an attachment plug

The MAINTRAB device protection range is very easy to retrofit in existing installations. Versions are available as simple adapters for mains sockets or with additional signal interfaces.



Surge protection for LED lights

The surge protective devices for LED applications are specifically designed for street, tunnel or object lighting. Different versions are available for protection class I and II.



Surge protection with integrated arrester backup fuse

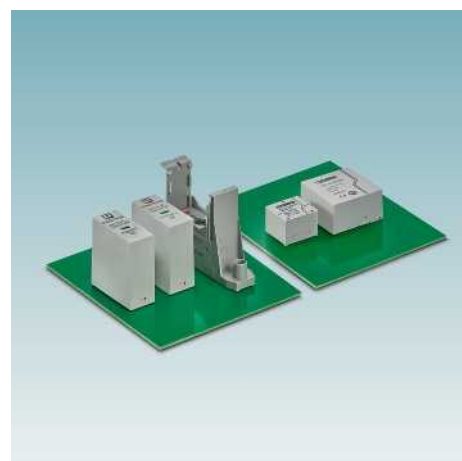
VAL-CP-MCB... are combinations of type 2 surge protection with integrated, surge-proof circuit breakers as arrester backup fuses.

Surge protection for 60 mm system technology

VAL-CP-MOSO... are type 2 surge protective devices with integrated, surge-proof arrester backup fuse for installation on 60 mm system technology.

Surge protection for photovoltaic systems

The product range comprises individual components for all types of photovoltaic systems, from 600 V DC up to 1500 V DC.



Type 3 surge protection for I/Os and controllers

TTC type 3 is based on the narrow 6 mm TERMITRAB complete range. It protects the 24 V power supply of end devices such as I/Os or controllers against surge voltages from the field.

Surge protection for DC current sources

VALVETRAB-SEC DC is the surge protection solution for power supplies with linear operating characteristics. Two different circuit versions for various nominal voltages provide protection for all common DC applications.

Surge protection for printed-circuit boards

The PRINTRAB series enables powerful type 2 surge protection in a confined space. Installed directly on the PCB, it provides protection for single-phase applications in very small devices. There are numerous areas of application, such as the future 5G communication system or inverters.

Surge protection and interference suppression filters

Surge protection for the power supply

Selection guide

The selection matrix indicates the corresponding surge protective device for commonly used network types.

Classification according to IEC test classification / EN type is simplified here. Detailed information can be found on the relevant product page.

Further application recommendations are available on request.

230/400 V systems Standard applications						
Network type			IEC test classification / EN type			
			I / T1	II / T2	III / T3	+ ⚡
3-phase	TN-S/TT 	230 / 400 V	✓	✓		
			✓	✓		✓
			✓	✓		
				✓	✓	
3-phase	TN-C 	230 / 400 V	✓	✓		
			✓	✓		✓
			✓	✓		
				✓		
1-phase	TN-S/TT 	230 V	✓	✓		
			✓	✓		✓
			✓	✓		
				✓	✓	
1-phase	TN-C 	230 V	✓	✓		
			✓	✓		✓
			✓	✓		
				✓		

230/400 V systems Special installation requirements						
Network type			IEC test classification / EN type			
			I / T1	II / T2	III / T3	+ ⚡
3-phase	TN-S/TT 	230 / 400 V	✓	✓		
				✓		✓
				✓		✓
				✓		✓
3-phase	TN-C 	230 / 400 V	✓	✓		
				✓		✓
				✓		✓
				✓		✓
1-phase	TN-S/TT 	230 V	✓	✓		
				✓		✓
				✓		
					✓	
1-phase	TN-C 	230 V	✓	✓		
				✓		



Note

Products bearing this stamp (plug elements) can be tested with CHECKMASTER 2.

Surge protective device (SPD)	Order No.	Page
FLT-SEC-P-T1-3S-350/25-FM	2905421	37
FLT-SEC-H-T1-3C-264/25-FM + FLT-SEC-P-T1-N/PE-350/100-FM	2905871 + 2905472	34
FLT-SEC-T1+T2-3S-350/25-FM	2905470	42
VAL-SEC-T2-3S-350-FM	2905340	54
PLT-SEC-T3-3S-230-FM	2905230	82
FLT-SEC-P-T1-3C-350/25-FM	2905419	37
FLT-SEC-H-T1-3C-264/25-FM	2905871	34
FLT-SEC-T1+T2-3C-350/25-FM	2905469	42
VAL-SEC-T2-3C-350-FM	2905339	54
FLT-SEC-P-T1-1S-350/25-FM	2905415	39
FLT-SEC-H-T1-1C-264/25-FM + FLT-SEC-P-T1-N/PE-350/100-FM	2801615 + 2905472	34
FLT-SEC-T1+T2-1S-350/25-FM	2905466	43
VAL-SEC-T2-1S-350-FM	2905333	55
PLT-SEC-T3-230-FM-PT	2907928	83
FLT-SEC-P-T1-1C-350/25-FM	2905414	39
FLT-SEC-H-T1-1C-264/25-FM	2801615	34
FLT-SEC-T1+T2-1C-350/25-FM	2905465	44

Surge protective device (SPD)	Order No.	Page	
FLT-SEC-P-T1-3S-264/50-FM	Where $I_{imp} = 50$ kA in L-N mode of protection	2909589	40
VAL-SEC-T2-3S-350/40-FM	Where $I_n = 40$ kA in N-PE mode of protection	2909635	54
VAL-SEC-T2-3S-350VF-FM	Free of leakage current	2909590	54
VAL-CP-MCB-3S-350/40/FM	Combination with MCB	2882750	74
VAL-CP-MOSO 60-3S-FM	Combination with MCB for 60 mm rail system	2804403	75
FLT-SEC-P-T1-3C-264/50-FM	Where $I_{imp} = 50$ kA in L-N mode of protection	2907390	40
VAL-SEC-T2-3C-350VF-FM	Free of leakage current	2909591	54
VAL-CP-MCB-3C-350/40/FM	Combination with MCB	2882776	74
VAL-CP-MOSO 60-3C-FM	Combination with MCB for 60 mm rail system	2804416	75
FLT-SEC-P-T1-1S-264/50-FM	Where $I_{imp} = 50$ kA in L-N mode of protection	2907388	41
VAL-SEC-T2-1S-350VF-FM	Free of leakage current	2909592	55
VAL-CP-MCB-1S-350/40/FM	Combination with MCB	2882763	74
BLT-T2-1S-320-UT	Universal mounting	2906101	76
MNT-1 D	Attachment plug	2882200	88
BLT-T3-230-A	Universal mounting (audible)	1038841	86
BLT-SKT-230-A	Universal mounting (audible)	1038842	86
FLT-SEC-P-T1-1C-264/50-FM	Where $I_{imp} = 50$ kA in L-N mode of protection	2907387	41

Surge protection and interference suppression filters







Surge protection for the power supply



Selection guide

The selection matrix indicates the corresponding surge protective device for commonly used network types.

Classification according to IEC test classification / EN type is simplified here. Detailed information can be found on the relevant product page.

Further application recommendations are available on request.

Other network types						
Network type			IEC test classification / EN type			
			I / T1	II / T2	III / T3	+ ⚡
3-phase	TN-S/TT 	400 / 690 V	✓	✓		
			✓	✓		
	TN-C 	400 / 690 V	✓	✓		✓
			✓	✓		
	IT 	554 / 960 V	✓			
				✓		
IT 	400 V	✓	✓		✓	
		✓	✓			
IT 	500 - 690 V	✓	✓			
			✓			
1-phase	TN-S/TT 	120 V	✓	✓		
				✓		
				✓		

DC systems						
Network type			IEC test classification / EN type			
			I / T1	II / T2	III / T3	
Linear DC source 	24 V		✓			
				✓		
				✓		
	48 V		✓			✓
				✓		
				✓		
	120 V			✓		
				✓		✓
	220 V			✓		
				✓		✓
	380 V			✓		
				✓		
Photovoltaic DC source 	0.6 kV	✓				
	1.0 kV	✓		✓		
	1.5 kV	✓		✓		
				✓		



Note

Products bearing this stamp (plug elements) can be tested with CHECKMASTER 2.

Surge protective device (SPD)	Order No.	Page
FLT-SEC-P-T1-3S-440/35-FM	2908264	35
FLT-SEC-H-T1-3C-440/25-FM + FLT-SEC-P-T1-N/PE-440/100-FM	2907260 + 2907262	34
VAL-SEC-T2-4+0-440-FM TN-S only	1076468	53
FLT-SEC-P-T1-3C-440/35-FM	2905988	35
FLT-SEC-H-T1-3C-440/25-FM	2907260	34
VAL-SEC-T2-3C-440-FM	2909968	53
PWT 100-800AC-FM	2800531	52
VAL-MS 750/30/3+0-FM	2920272	65
FLT-SEC-P-T1-3C-440/35-FM	2905988	35
FLT-SEC-H-T1-3C-440/25-FM	2907260	34
VAL-SEC-T2-3C-440-FM	2909968	53
PWT 100-800AC-FM	2800531	52
VAL-MS 750/30/3+0-FM	2920272	65
VAL-US-120/65/1+1-FM	2910356	93
VAL-SEC-T2-1S-175-FM	2905348	57
PLT-SEC-T3-120-FM-PT	2907927	83

Surge protective device (SPD)	Order No.	Page
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	48
VAL-SEC-T2-2+0-48DC-FM	2907865	58
VAL-SEC-T2-2+F-48DC-FM Free of leakage current	1033786	59
PLT-SEC-T3-24-FM-PT	2907925	82
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	48
VAL-SEC-T2-2+0-48DC-FM	2907865	58
VAL-SEC-T2-2+F-48DC-FM Free of leakage current	1033786	59
PLT-SEC-T3-60-FM-PT	2907926	83
VAL-SEC-T2-2+0-120DC-FM	2907874	58
VAL-SEC-T2-2+F-120DC-FM Free of leakage current	1033788	59
PLT-SEC-T3-120-FM-PT	2907927	83
VAL-SEC-T2-2+0-220DC-FM	2907875	58
VAL-SEC-T2-2+F-220DC-FM Free of leakage current	1033789	59
PLT-SEC-T3-230-FM-PT	2907928	83
VAL-SEC-T2-2+0-380DC-FM	2907876	58
VAL-SEC-T2-2+F-380DC-FM Free of leakage current	1033790	59
VAL-MS-T1/T2 600DC-PV/2+V-FM	2801164	50
VAL-MS 600DC-PV/2+V-FM	2800641	73
VAL-MS-T1/T2 1000DC-PV/2+V-FM	2801161	50
VAL-MS 1000DC-PV/2+V-FM	2800627	73
VAL-MB-T1/T2 1500DC-PV/2+V-FM	2905640	51
VAL-MS 1500DC-PV/2+V-FM	1033725	73

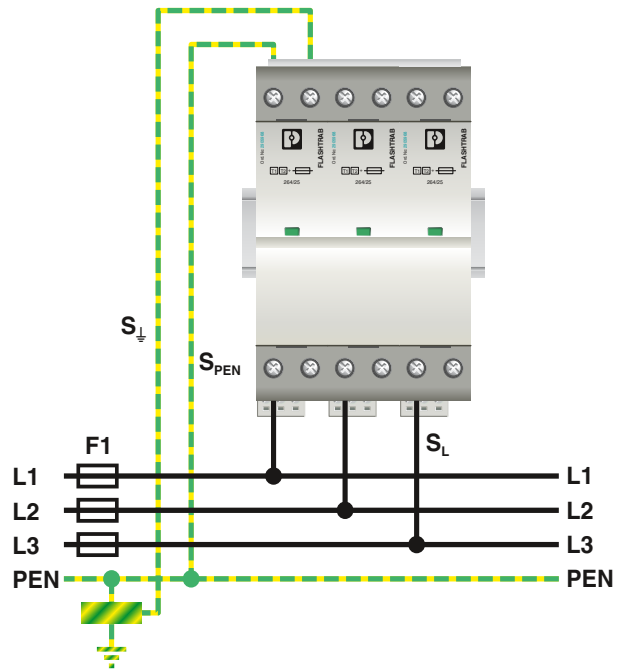
Surge protection and interference suppression filters

Surge protection for the power supply

Type 1 protection for the power supply with integrated arrester backup fuse

FLT-SEC-HYBRID

Branch wiring in the TN-C network



Technical characteristics	
Typical installation location	Upstream or downstream of the circuit breaker of low-voltage distribution boards with large load currents
Lightning protection level	I, II, III, IV
Lightning protection zone transition	LPZ 0 _A → LPZ 1
Coordination	Coordination with type 2 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> Refer to the adjacent tables for the required conductor cross sections. The connection to the main grounding rail (S_{\pm}) is mandatory (see figure). For S_{\pm}, use a cross section of at least 16 mm². If this connection (S_{\pm}) is to be equal to the connection to the protective conductor (S_{PEN}) in the application, use a cross section of at least 35 mm² for S_{PEN}. If the supply line cross section is greater than 35 mm², make sure that the surge protection connecting cables (S_L) are protected against ground faults and short circuits. Recommendation: use temperature-stable cables for S_L, e.g., XLPE/EPR-insulated cables. Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	<ul style="list-style-type: none"> Can be used without backup fuse in branch wiring The integrated overcurrent protection is selective in relation to upstream F1 fuses ≥ 400 A gG
Products in the catalog	Page 34

S_L mm ²	S_{PEN} mm ²
35	35

Table 1: Connecting cables

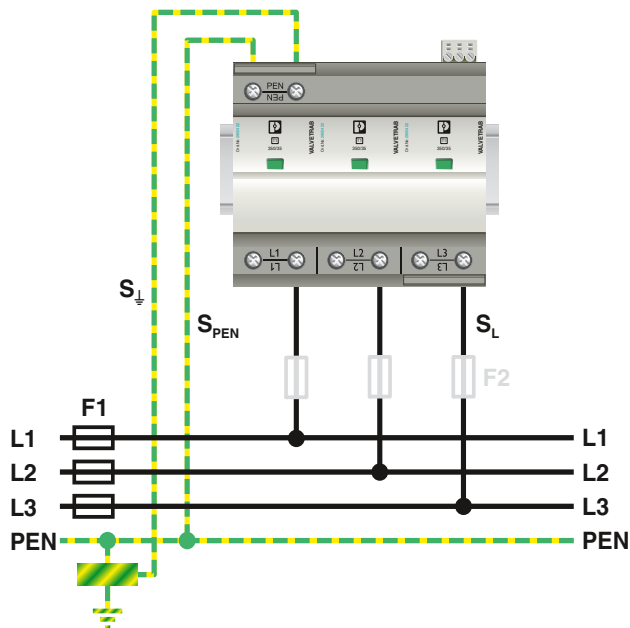
	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm ² ... 1.5 mm ²		

Table 2: Remote signaling data

Type 1 protection for the power supply

FLT-SEC-PLUS

Branch wiring in the TN-C network



Technical characteristics	
Typical installation location	Where the cable enters the building or in the pre-meter or post-meter area
Lightning protection level	I, II, III, IV
Lightning protection zone transition	LPZ 0 _A → LPZ 1
Coordination	Coordination with type 2 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> Refer to the adjacent tables for the required conductor cross sections. The connection to the main grounding rail (S_d) is mandatory (see figure). For S_d, use a cross section of at least 16 mm². If this connection (S_d) is to be equal to the connection to the protective conductor (S_{PEN}) in the application, use a cross section of at least 16 mm² for S_{PEN}. Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	<ul style="list-style-type: none"> Can be used without backup fuse in branch wiring up to 315 A gG If the surge protection fuse needs to be selective in relation to the upstream installation, a separate F2 backup fuse is required. Once the F2 backup fuse has tripped, surge protection is no longer in place for the system. Can be used without backup fuse in through wiring up to 125 A gG
Products in the catalog	Page 35

F1 A gG	F2 A gG	$S_L = S_N$ mm ²	$S_{PE(N)}$ mm ²	S_d mm ²
40		6	6	16
50		6	6	16
63		6	6	16
80		10	10	16
100		10	10	16
125		16	16	16
160		16	16	16
200		25	25	16
250		35	35	16
315		35	35	16
400	≤ 250	Conductor cross sections according to selected F2 fuse, see above		
≥ 500	≤ 315			

Table 1: Branch wiring

F1 A gG	S_L mm ²	$S_{PE(N)}$ mm ²	S_d mm ²
40	6	6	16
50	10	10	16
63	10	10	16
80	16	16	16
100	25	16	16
125	35	16	16

Table 2: Through wiring

	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm ² ... 1.5 mm ²		

Table 3: Remote signaling data

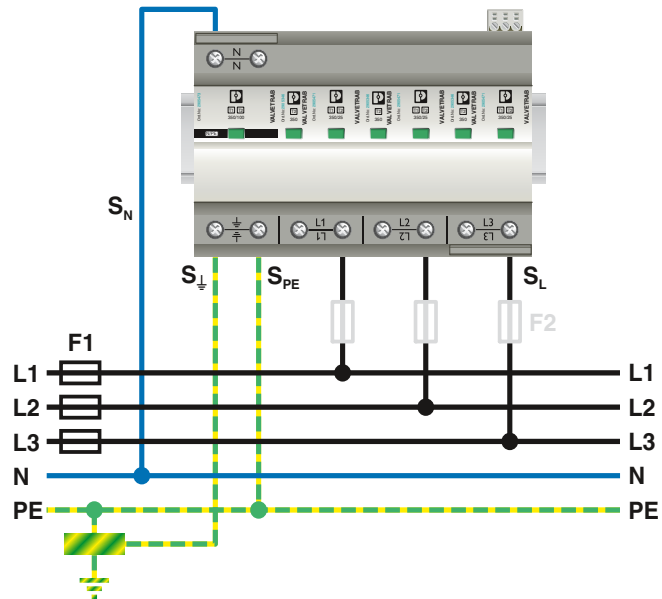
Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 protection for the power supply

FLT-SEC-T1+T2

Branch wiring in the TN-S network



Technical characteristics	
Typical installation location	Where the cable enters the building in the post-meter area
Lightning protection level	I, II, III, IV
Lightning protection zone transition	LPZ 0 _A → LPZ 2
Coordination	Coordination with type 3 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> Refer to the adjacent tables for the required conductor cross sections. The connection to the main grounding rail (S_j) is mandatory (see figure). For S_j, use a cross section of at least 16 mm². If this connection (S_j) is to be equal to the connection to the protective conductor (S_{PE}) in the application, use a cross section of at least 16 mm² for S_{PE}. Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	<ul style="list-style-type: none"> Can be used without backup fuse in branch wiring up to 315 A gG If the surge protection fuse needs to be selective in relation to the upstream installation, a separate F2 backup fuse is required. Once the F2 backup fuse has tripped, surge protection is no longer in place for the system. Can be used without backup fuse in through wiring up to 125 A gG
Products in the catalog	Page 42

F1 A gG	F2 A gG	$S_L = S_N$ mm ²	$S_{PE(N)}$ mm ²	S_j mm ²
40		6	6	16
50		6	6	16
63		6	6	16
80		10	10	16
100		10	10	16
125		16	16	16
160		16	16	16
200		25	25	16
250		35	35	16
315		35	35	16
400	≤ 250	Conductor cross sections according to selected F2 fuse, see above		
≥ 500	≤ 315			

Table 1: Branch wiring

F1 A gG	S_L mm ²	$S_{PE(N)}$ mm ²	S_j mm ²
40	6	6	16
50	10	10	16
63	10	10	16
80	16	16	16
100	25	16	16
125	35	16	16

Table 2: Through wiring

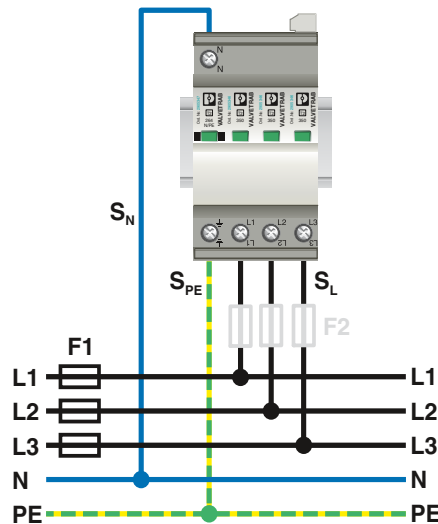
	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm ² ... 1.5 mm ²		

Table 3: Remote signaling data

Type 2 protection for the power supply

VAL-SEC

Branch wiring in the TN-S network



Technical characteristics	
Typical installation location	In sub-distributions or level distributions upstream of the RCD
Lightning protection zone transition	LPZ 0 _B → LPZ 1 LPZ 1 → LPZ 2
Coordination	Coordination with type 1 and type 3 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> Refer to the adjacent tables for the required conductor cross sections. For backup fuses > 200 A in relation to PVC-insulated copper cables, it is not possible to clamp a sufficient cross section for short circuits and ground faults. Special measures must therefore be implemented in this area to ensure that the connecting cables are protected against short circuits and ground faults. Use spacers to prevent the cables from touching each other or touching conductive components. Use cables with increased temperature stability (e.g., XLPE/EPR-insulated cables). Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	<ul style="list-style-type: none"> Can be used without backup fuse in branch wiring up to 315 A gG If the surge protection fuse needs to be selective in relation to the upstream installation, a separate F2 backup fuse is required. Once the F2 backup fuse has tripped, surge protection is no longer in place for the system. Can be used without backup fuse in through wiring up to 63 A gG
Products in the catalog	Page 54

F1 A gG	F2 A gG	S _L = S _N mm ²	S _{PE} mm ²
25		6	6
32		6	6
40		6	6
50		6	6
63		6	6
80		10	10
100		10	10
125		16	16
160		16	16
200		25	25
250		25	25
315		25	25
400	≤ 250	25	25
≥ 500	≤ 315	25	25

Table 1: Branch wiring

F1 A gG	S _L = S _N mm ²	S _{PE} mm ²
25	6	6
32	6	6
40	6	6
50	10	10
63	10	10

Table 2: Through wiring

	U _{max}	I _{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm ² ... 1.5 mm ²		

Table 3: Remote signaling data

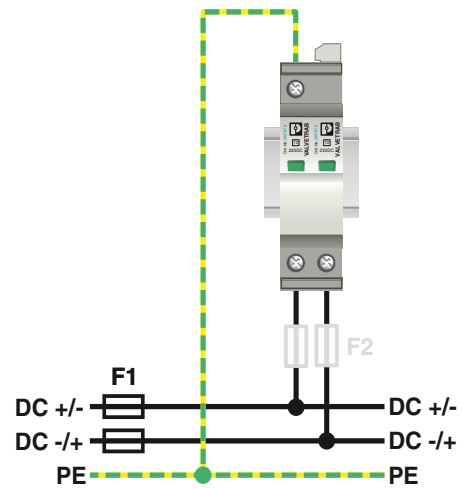
Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 protection for the power supply

VAL-SEC DC

Branch wiring in isolated DC voltage systems



Technical characteristics	
Typical installation location	Main and sub-distribution
Lightning protection zone transition	LPZ 0 _B → LPZ 1 LPZ 1 → LPZ 2
Coordination	Coordination with type 3 SPDs from the SEC range is guaranteed.
Connecting cables	<ul style="list-style-type: none"> – For branch wiring, the connecting cables and conductor cross sections only have to be designed for short circuits and ground faults. – For through wiring, the operating and overload current must also be taken into consideration. – Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	– Refer to the adjacent tables for the required conductor cross sections.
Products in the catalog	Page 58

Prospective short-circuit current I_{SCCR}	S_L/mm^2	$S_{PE} = S_J/\text{mm}^2$	F2 backup fuse
> 200 A	4	6	20 A
≤ 200 A	4	6	-

Table 1: Backup fuses for $U_N \leq 220 \text{ V DC}$

Prospective short-circuit current I_{SCCR}	S_L/mm^2	$S_{PE} = S_J/\text{mm}^2$	F2 backup fuse
≤ 100 A	4	6	-
> 100 A	4	6	10 A
> 200 A	4	6	20 A

Table 2: Backup fuses for $U_N \leq 400 \text{ V DC}$

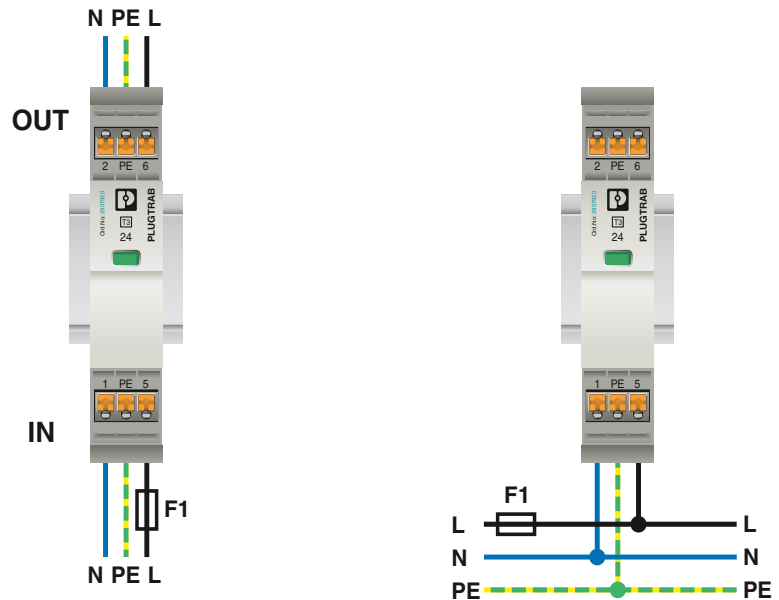
	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm ² ... 1.5 mm ²		

Table 3: Remote signaling data

Type 3 protection for the power supply

PLT-SEC

Through wiring and branch wiring
in the TN-S network



Technical characteristics	
Typical installation location	Upstream of the end device to be protected
Lightning protection zone transition	LPZ 1 → LPZ 2 LPZ 2 → LPZ 3
Coordination	Coordination with type 2 protective devices from the SEC range is guaranteed
Connection	<ul style="list-style-type: none"> – Max. conductor cross section 4 mm² rigid and 2.5 mm² flexible – The maximum load current I_L is 26 A for through wiring
Backup fuses	<ul style="list-style-type: none"> – AC: can be used without backup fuse in branch wiring up to 32 A gG – DC: can be used without backup fuse for prospective short-circuit currents up to 250 A DC
Products in the catalog	Page 82

	U_{max}	I_{max}
AC	250 V	0.5 A
DC	125 V	0.2 A
DC	75 V	0.5 A
0.2 mm ² ... 2.5 mm ²		

Table 1: Remote signaling data

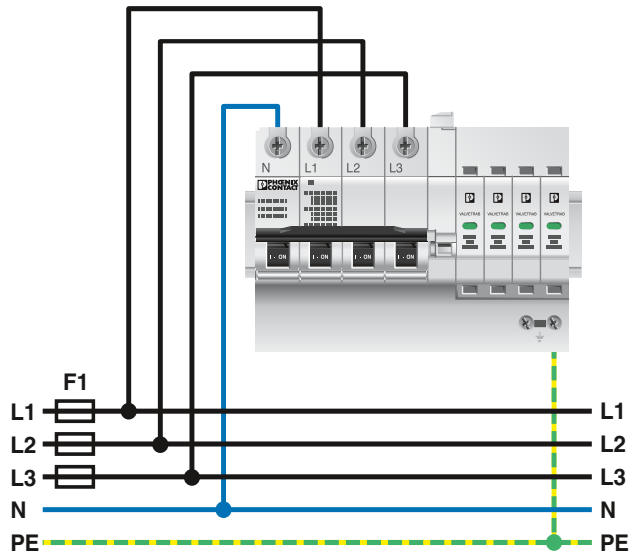
Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 protection for the power supply

VAL-CP-MCB

Branch wiring in the TN-S network



Technical characteristics	
Typical installation location	In sub-distributions or level distributions upstream of the RCD
Lightning protection zone transition	LPZ 0 _B → LPZ 1 LPZ 1 → LPZ 2
Coordination	Coordination with type 1 and type 3 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> Refer to the adjacent tables for the required conductor cross sections. For backup fuses > 250 A in relation to PVC-insulated copper cables, it is not possible to clamp a sufficient cross section for short circuits and ground faults. Special measures must therefore be implemented in this area to ensure that the connecting cables are protected against short circuits and ground faults. Prevent the cables from touching each other or touching conductive components, e.g., by using spacers, or use cables with increased temperature stability (e.g., XLPE/EPR-insulated cables). Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	<ul style="list-style-type: none"> Can be used without backup fuse in branch wiring The integrated overcurrent protection is selective in relation to upstream F1 fuses ≥ 63 A gG
Products in the catalog	Page 74

F1 A gG	S _L = S _N mm ²	S _{PE} mm ²
63	10	10
80	10	10
100	16	16
125	16	16
160	25	25
200	25	25
250	35	2 x 16
> 250	35	2 x 16

Table 1: Branch wiring

	U _{max}	I _{max}
AC	250 V	2 A
DC	250 V	0.05 A
0.14 mm ² ... 1.5 mm ²		

Table 2: Remote signaling data

Type 1 protection for the power supply

FLT-SEC-ZP

Installation in TN-S network



Technical characteristics	
Typical installation location	In the grid-side wiring space of meter cabinets with 40 mm busbar system
Lightning protection level	III, IV
Lightning protection zone transition	LPZ 0 _A → LPZ 1
Coordination	Coordination with type 2 protective devices from the SEC range is guaranteed
Connecting cables	<ul style="list-style-type: none"> – If an external lightning protection system is present, it is imperative that the separate connecting cable (S_p) is connected to the main grounding rail (see figure). – For S_p, use a cross section of at least 16 mm². – For busbar systems without PE/PEN rail, use one of the terminal points for the separate protective conductor connection. – Use a cross section of at least 16 mm².
Backup fuses	– Can be used without backup fuse up to 250 A gG
Products in the catalog	Page 45

Network type	Surge protective device (SPD)	Order No.
TN-S / TT	FLT-SEC-ZP-3S-255/12,5	1032207
TN-C	FLT-SEC-ZP-3C-255/12,5	1032204

Table 1: Products for lightning protection equipotential bonding in accordance with lightning protection levels III and IV

Network type	Surge protective device (SPD)	Order No.
TN-S / TT	FLT-SEC-ZP-3S-255/7,5	1074741
TN-C	FLT-SEC-ZP-3C-255/7,5	1074739

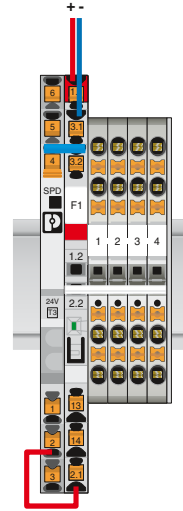
Table 2: Products for equipotential bonding for supply via overhead lines

Surge protection and interference suppression filters

Surge protection for the power supply

Protection for 24 V potential distribution

TTC type 3 surge protection and PTCB overcurrent protection



Technical characteristics	
Typical installation location	<ul style="list-style-type: none">- At the 24 V potential distribution- Branch wiring to PTCB device circuit breakers
Lightning protection zone transition	LPZ 1 → LPZ 2 LPZ 2 → LPZ 3
Connection	<ul style="list-style-type: none">- Max. conductor cross section 4 mm² rigid and 2.5 mm² flexible- Max. load current IL is 6 A for through wiring
Backup fuse in branch wiring	<ul style="list-style-type: none">- Without additional backup fuse (for short-circuit currents ≤ 60 A)- Max. 10 A, when combined with electronic circuit breakers (PTCB, CBM, CBMC)
Products in the catalog	Page 85

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC HYBRID

- Integrated combination of spark gap without line follow current and surge-proof fuse
- Can be used without separate backup fuse, thanks to integrated overcurrent protection
- Free of leakage current, suitable for use in the pre-meter area
- 440 V versions satisfy TOV requirements for use in IT systems
- Can be inserted with innovative push-pull locking mechanism
- Low voltage protection level of 1.5 kV for 264 V and 2.5 kV for 440 V versions
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

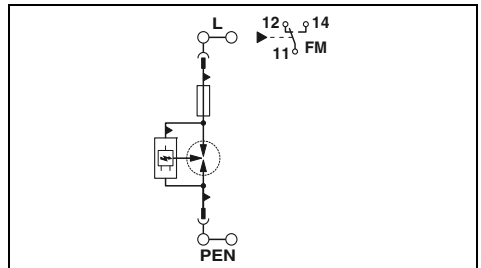
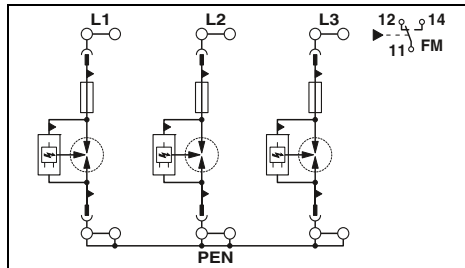
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



4-conductor system; L1, L2, L3, PEN



2-conductor system; L, PEN



Technical data

Electrical data	... 264	... 440
IEC test classification	I / II, T1 / T2	I / II, T1 / T2
Nominal voltage U_N	240/415 V AC (TN-C)	400/690 V AC (TN-C) / 400 V AC (IT)
Mode of protection	L-PEN	L-PEN / L-PE
Maximum continuous operating voltage U_C	264 V AC	440 V AC
Impulse discharge current I_{imp} (10/350) μ s	25 kA	25 kA
Nominal discharge current I_n (8/20) μ s	25 kA	25 kA
Max. discharge current I_{max} (8/20) μ s	50 kA	50 kA
Protection level U_p	≤ 1.5 kV	≤ 2.5 kV
Follow current interrupt rating I_f	50 kA	50 kA
Response time t_A	≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}	50 kA	50 kA
General data		
Dimensions W/H/D	106.8 mm / 167 mm / 74.5 mm	
IEC connection data	Rigid / flexible / AWG	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
Temperature range		-40°C ... 80°C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)

Electrical data	... 264	... 440
IEC test classification	I / II, T1 / T2	I / II, T1 / T2
Nominal voltage U_N	240 V AC (TN-C)	400 V AC (TN) / 400 V AC (IT)
Mode of protection	L-PEN	L-N / L-PE / L-PEN / N-PE (4+0)
Maximum continuous operating voltage U_C	264 V AC	440 V AC
Impulse discharge current I_{imp} (10/350) μ s	25 kA	25 kA
Nominal discharge current I_n (8/20) μ s	25 kA	25 kA
Max. discharge current I_{max} (8/20) μ s	50 kA	50 kA
Protection level U_p	≤ 1.5 kV	≤ 2.5 kV
Follow current interrupt rating I_f	50 kA	50 kA
Response time t_A	≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}	50 kA	50 kA
General data		
Dimensions W/H/D	35.5 mm / 167 mm / 74.5 mm	
IEC connection data	Rigid / flexible / AWG	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
Temperature range		-40°C ... 80°C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)

Ordering data

Description	U_C	Type	Order No.	Pcs./Pkt.
FLASHTRAB	264 V AC	FLT-SEC-H-T1-3C-264/25-FM	2905871	1
	440 V AC	FLT-SEC-H-T1-3C-440/25-FM	2907260	1

Description	U_C	Type	Order No.	Pcs./Pkt.
FLASHTRAB	264 V AC	FLT-SEC-H-T1-1C-264/25-FM	2801615	1
	440 V AC	FLT-SEC-H-T1-1C-440/25-FM	2907259	1

Accessories

Replacement plug	Mode of protection	Type	Order No.	Pcs./Pkt.
Wiring bridge, 35 mm ² 6-pos.	L-PEN	FLT-SEC-H-T1-264/25-P	2905968	1
	L-N/L-PE/L-PEN/N-PE (4+0)	FLT-SEC-H-T1-440/25-P	2907261	1
Wiring bridge, 35 mm ² 8-pos.	L-PEN	MPB 18/1-6/35	2908705	10
	L-N/L-PE/L-PEN/N-PE (4+0)	MPB 18/1-8/35	2908704	10
FLT-SEC-H MPB-3+1		FLT-SEC-H MPB-3+1	2910501	1

Replacement plug	Mode of protection	Type	Order No.	Pcs./Pkt.
Wiring bridge, 35 mm ² 6-pos.	L-PEN	FLT-SEC-H-T1-264/25-P	2905968	1
	L-N/L-PE/L-PEN/N-PE (4+0)	FLT-SEC-H-T1-440/25-P	2907261	1
Wiring bridge, 35 mm ² 8-pos.	L-PEN	MPB 18/1-6/35	2908705	10
	L-N/L-PE/L-PEN/N-PE (4+0)	MPB 18/1-8/35	2908704	10
FLT-SEC-H MPB-3+1		FLT-SEC-H MPB-3+1	2910501	1

A 3+1 circuit can be implemented when the products are used in conjunction with the 8-pos. wiring bridge: FLT-SEC-H MPB-3+1 (2910501) and FLT-SEC-P-T1-N/PE-350/100-FM (2905472) or FLT-SEC-P-T1-N/PE-440/100-FM (2907262).

A 3+1 circuit can be implemented when the products are used in conjunction with the 8-pos. wiring bridge: FLT-SEC-H MPB-3+1 (2910501) and FLT-SEC-P-T1-N/PE-350/100-FM (2905472) or FLT-SEC-P-T1-N/PE-440/100-FM (2907262).

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC PLUS 440

- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Satisfies TOV requirements for use in IT systems
- Pluggable
- Low voltage protection level of 2.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2



5-conductor system; L1, L2, L3, N, PE

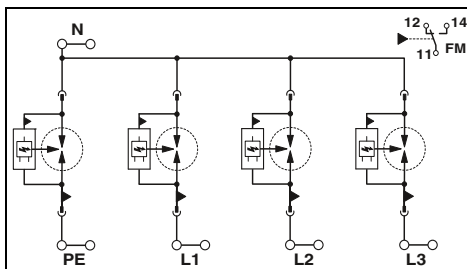


4-conductor system, L1, L2, L3, PE(N)

Notes:

If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

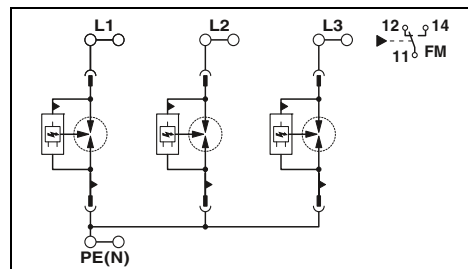
ERC



Technical data

I / II, T1 / T2
400/690 V AC (TN-S) /
400/690 V AC (TT)
L-N / L-PE / N-PE
440 V AC
35 kA / 35 kA / 100 kA
35 kA / 35 kA / 100 kA
50 kA / 50 kA / -
≤ 2.5 kV / ≤ 4.5 kV / ≤ 2.5 kV
50 kA / 50 kA / 100 A
≤ 100 ns
50 kA
400 A (gG)

ERC KEBA CB



Technical data

I / II, T1 / T2
400/690 V AC (TN-C) /
400 V AC (IT)
L-PE / L-PEN
440 V AC
35 kA
35 kA
50 kA
≤ 2.5 kV
50 kA
≤ 100 ns
50 kA
400 A (gG)

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_{fi}	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	
General data	
Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
Max. operating voltage	
Max. operating current	

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-3S-440/35-FM	2908264	1

Accessories		
FLT-SEC-P-T1-440/35-P	2905989	1
FLT-SEC-P-T1-N/PE-440/100-P	2907263	1

Description	
FLASHTRAB	
Replacement plug	L-N/L-PE/L-PEN/N-PE (4+0) N-PE

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-3C-440/35-FM	2905988	1

Accessories		
FLT-SEC-P-T1-440/35-P	2905989	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC PLUS 440

- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Satisfies TOV requirements for use in IT systems
- Pluggable
- Low voltage protection level of 2.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

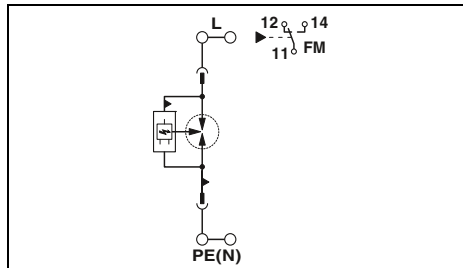


2-conductor system, L, PE(N)



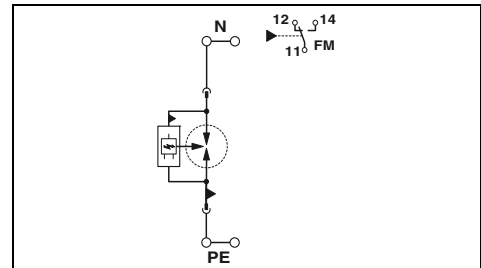
N-PE spark gap

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Technical data

I / II, T1 / T2
400 V AC (TN) /
400 V AC (IT)
L-N / L-PE / L-PEN / N-PE (4+0)
440 V AC
35 kA
35 kA
50 kA
≤ 2.5 kV
100 A
≤ 100 ns
50 kA
400 A (gG)



Technical data

I / II, T1 / T2
400 V AC (TN - only N-PE) /
400 V AC (TT - only N-PE)
N-PE
440 V AC
100 kA
100 kA
-
≤ 2.5 kV
100 A
≤ 100 ns
-
-

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_f	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	
General data	
Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
Max. operating voltage	
Max. operating current	

35.6 mm / 95.2 mm / 74.5 mm
2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

35.6 mm / 95.2 mm / 74.5 mm
2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Ordering data

Description	
FLASHTRAB	

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-1C-440/35-FM	2905987	1

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-N/PE-440/100-FM	2907262	1

Accessories

Replacement plug	L-N/L-PE/L-PEN/N-PE (4+0) N-PE
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Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-440/35-P	2905989	1

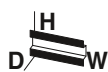
Accessories

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-N/PE-440/100-P	2907263	1

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC PLUS 350

- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

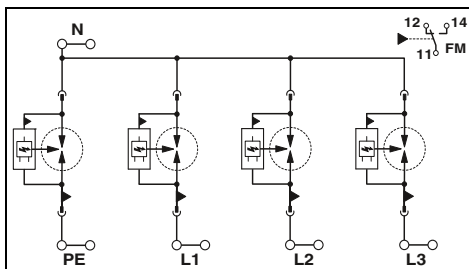
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE

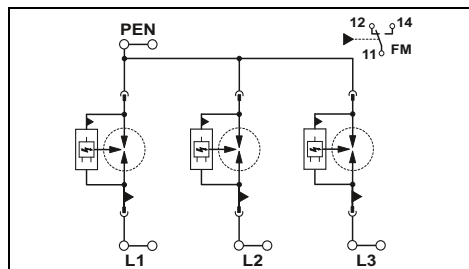


4-conductor system; L1, L2, L3, PEN



Technical data

I / II, T1 / T2
240/415 V AC (TN-S) /
240/415 V AC (TT)
L-N / L-PE / N-PE
350 V AC
25 kA / 25 kA / 100 kA
25 kA / 25 kA / 100 kA
50 kA / 50 kA / -
≤ 1.5 kV / ≤ 2.5 kV / ≤ 1.5 kV
50 kA / - / 100 A
≤ 100 ns
50 kA
315 A (gG)



Technical data

I / II, T1 / T2
240/415 V AC (TN-C)
L-PEN
350 V AC
25 kA
25 kA
50 kA
≤ 1.5 kV
50 kA
≤ 100 ns
50 kA
315 A (gG)

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_{fi}	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	
General data	
Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	
Max. operating current	

Dimensions W/H/D	142.4 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	30 ... 14
Max. operating current	250 V AC / 125 V DC (200 mA DC) 1 A AC / 1 A DC (30 V DC)

Dimensions W/H/D	106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	30 ... 14
Max. operating current	250 V AC / 125 V DC (200 mA DC) 1 A AC / 1 A DC (30 V DC)

Description	
FLASHTRAB	
Replacement plug	
L-N/L-PEN	
N-PE	

Ordering data			
Type	Order No.	Pcs./Pkt.	
FLT-SEC-P-T1-3S-350/25-FM	2905421	1	
Accessories			
FLT-SEC-P-T1-350/25-P	2905422	1	
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1	

Ordering data			
Type	Order No.	Pcs./Pkt.	
FLT-SEC-P-T1-3C-350/25-FM	2905419	1	
Accessories			
FLT-SEC-P-T1-350/25-P	2905422	1	

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC PLUS 350

- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

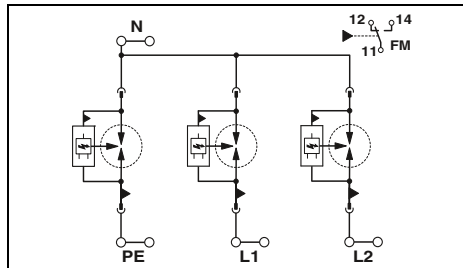


4-conductor system; L1, L2, N, PE



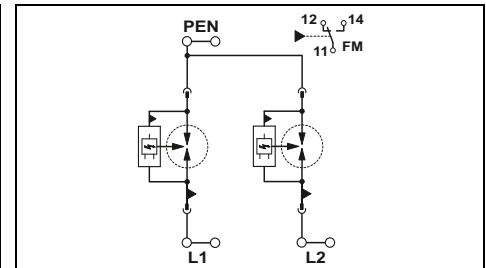
3-conductor system; L1, L2, PEN

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Technical data

I / II, T1 / T2
240/415 V AC (TN-S) /
240/415 V AC (TT)
L-N / L-PE / N-PE
350 V AC
25 kA / 25 kA / 100 kA
25 kA / 25 kA / 100 kA
50 kA / 50 kA / -
≤ 1.5 kV / ≤ 2.5 kV / ≤ 1.5 kV
50 kA / - / 100 A
≤ 100 ns
50 kA
315 A (gG)



Technical data

I / II, T1 / T2
240/415 V AC (TN-C)
L-PEN
350 V AC
25 kA
25 kA
50 kA
≤ 1.5 kV
50 kA
≤ 100 ns
50 kA
315 A (gG)

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_{fi}	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	
General data	
Dimensions W/H/D	106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-2S-350/25-FM	2905418	1
Accessories		
FLT-SEC-P-T1-350/25-P	2905422	1
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-2C-350/25-FM	2905416	1
Accessories		
FLT-SEC-P-T1-350/25-P	2905422	1

Description	
FLASHTRAB	
Replacement plug	
L-N/L-PEN	
N-PE	

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-2S-350/25-FM	2905418	1
Accessories		
FLT-SEC-P-T1-350/25-P	2905422	1
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-2C-350/25-FM	2905416	1
Accessories		
FLT-SEC-P-T1-350/25-P	2905422	1



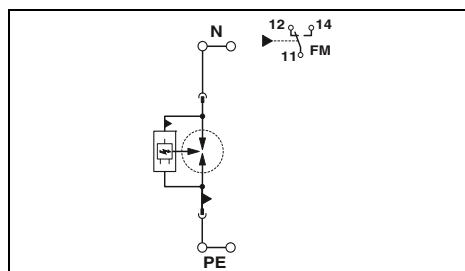
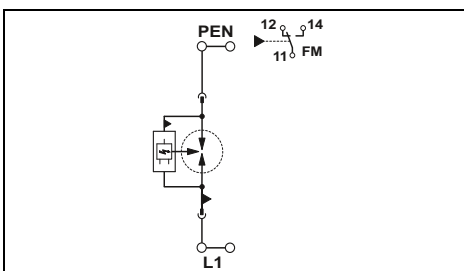
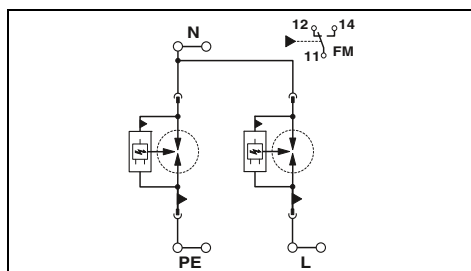
3-conductor system; L, N, PE



2-conductor system; L, PEN



N-PE spark gap



Technical data

I / II, T1 / T2
 240 V AC (TN-S) /
 240 V AC (TT)
 L-N / L-PE / N-PE
 350 V AC
 25 kA / 25 kA / 100 kA
 25 kA / 25 kA / 100 kA
 50 kA / 50 kA / -
 ≤ 1.5 kV / ≤ 2.5 kV / ≤ 1.5 kV
 50 kA / - / 100 A
 ≤ 100 ns
 50 kA
 315 A (gG)

71.2 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-1S-350/25-FM	2905415	1

Accessories

FLT-SEC-P-T1-350/25-P	2905422	1
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Technical data

I / II, T1 / T2
 240 V AC (TN-C) /
 240 V AC (TT)
 L-PEN
 350 V AC
 25 kA
 25 kA
 50 kA
 ≤ 1.5 kV
 50 kA
 ≤ 100 ns
 50 kA
 315 A (gG)

35.6 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-1C-350/25-FM	2905414	1

Accessories

FLT-SEC-P-T1-350/25-P	2905422	1
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Technical data

I / II, T1 / T2
 240 V AC (TN - only N-PE) /
 240 V AC (TT - only N-PE)
 N-PE
 350 V AC
 100 kA
 100 kA
 -
 ≤ 1.5 kV
 100 A
 ≤ 100 ns
 -
 -

35.6 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-N/PE-350/100-FM	2905472	1

Accessories

FLT-SEC-P-T1-N/PE-350/100-P	2905473	1
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester FLASHTRAB SEC PLUS 264

- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Pluggable
- High lightning impulse current of 50 kA per position
- Low voltage protection level of 2.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2



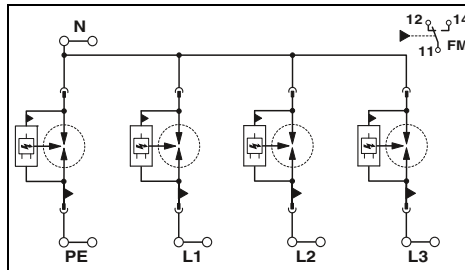
5-conductor system; L1, L2, L3, N, PE



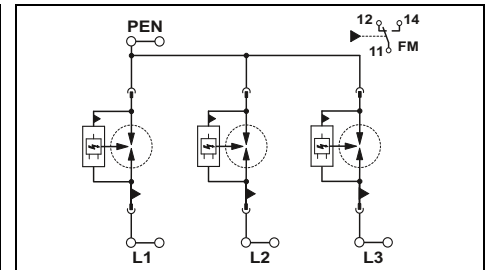
4-conductor system; L1, L2, L3, PEN

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

ERC



ERC



Technical data

Electrical data	
IEC test classification	I / II, T1 / T2
Nominal voltage U_N	240/415 V AC (TN-S) / 240/415 V AC (TT)
Mode of protection	
Maximum continuous operating voltage U_C	L-N / L-PE / N-PE 264 V AC / 264 V AC / 350 V AC
Impulse discharge current I_{imp} (10/350) μ s	50 kA / 50 kA / 100 kA
Nominal discharge current I_n (8/20) μ s	50 kA / 50 kA / 100 kA
Max. discharge current I_{max} (8/20) μ s	100 kA
Protection level U_p	≤ 2.5 kV / ≤ 3 kV / ≤ 1.5 kV
Follow current interrupt rating I_f	50 kA / - / 100 A
Response time t_A	≤ 100 ns
Short-circuit current rating I_{SCCR}	50 kA
Maximum backup fuse for branch wiring	500 A (gG)
General data	
Dimensions W/H/D	142.4 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	30 ... 14
Max. operating current	250 V AC / 125 V DC (200 mA DC) 1 A AC / 1 A DC (30 V DC)

Technical data	
I / II, T1 / T2	
240/415 V AC (TN-C)	
L-PEN	
264 V AC	
50 kA	
50 kA	
100 kA	
≤ 2.5 kV	
50 kA	
≤ 100 ns	
50 kA	
500 A (gG)	
General data	
106.8 mm / 95.2 mm / 74.5 mm	
2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2	
3 ... 2	
-40°C ... 80°C	
IEC 61643-11 / EN 61643-11	
Remote indication contact	
PDT contact	
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16	
30 ... 14	
250 V AC / 125 V DC (200 mA DC) 1 A AC / 1 A DC (30 V DC)	

Ordering data

Description		
FLASHTRAB		
Replacement plug	L-N/L-PEN N-PE	

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-3S-264/50-FM	2909589	1
Accessories		
FLT-SEC-P-T1-264/50-P	2907391	5
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-3C-264/50-FM	2907390	1
Accessories		
FLT-SEC-P-T1-264/50-P	2907391	5



3-conductor system; L, N, PE

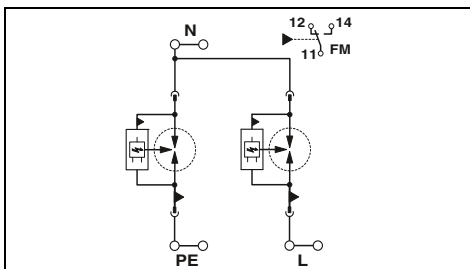


2-conductor system; L, PEN



N-PE spark gap

ERC



Technical data

I / II, T1 / T2
 240 V AC (TN-S) /
 240 V AC (TT)
 L-N / L-PE / N-PE
 264 V AC / 264 V AC / 350 V AC
 50 kA / 50 kA / 100 kA
 50 kA / 50 kA / 100 kA
 100 kA
 $\leq 2.5 \text{ kV} / \leq 3 \text{ kV} / \leq 1.5 \text{ kV}$
 50 kA / - / 100 A
 $\leq 100 \text{ ns}$
 50 kA
 500 A (gG)

71.2 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

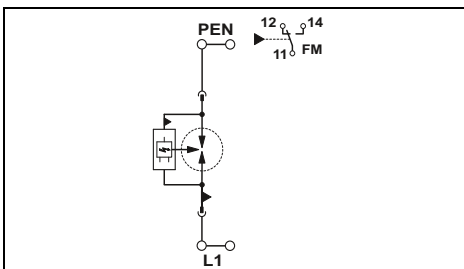
Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-1S-264/50-FM	2907388	1

Accessories

FLT-SEC-P-T1-264/50-P	2907391	5
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

ERC



Technical data

I / II, T1 / T2
 240 V AC (TN-C) /
 240 V AC (TT)
 L-PEN
 264 V AC
 50 kA
 50 kA
 100 kA
 $\leq 2.5 \text{ kV}$
 50 kA
 $\leq 100 \text{ ns}$
 50 kA
 500 A (gG)

35.6 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

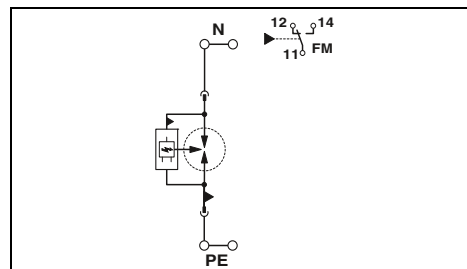
Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-1C-264/50-FM	2907387	1

Accessories

FLT-SEC-P-T1-264/50-P	2907391	5
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ERC KEBA CB



Technical data

I / II, T1 / T2
 240 V AC (TN - only N-PE) /
 240 V AC (TT - only N-PE)
 N-PE
 350 V AC
 100 kA
 100 kA
 -
 $\leq 1.5 \text{ kV}$
 100 A
 $\leq 100 \text{ ns}$
 -
 -

35.6 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
 3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11
 PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-N/PE-350/100-FM	2905472	1

Accessories

FLT-SEC-P-T1-N/PE-350/100-P	2905473	1
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester special FLASHTRAB SEC T1+T2

- Directly coordinated combination of type 1 spark gap without line follow current and type 2 varistor arrester
- Particularly suitable for maximum protection of sensitive devices in harsh environments
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

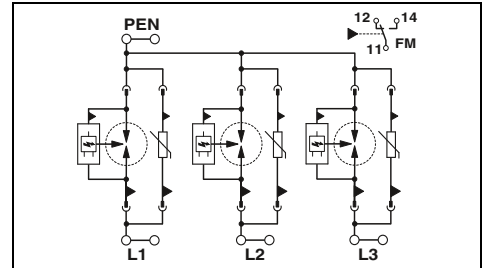
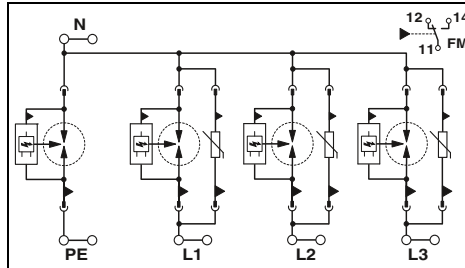


5-conductor system; L1, L2, L3, N, PE



4-conductor system; L1, L2, L3, PEN

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Electrical data

IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_{fi}	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	

Technical data

I + II, T1 + T2	240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE	350 V AC
	25 kA / 25 kA / 100 kA
	25 kA / 25 kA / 100 kA
	≤ 1.5 kV / ≤ 2.2 kV / ≤ 1.5 kV
	25 kA (264 V AC) / - / 100 A (350 V AC)
	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
	25 kA (264 V AC)
	315 A (gG)

Technical data

I + II, T1 + T2	240/415 V AC (TN-C)
L-PEN	350 V AC
	25 kA
	25 kA
	≤ 1.5 kV
	25 kA (264 V AC)
	≤ 25 ns
	25 kA (264 V AC)
	315 A (gG)

General data

Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	
Max. operating current	

General data

Dimensions W/H/D	142.4 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	30 ... 14
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

General data

Dimensions W/H/D	106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 2.5 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	30 ... 14
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-3S-350/25-FM	2905470	1

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-3C-350/25-FM	2905469	1

Accessories

Replacement plug	Order No.	Pcs./Pkt.	
L-N/L-PEN	FLT-SEC-T1-350/25-P	2905471	1
L-N/L-PEN	VAL-SEC-T2-350-P	2905346	1
N-PE	FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Accessories

Replacement plug	Order No.	Pcs./Pkt.	
L-N/L-PEN	FLT-SEC-T1-350/25-P	2905471	1
L-N/L-PEN	VAL-SEC-T2-350-P	2905346	1



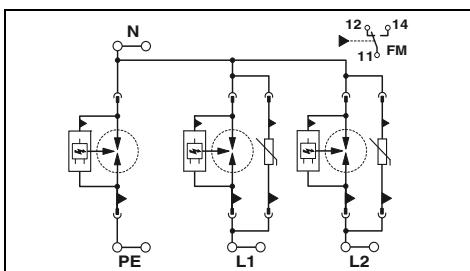
4-conductor system; L1, L2, N, PE



3-conductor system; L1, L2, PEN



3-conductor system; L, N, PE



Technical data

I + II, T1 + T2
 240/415 V AC (TN-S) /
 240/415 V AC (TT)
 L-N / L-PE / N-PE
 350 V AC
 25 kA / 25 kA / 100 kA
 25 kA / 25 kA / 100 kA
 $\leq 1.5 \text{ kV} / \leq 2.2 \text{ kV} / \leq 1.5 \text{ kV}$
 25 kA (264 V AC) / - / 100 A (350 V AC)
 $\leq 25 \text{ ns} / - / \leq 100 \text{ ns}$
 25 kA (264 V AC)
 315 A (gG)

106.8 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2

3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11

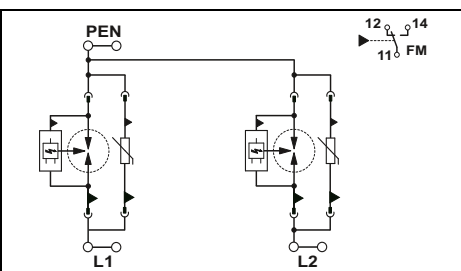
PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-2S-350/25-FM	2905468	1

Accessories

FLT-SEC-T1-350/25-P	2905471	1
VAL-SEC-T2-350-P	2905346	1
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1



Technical data

I + II, T1 + T2
 240/415 V AC (TN-C)
 L-PEN
 350 V AC
 25 kA
 25 kA
 $\leq 1.5 \text{ kV}$
 25 kA (264 V AC)
 $\leq 25 \text{ ns}$
 25 kA (264 V AC)
 315 A (gG)

71.2 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2

3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11

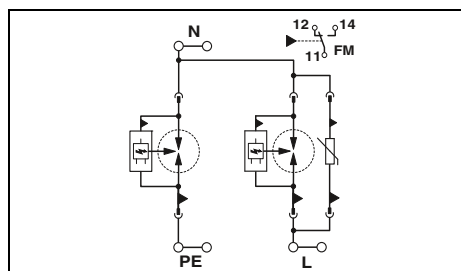
PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-2C-350/25-FM	2905467	1

Accessories

FLT-SEC-T1-350/25-P	2905471	1
VAL-SEC-T2-350-P	2905346	1



Technical data

I + II, T1 + T2
 240 V AC (TN-S) /
 240 V AC (TT)
 L-N / L-PE / N-PE
 350 V AC
 25 kA / 25 kA / 100 kA
 25 kA / 25 kA / 100 kA
 $\leq 1.5 \text{ kV} / \leq 2.2 \text{ kV} / \leq 1.5 \text{ kV}$
 25 kA (264 V AC) / - / 100 A (350 V AC)
 $\leq 25 \text{ ns} / - / \leq 100 \text{ ns}$
 25 kA (264 V AC)
 315 A (gG)

71.2 mm / 95.2 mm / 74.5 mm
 2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2

3 ... 2
 -40°C ... 80°C
 IEC 61643-11 / EN 61643-11

PDT contact
 0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
 30 ... 14
 250 V AC / 125 V DC (200 mA DC)
 1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-1S-350/25-FM	2905466	1

Accessories

FLT-SEC-T1-350/25-P	2905471	1
VAL-SEC-T2-350-P	2905346	1
FLT-SEC-P-T1-N/PE-350/100-P	2905473	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester special FLASHTRAB SEC T1+T2

- Directly coordinated combination of type 1 spark gap without line follow current and type 2 varistor arrester
- Particularly suitable for maximum protection of sensitive devices in harsh environments
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2



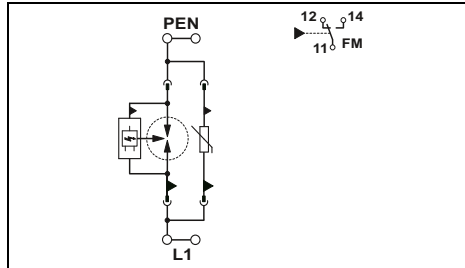
2-conductor system; L, PEN



N-PE spark gap

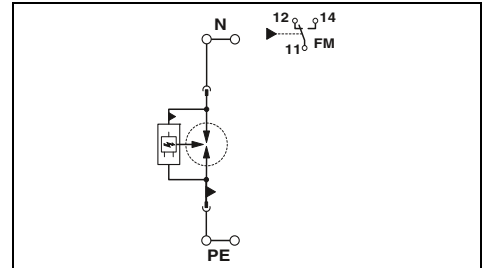


Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Technical data

I + II, T1 + T2
240 V AC (TN-C) /
240 V AC (TT)
L-PEN
350 V AC
25 kA
25 kA
≤ 1.5 kV
25 kA (264 V AC)
≤ 25 ns
25 kA (264 V AC)
315 A (gG)



Technical data

I / II, T1 / T2
240 V AC (TN - only N-PE) /
240 V AC (TT - only N-PE)
N-PE
350 V AC
100 kA
100 kA
≤ 1.5 kV
100 A
≤ 100 ns
-
-

General data	
Dimensions W/H/D	35.6 mm / 95.2 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Dimensions W/H/D	35.6 mm / 95.2 mm / 74.5 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / 13 ... 2
UL connection data	3 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	30 ... 14
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-T1+T2-1C-350/25-FM	2905465	1

Ordering data

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-N/PE-350/100-FM	2905472	1

Accessories

FLT-SEC-T1-350/25-P	2905471	1
VAL-SEC-T2-350-P	2905346	1

Accessories

FLT-SEC-P-T1-N/PE-350/100-P	2905473	1
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Replacement plug	
L-N/L-PEN	
L-N/L-PEN	
N-PE	

T1+T2 combined lightning current and surge arrester FLASHTRAB SEC ZP

- Complete module for direct mounting on 40 mm busbar systems
- Fits in every distribution board, thanks to extremely narrow overall width of just 47 mm
- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Low voltage protection level of 1.5 kV L-N/N-PE and 2 kV L-PE
- Test button for electrical status indicator
- Tool-free and secure attachment to 5 and 10 mm thick rails, thanks to universal interlock
- Satisfies all requirements for the installation of surge protection in accordance with DIN VDE 0100-534

new

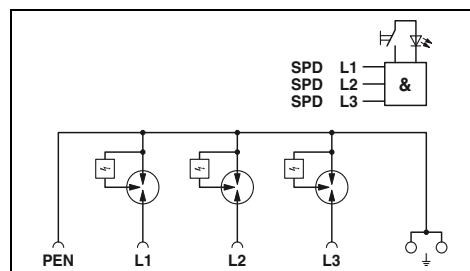
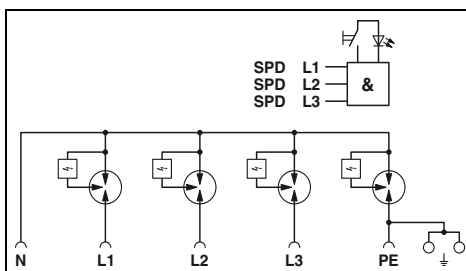
new



5-conductor system; L1, L2, L3, N, PE



4-conductor system; L1, L2, L3, PEN



Technical data

... 3S...12,5	... 3S...7,5
I + II, T1 + T2	I + II, T1 + T2
230/400 V AC (TN-S) / 230/400 V AC (TT)	230/400 V AC (TN-S) / 230/400 V AC (TT)
L-N / L-PE / N-PE	L-N / L-PE / N-PE
255 V AC	255 V AC
12.5 kA / 12.5 kA / 50 kA	7.5 kA / 7.5 kA / 30 kA
20 kA / 20 kA / 80 kA	20 kA / 20 kA / 80 kA
≤ 1.5 kV / ≤ 2 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 2 kV / ≤ 1.5 kV
25 kA / 25 kA / 100 A	25 kA / 25 kA / 100 A
≤ 100 ns	≤ 100 ns
25 kA	25 kA
250 A (gG)	250 A (gG)

Technical data

... 3C...12,5	... 3C...7,5
I + II, T1 + T2	I + II, T1 + T2
230/400 V AC (TN-C)	230/400 V AC (TN-C)
L-PEN	L-PEN
255 V AC	255 V AC
12.5 kA	7.5 kA
20 kA	20 kA
≤ 1.5 kV	≤ 1.5 kV
25 kA	25 kA
≤ 100 ns	≤ 100 ns
25 kA	25 kA
250 A (gG)	250 A (gG)

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Protection level U_p	
Follow current interrupt rating I_{fi}	
Response time t_A	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	

General data	
Dimensions W/H/D	47 mm / 223.2 mm / 110.7 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / -
UL connection data	-
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

General data	
Dimensions W/H/D	47 mm / 223.2 mm / 110.7 mm
IEC connection data	2.5 ... 35 mm ² / 2.5 ... 35 mm ² / -
UL connection data	-
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
FLASHTRAB FLT-SEC-ZP-3S-255/12,5	1032207	1
FLASHTRAB FLT-SEC-ZP-3S-255/7,5	1074741	1

Ordering data

Type	Order No.	Pcs./Pkt.
FLASHTRAB FLT-SEC-ZP-3C-255/12,5	1032204	1
FLASHTRAB FLT-SEC-ZP-3C-255/7,5	1074739	1

Description	
FLASHTRAB	
$I_{imp} = 12.5$ kA	
$I_{imp} = 7.5$ kA	

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester VALVETRAB MS

- Seamless pluggability (even for N/PE spark gap)
- Secure hold of plugs in the event of high lightning current loads and strong vibration, thanks to new latching
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2

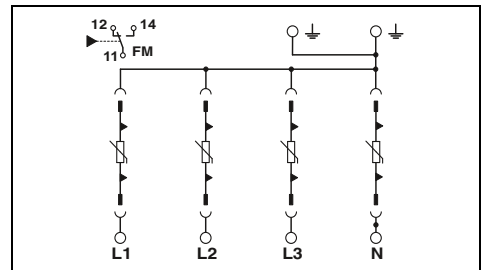
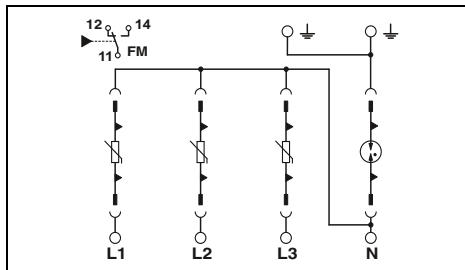


5-conductor system; L1, L2, L3, N, PE
(3+1 circuit)



5-conductor system; L1, L2, L3, N, PE
(4+0 circuit)

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Electrical data	
IEC test classification	...335
Nominal voltage U_N	I / II, T1 / T2 240/415 V AC (TN-S) / 240/415 V AC (TT)
Mode of protection	
Maximum continuous operating voltage U_C	L-N / L-PE / N-PE 335 V AC / 335 V AC / 264 V AC
Impulse discharge current I_{imp} (10/350) μ s	12.5 kA / 12.5 kA / 50 kA
Nominal discharge current I_n (8/20) μ s	12.5 kA / 12.5 kA / 50 kA
Max. discharge current I_{max} (8/20) μ s	50 kA
Protection level U_p	≤ 1.2 kV / ≤ 2 kV / ≤ 1.7 kV
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	160 A (gG)
General data	
Dimensions W/H/D	71.2 mm / 98.7 mm / 77.5 mm
IEC connection data	1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	Rigid / flexible / AWG 10 ... 2 AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	30 ... 14 AWG
Max. operating current	250 V AC / 30 V DC 1.5 A AC / 1 A DC

Technical data		
...335	I / II, T1 / T2	240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE		
335 V AC	335 V AC	264 V AC
12.5 kA	12.5 kA	50 kA
12.5 kA	12.5 kA	50 kA
50 kA	50 kA	50 kA
≤ 1.2 kV	≤ 2 kV	≤ 1.7 kV
≤ 25 ns	≤ 100 ns	≤ 100 ns
25 kA	25 kA	25 kA
160 A (gG)	160 A (gG)	160 A (gG)

Technical data		
...335	I / II, T1 / T2	240/415 V AC (TN-S)
L-PE / N-PE		
335 V AC	335 V AC	264 V AC
12.5 kA	12.5 kA	50 kA
12.5 kA	12.5 kA	50 kA
50 kA	50 kA	50 kA
≤ 1.2 kV	≤ 1.6 kV	(30 kA - 8/20 μ s)
≤ 25 ns	≤ 25 ns	≤ 25 ns
25 kA	25 kA	25 kA
160 A (gG)	160 A (gG)	160 A (gG)

Description	U_C
VALVETRAB-MS , varistor-based lightning current arrester	
with remote indication contact	335 V AC
without remote indication contact	335 V AC

Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 335/12.5/3+1-FM	2800183	1
VAL-MS-T1/T2 335/12.5/3+1	2800184	1

Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 335/12.5/4+0-FM	2800644	1
VAL-MS-T1/T2 335/12.5/4+0	2800645	1

Replacement plug	
335 V AC	L-N/L-PEN N-PE

Accessories		
VAL-MS-T1/T2 335/12.5 ST	2800190	10
F-MS-T1/T2 50 ST	2800191	10

Accessories		
VAL-MS-T1/T2 335/12.5 ST	2800190	10



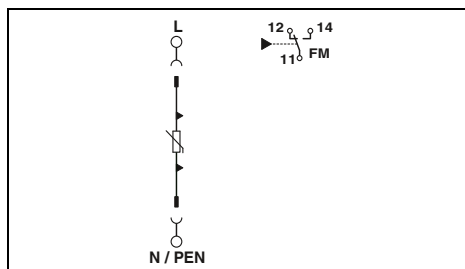
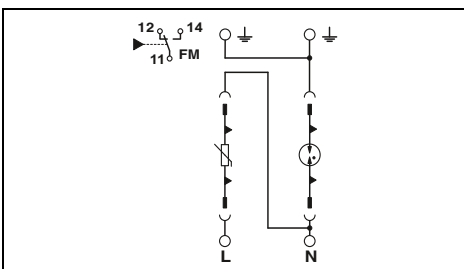
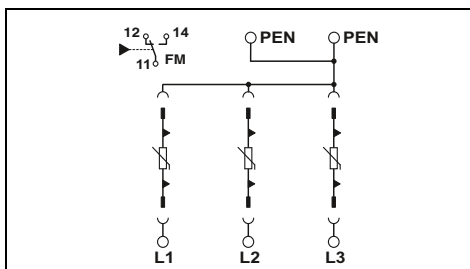
4-conductor system; L1, L2, L3, PEN



3-conductor system; L, N, PE



2-conductor system; L, N, PEN



Technical data

Technical data

Technical data

...335
I / II, T1 / T2
240/415 V AC (TN-C)

L-PEN
335 V AC
12.5 kA
12.5 kA
50 kA
≤ 1.2 kV / ≤ 1.6 kV (30 kA - 8/20 μs)
≤ 25 ns
25 kA
160 A (gG)

...335
I / II, T1 / T2
240 V AC (TN-S) /
240 V AC (TT)
L-N / L-PE / N-PE
335 V AC / 335 V AC / 264 V AC
12.5 kA / 12.5 kA / 50 kA
12.5 kA / 12.5 kA / 50 kA
50 kA
≤ 1.2 kV / ≤ 2 kV / ≤ 1.7 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA
160 A (gG)

...335
I / II, T1 / T2
240 V AC (TN-C, TN-S) /
240 V AC (TT)
L-N / L-PEN
335 V AC
12.5 kA
12.5 kA
50 kA
≤ 1.2 kV / ≤ 1.6 kV (30 kA - 8/20 μs)
≤ 25 ns
25 kA
160 A (gG)

53.4 mm / 98.7 mm / 77.5 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2

35.6 mm / 96.8 mm / 77.5 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2

17.6 mm / 96.8 mm / 77.5 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2

10 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

10 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

-
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 30 V DC
1.5 A AC / 1 A DC

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 30 V DC
1.5 A AC / 1 A DC

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
-
250 V AC / 30 V DC
1 A AC / 1 A DC

Ordering data

Ordering data

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 335/12.5/3+0-FM	2800188	1
VAL-MS-T1/T2 335/12.5/3+0	2800189	1

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 335/12.5/1+1-FM	2800186	1
VAL-MS-T1/T2 335/12.5/1+1	2800187	1

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 335/12.5/1+0-FM	2801042	1
VAL-MS-T1/T2 335/12.5/1+0	2801041	1

Accessories

Accessories

Accessories

VAL-MS-T1/T2 335/12.5 ST	2800190	10
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VAL-MS-T1/T2 335/12.5 ST	2800190	10
F-MS-T1/T2 50 ST	2800191	10

VAL-MS-T1/T2 335/12.5 ST	2800190	10
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester VALVETRAB MS

- Universal pluggability
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2

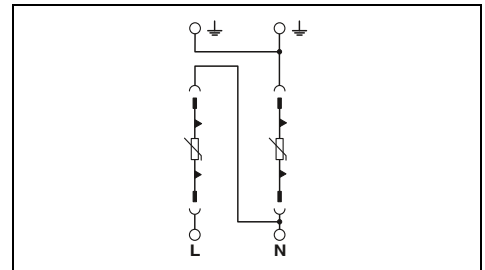
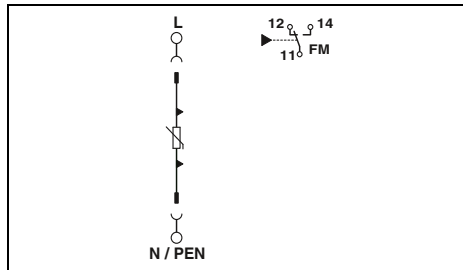


2-conductor system; L, PEN



3-conductor system; L, N, PE

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Electrical data	
IEC test classification	I / II, T1 / T2
Nominal voltage U_N	60 V AC (TN)
Mode of protection	L-N / L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE
Maximum continuous operating voltage U_C	75 V AC / 100 V DC
Impulse discharge current I_{imp} (10/350) μ s	12.5 kA
Nominal discharge current I_n (8/20) μ s	12.5 kA
Max. discharge current I_{max} (8/20) μ s	30 kA
Protection level U_p	≤ 0.4 kV
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	160 A (gG)
General data	
Dimensions W/H/D	17.6 mm / 96.8 mm / 77.5 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	AWG 10 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	AWG 30 ... 14
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1.5 A AC / 1 A DC (30 V DC)

Technical data		
I / II, T1 / T2		
60 V AC (TN)		
L-N / L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE		
75 V AC / 100 V DC		
12.5 kA		
12.5 kA		
30 kA		
≤ 0.4 kV		
≤ 25 ns		
25 kA		
160 A (gG)		
Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 48/12.5/1+0-FM	2801240	1
VAL-MS-T1/T2 48/12.5/1+0	2801241	1
Accessories		
VAL-MS-T1/T2 48/12.5 ST	2801242	10

Technical data		
I / II, T1 / T2		
60 V AC (TN-S)		
L-N / L-PE / N-PE / (L+) - (L-) / (L+) - PE / (L-) - PE		
75 V AC / 100 V DC		
12.5 kA		
12.5 kA		
30 kA		
≤ 0.4 kV / ≤ 0.8 kV / ≤ 0.4 kV / ≤ 0.4 kV / ≤ 0.4 kV / ≤ 0.8 kV		
≤ 25 ns		
25 kA		
160 A (gG)		
Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	1
VAL-MS-T1/T2 48/12.5/1+1V	2801532	1
Accessories		
VAL-MS-T1/T2 48/12.5 ST	2801242	10

Description	
VALVETRAB-MS , varistor-based lightning current arrester	
with remote indication contact	
without remote indication contact	

Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 48/12.5/1+0-FM	2801240	1
VAL-MS-T1/T2 48/12.5/1+0	2801241	1

Ordering data		
Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	1
VAL-MS-T1/T2 48/12.5/1+1V	2801532	1

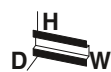
Replacement plug	
L-N/N-PE/(L+) - (L-)/(L+) - PE	

Accessories		
VAL-MS-T1/T2 48/12.5 ST	2801242	10

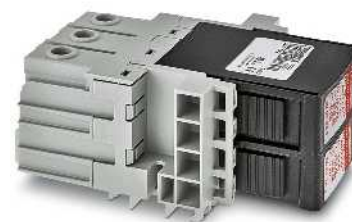
Accessories		
VAL-MS-T1/T2 48/12.5 ST	2801242	10

Type 1+2 combined lightning current and surge arrester VALVETRAB MS

- Universal pluggability
- Suitable for 19" applications with rackmount systems
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



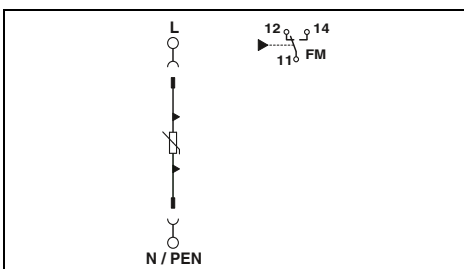
2-conductor system; L, PEN



3-conductor system; L, N, PE

Notes:

If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Technical data

Electrical data	I / II, T1 / T2
IEC test classification	- V AC / -48 V DC
Nominal voltage U_N	L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE
Mode of protection	75 V AC / 100 V DC
Maximum continuous operating voltage U_C	12.5 kA 12.5 kA
Impulse discharge current I_{imp} (10/350) μ s	12.5 kA
Nominal discharge current I_n (8/20) μ s	30 kA
Max. discharge current I_{max} (8/20) μ s	≤ 0.4 kV
Protection level U_p	≤ 25 ns
Response time t_A	25 kA
Short-circuit current rating I_{SCCR}	160 A AC (gG)
Maximum backup fuse for branch wiring	

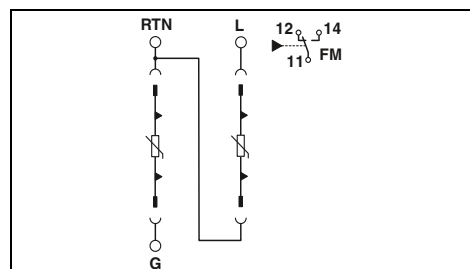
General data	
Dimensions W/H/D	17.5 mm / 77.1 mm / 89.2 mm
IEC connection data	1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	10 ... 2 AWG
Temperature range	-40°C ... 80°C
Test standards	EN 61643-11/A11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	-
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1.5 A / 1 A (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS with remote indication contact	VAL-MS-T1/T2 48/12.5/O-FM	2906282	12
without remote indication contact	VAL-MS-T1/T2 48/12.5/O	2906281	12

Accessories

Replacement plug	VAL-MS-T1/T2 48/12.5 ST	2801242	10
L-N/N-PE/(L+) - (L-)/(L+) - PE	VAL-MS-T1/T2 BE/O-FM	2905652	12
VALVETRAB, base element	VAL-MS-T1/T2 BE/O	2905650	12



Technical data

Electrical data	I / II, T1 / T2
IEC test classification	60 V AC (TN-S) / -48 V DC
Nominal voltage U_N	L-N / N-PE
Mode of protection	75 V AC / 100 V DC
Maximum continuous operating voltage U_C	12.5 kA
Impulse discharge current I_{imp} (10/350) μ s	12.5 kA
Nominal discharge current I_n (8/20) μ s	30 kA
Max. discharge current I_{max} (8/20) μ s	≤ 0.4 kV
Protection level U_p	≤ 25 ns
Response time t_A	25 kA
Short-circuit current rating I_{SCCR}	160 A AC (gG)
Maximum backup fuse for branch wiring	

General data	
Dimensions W/H/D	70.6 mm / 40.6 mm / 98.1 mm
IEC connection data	- mm ² / - mm ² / 15 ... 2
UL connection data	10 ... 2
Temperature range	-40°C ... 80°C
Test standards	-
Remote indication contact	PDT contact
IEC connection data	- mm ² / - mm ² / 24 ... 20
UL connection data	30 ... 14
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1.5 A / 1 A (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS with remote indication contact	VAL-MS-T1/T2 48/12.5/1+1/1U/FM	2909629	6

Accessories

Replacement plug	VAL-MS-T1/T2 48/12.5 ST	2801242	10
L-N/N-PE/(L+) - (L-)/(L+) - PE	VAL-MS BE/1+1/1U/FM	2909628	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester VALVETRAB MS

- Double terminal block for safe and easy equipotential bonding connection
- Screw shafts with raised domes to ensure safe working
- Main connections with extended insertion funnels for increased resistance to creepage
- Optical, mechanical status indication for the individual arresters
- Visual display for checking the status directly on the device
- Pluggable signal connection for remote status signaling
- Compact design for space-saving installation

Notes:

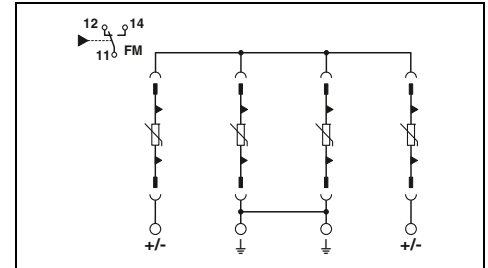
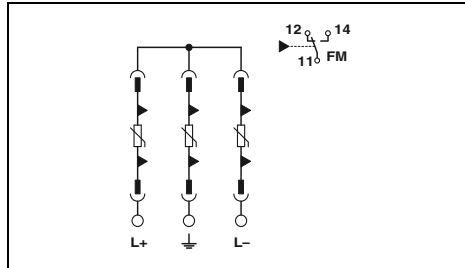
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Pluggable lightning and surge protection for PV applications up to 1000 V DC



Pluggable lightning and surge protection for PV applications up to 1000 V DC



Technical data

Electrical data	... 600DC	... 1000DC
IEC test classification	PV I / II, T1 / T2	PV I / II, T1 / T2
Mode of protection	(L+) - (L-) / (L+) - PE / (L-) - PE	(DC+) - (DC-) / (DC+)/ (DC-) - PE
Maximum continuous operating voltage U_{CPV}	720 V DC	1050 V DC
Impulse discharge current I_{imp} (10/350) μ s	5 kA	5 kA
Nominal discharge current I_n (8/20) μ s	15 kA	15 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	40 kA
Protection level U_p	≤ 2.6 kV	≤ 3.5 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Short-circuit current I_{SCPV}	2000 A	2000 A
General data		
Dimensions W/H/D	53.4 mm / 98.7 mm / 65.7 mm	
IEC connection data	Rigid / flexible / AWG	1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
Temperature range	-40°C ... 80°C	
Test standards	EN 50539-11	
Remote indication contact	PDT contact	
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 30 V DC	
Max. operating current	1.5 A AC / 1 A DC	

Technical data

Electrical data	... 600DC	... 1000DC
IEC test classification	PV I / II, T1 / T2	PV I / II, T1 / T2
Mode of protection	(DC+) - (DC-) / (DC+)/ (DC-) - PE	(DC+) - (DC-) / (DC+)/ (DC-) - PE
Maximum continuous operating voltage U_{CPV}	1170 V DC	1170 V DC
Impulse discharge current I_{imp} (10/350) μ s	5 kA	5 kA
Nominal discharge current I_n (8/20) μ s	15 kA	15 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	40 kA
Protection level U_p	≤ 3.5 kV / ≤ 3.2 kV	≤ 3.5 kV / ≤ 3.2 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Short-circuit current I_{SCPV}	2000 A	2000 A
General data		
Dimensions W/H/D	71.2 mm / 98.7 mm / 65.7 mm	
IEC connection data	Rigid / flexible / AWG	1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
Temperature range	-40°C ... 85°C	
Test standards	EN 50539-11	
Remote indication contact	PDT contact	
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 30 V DC	
Max. operating current	1.5 A AC / 1 A DC	

Ordering data

Description	
VALVETRAB ...PV	
VALVETRAB ...PV, without FM contact	

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 600DC-PV/2+V-FM	2801164	1
VAL-MS-T1/T2 1000DC-PV/2+V-FM	2801161	1
VAL-MS-T1/T2 600DC-PV/2+V	2801163	1
VAL-MS-T1/T2 1000DC-PV/2+V	2801160	1

Accessories

Replacement plug	
600 V DC	(L+) - (L-)/(L+) - G/(L-) - G
1000 V DC	(L+) - (L-)/(L+) - G/(L-) - G

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 600DC-PV-ST	2801165	1
VAL-MS-T1/T2 1000DC-PV-ST	2801162	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 1000DC-PV/3+V-FM/32	1044182	32
VAL-MS-T1/T2 1000DC-PV/3+V/32	1044183	32

Accessories

VAL-MS-T1/T2 1000DC-PV-ST	2801162	1
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Type 1+2 combined lightning current and surge arrester VALVETRAB MB

- Double terminal block for safe and easy equipotential bonding connection
- Screw shafts with raised domes to ensure safe working
- Main connections with extended insertion funnels for increased resistance to creepage
- Optical, mechanical status indication for the individual arresters
- Visual display for checking the status directly on the device
- Pluggable signal connection for remote status signaling
- Compact design for space-saving installation

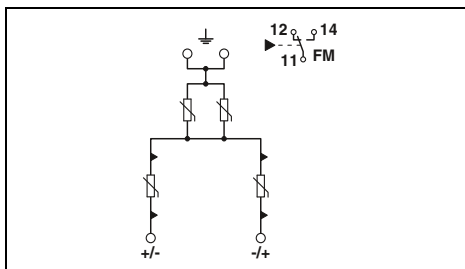
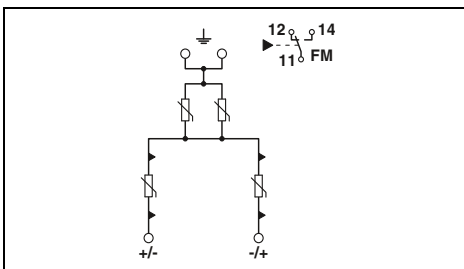
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



One-piece lightning and surge protection for PV applications up to 1000 V DC



One-piece lightning and surge protection for PV applications up to 1500 V DC



Electrical data	
IEC test classification	... 600DC
Mode of protection	PV I / II, T1 / T2
Maximum continuous operating voltage U_{CPV}	(L+) - (L-) / (L+) - PE / (L-) - PE
Impulse discharge current I_{imp} (10/350) μ s	800 V DC
Nominal discharge current I_n (8/20) μ s	6.25 kA
Max. discharge current I_{max} (8/20) μ s	20 kA
Protection level U_p	40 kA
Response time t_A	≤ 2.9 kV
Short-circuit current I_{SCPV}	≤ 25 ns
General data	
Dimensions W/H/D	2000 A
IEC connection data	71.2 mm / 120 mm / 65.5 mm
Temperature range	- mm ² / 2.5 ... 2
Test standards	-40°C ... 80°C
Remote indication contact	EN 50539-11
IEC connection data	PDT contact
Max. operating voltage	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating current	250 V AC / 5 V DC ... 30 V DC
	1.5 A AC / 5 mA DC ... 1 A DC

Technical data	
... 1000DC	... 1500DC
PV I / II, T1 / T2	PV I / II, T1 / T2
(L+) - (L-) / (L+) - PE / (L-) - PE	(L+) - (L-) / (L+) - PE / (L-) - PE
800 V DC	1500 V DC
6.25 kA	6.25 kA
20 kA	20 kA
40 kA	40 kA
≤ 2.9 kV	≤ 3.3 kV
≤ 25 ns	≤ 25 ns
2000 A	2000 A
General data	
Dimensions W/H/D	71.2 mm / 120 mm / 65.5 mm
IEC connection data	- mm ² / 2.5 ... 35 mm ² / 14 ... 2
Temperature range	-40°C ... 80°C
Test standards	EN 50539-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 5 V DC ... 30 V DC
Max. operating current	1.5 A AC / 5 mA DC ... 1 A DC

Technical data	
... 1500DC	... 1000DC
PV I / II, T1 / T2	PV I / II, T1 / T2
(L+) - (L-) / (L+) - PE / (L-) - PE	(L+) - (L-) / (L+) - PE / (L-) - PE
1500 V DC	800 V DC
6.25 kA	6.25 kA
20 kA	20 kA
40 kA	40 kA
≤ 4.5 kV	≤ 2.9 kV
≤ 25 ns	≤ 25 ns
2000 A	2000 A
General data	
Dimensions W/H/D	71.2 mm / 120 mm / 65.5 mm
IEC connection data	- mm ² / 2.5 ... 35 mm ² / 14 ... 2
Temperature range	-40°C ... 80°C
Test standards	EN 50539-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 5 V DC ... 30 V DC
Max. operating current	1.5 A AC / 5 mA DC ... 1 A DC

Ordering data	
Description	VALVETRAB ...PV
Type	VAL-MB-T1/T2 600DC-PV/2+V-FM
Order No.	2906292
Pcs./Pkt.	1
Type	VAL-MB-T1/T2 1000DC-PV/2+V-FM
Order No.	2905638
Pcs./Pkt.	1
Description	VALVETRAB ...PV, without FM contact
Type	VAL-MB-T1/T2 600DC-PV/2+V
Order No.	2906293
Pcs./Pkt.	1
Type	VAL-MB-T1/T2 1000DC-PV/2+V
Order No.	2905639
Pcs./Pkt.	1

Ordering data	
Description	VALVETRAB ...PV
Type	VAL-MB-T1/T2 1500DC-PV/2+V-FM
Order No.	2905640
Pcs./Pkt.	1
Type	VAL-MB-T1/T2 1500DC-PV/2+V
Order No.	2905641
Pcs./Pkt.	1

Accessories

Accessories

The product is also suitable for applications in PV systems with a max. short-circuit current $I_{SCPV} = 15$ kA (in accordance with EN 50539-11:2013).

Surge protection and interference suppression filters

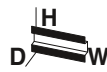
Surge protection for the power supply

Type 1+2 combined lightning current and surge arrester POWERTRAB PWT

- Series connection from the high-capacity varistor and gas-filled surge arrester
- Free of leakage current, suitable for use in the pre-meter area
- High TOV resistance for use in IT systems and in the event of repetitive current peaks, e.g., triggered by frequency inverters
- Satisfies the installation requirements for use in wind turbine generators in accordance with CLC/TS 50539-22
- Encapsulated die-cast housing for direct assembly on mounting plates
- Suitable for use in harsh industrial environments
- High lightning impulse current of 35 kA per position
- Multi-stage status monitoring via remote indication contact
- Visual status indicator on the device

Notes:

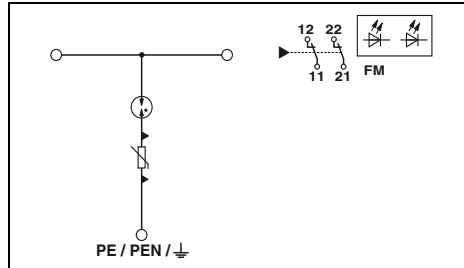
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



2-conductor system, L, PE/PEN

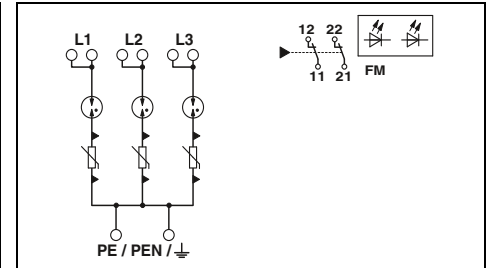


4-conductor system; L1, L2, L3, PE/PEN



Technical data

I / II, T1 / T2
690 V AC /
554/960 V AC (TN-C) /
690 V AC (IT)
L-PE
800 V AC
35 kA
35 kA
100 kA
≤ 2.2 kV
≤ 4.5 kV
≤ 100 ns
50 kA
400 A (gG at 2x 50 mm²)



Technical data

I / II, T1 / T2
690 V AC /
554/960 V AC (TN-C) /
690 V AC (IT)
L-PE
800 V AC
35 kA
35 kA
100 kA
≤ 2.2 kV
≤ 4.5 kV
≤ 100 ns
50 kA
400 A (gG at 2x 50 mm²)

Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_C	
Impulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Residual voltage at 5 kA	
Protection level U_p	
Response time tA	
Short-circuit current rating I_{SCCR}	
Maximum backup fuse for branch wiring	
General data	
Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	
Max. operating current	

Dimensions W/H/D	56 mm / 191 mm / 280 mm
IEC connection data	16 ... 50 mm ² / 16 ... 50 mm ² / 6 ... 1/0
UL connection data	1/0 ... 6
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	2x N/C contacts, 1-pos.
IEC connection data	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
UL connection data	24 ... 12
Max. operating voltage	30 V AC / 30 V DC
Max. operating current	1.5 A AC / 1.5 A DC

Dimensions W/H/D	176 mm / 191 mm / 280 mm
IEC connection data	16 ... 50 mm ² / 16 ... 50 mm ² / 6 ... 1/0
UL connection data	1/0 ... 6
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	2x N/C contacts, 1-pos.
IEC connection data	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
UL connection data	24 ... 12
Max. operating voltage	30 V AC / 30 V DC
Max. operating current	1.5 A AC / 1.5 A DC

Ordering data

Description	
POWERTRAB	
POWERTRAB, incl. mounting set	

Type	Order No.	Pcs./Pkt.
PWT 35-800AC-FM	2800419	1

Ordering data

Type	Order No.	Pcs./Pkt.
PWT 100-800AC-FM	2800531	1

Accessories

Mounting set for connecting three lightning current arresters of type PWT 35-800AC-FM	
Mounting set for connecting four lightning current arresters of type PWT 35-800AC-FM	

Type	Order No.	Pcs./Pkt.
PWT CCT-SET	2800532	1
PWT CCT-SET 4	2905613	1

Type	Order No.	Pcs./Pkt.

Type 2 surge protective device VALVETRAB SEC

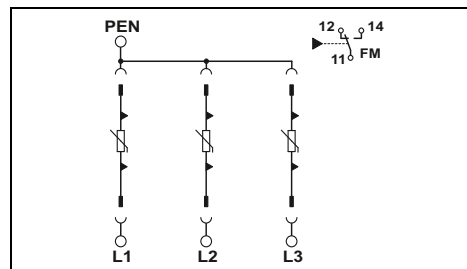
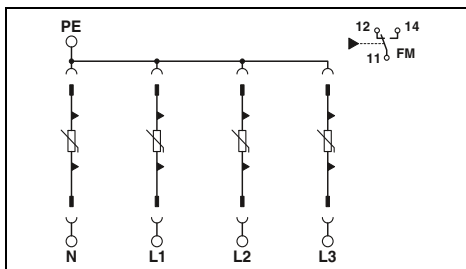
- Varistor arrester with a low leakage current
- High-performance gas-filled surge arrester for N/PE protection
- Version with high nominal discharge current of 40 kA in the N-PE path
- For systems with more stringent safety requirements
- Extremely narrow design, just 12 mm per position, including for 400/690 V AC systems
- Pluggable
- Low voltage protection level of 1.5 kV for 230/400 V AC systems or 1.9 kV for 400/690 V AC systems
- Optical, mechanical status indicator
- With floating remote indication contact as an option
- Plugs can be tested with CHECKMASTER 2



5-conductor system; L1, L2, L3, N, PE
(4+0 circuit)



4-conductor system, L1, L2, L3, PE(N)



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	400/690 V AC (TN-S) / 400 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_c	L-N / L-PE / N-PE 440 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 4 kV / ≤ 1.9 kV / ≤ 1.9 kV
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
Maximum backup fuse for branch wiring	315 A (gG)
General data	
Dimensions W/H/D	49.2 mm / 97.9 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG 2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB SEC with remote indication contact	VAL-SEC-T2-4+0-440-FM	1076468	1

Accessories

L-N/L-PEN	VAL-SEC-T2-440-P	2909969	1
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Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	400/690 V AC (TN-C) / 400 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_c	L-PEN 440 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 1.9 kV
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
Maximum backup fuse for branch wiring	315 A (gG)
General data	
Dimensions W/H/D	37.3 mm / 97.9 mm / 74.5 mm
IEC connection data	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)
Max. operating current	1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB SEC with remote indication contact	VAL-SEC-T2-3C-440-FM	2909968	1

Accessories

L-N/L-PEN	VAL-SEC-T2-440-P	2909969	1
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB SEC 350

- Varistor arrester with a low leakage current
- High-performance gas-filled surge arrester for N/PE protection
- Extremely narrow design, just 12 mm per position
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- VF versions free of leakage current with series connection from the varistor and gas-filled surge arrester
- Version with high nominal discharge current of 40 kA in the N-PE path for use at the system feed point
- Optical, mechanical status indicator
- With floating remote indication contact as an option
- Plugs can be tested with CHECKMASTER 2

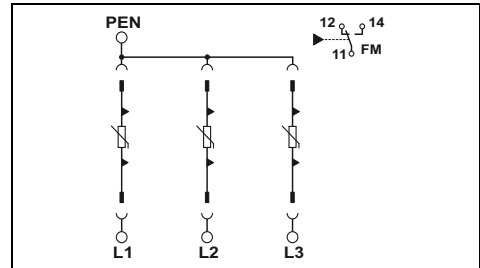
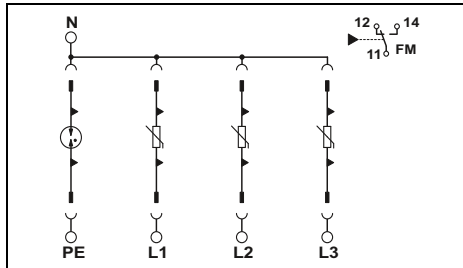
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE



4-conductor system; L1, L2, L3, PEN



Technical data

Electrical data	... 350	... 350VF	... 350/40 ...
IEC test classification	II, T2	II, T2	II, T2
Nominal voltage U_N	240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-S) / 240/415 V AC (TT)
Mode of protection	L-N / L-PE / N-PE	L-N / L-PE / N-PE	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	350 V AC / 350 V AC / 264 V AC	350 V AC / 350 V AC / 264 V AC	350 V AC / 350 V AC / 264 V AC
Nominal discharge current I_n (8/20) μ s	20 kA	10 kA / 10 kA / 20 kA	20 kA / 20 kA / 40 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	20 kA / 20 kA / 40 kA	40 kA / 40 kA / 80 kA
Protection level U_p	≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 2.3 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)	50 kA	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
Maximum backup fuse for branch wiring	315 A (gG)	200 A (gG)	315 A (gG)
General data	49.2 mm / 97.9 mm / 74.5 mm		
Dimensions W/H/D	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4		
IEC connection data	Rigid / flexible / AWG		
UL connection data	AWG		
Temperature range	14 ... 2 (rigid) / -40°C ... 80°C		
Test standards	IEC 61643-11 / EN 61643-11		
Remote indication contact	PDT contact		
IEC connection data	Rigid / flexible / AWG		
UL connection data	AWG		
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)		
Max. operating current	1 A AC / 1 A DC (30 V DC)		

Technical data	... 350	... 350VF
IEC test classification	II, T2	II, T2
Nominal voltage U_N	240/415 V AC (TN-C)	240/415 V AC (TN-C)
Mode of protection	L-PEN	L-PEN
Maximum continuous operating voltage U_C	350 V AC	350 V AC
Nominal discharge current I_n (8/20) μ s	20 kA	10 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	20 kA
Protection level U_p	≤ 1.5 kV	≤ 1.5 kV
Response time t_A	≤ 25 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)	50 kA
Maximum backup fuse for branch wiring	315 A (gG)	200 A (gG)
General data	37.3 mm / 97.9 mm / 74.5 mm	
Dimensions W/H/D	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4	
IEC connection data	Rigid / flexible / AWG	
UL connection data	AWG	
Temperature range	14 ... 2 (rigid) / -40°C ... 80°C	
Test standards	IEC 61643-11 / EN 61643-11	
Remote indication contact	PDT contact	
IEC connection data	Rigid / flexible / AWG	
UL connection data	AWG	
Max. operating voltage	250 V AC / 125 V DC (200 mA DC)	
Max. operating current	1 A AC / 1 A DC (30 V DC)	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB SEC with remote indication contact	VAL-SEC-T2-3S-350-FM	2905340	1
without remote indication contact	VAL-SEC-T2-3S-350	2905345	1
VALVETRAB SEC...VF, free of leakage current with remote indication contact	VAL-SEC-T2-3S-350VF-FM	2909590	1
VALVETRAB SEC, 40 kA, N-PE with remote indication contact	VAL-SEC-T2-3S-350/40-FM	2909635	1
without remote indication contact	VAL-SEC-T2-3S-350/40	2909637	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-3C-350-FM	VAL-SEC-T2-3C-350-FM	2905339	1
VAL-SEC-T2-3C-350	VAL-SEC-T2-3C-350	2905344	1
VAL-SEC-T2-3C-350VF-FM	VAL-SEC-T2-3C-350VF-FM	2909591	1



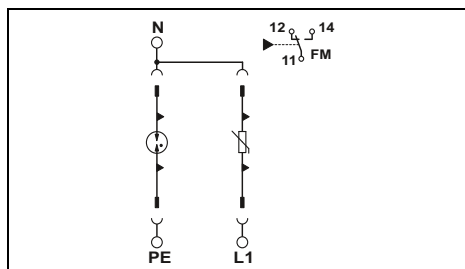
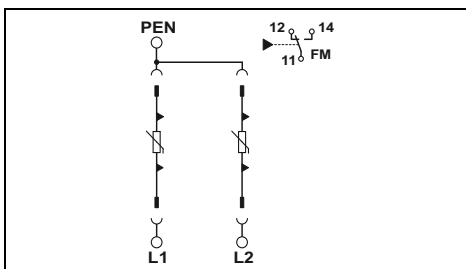
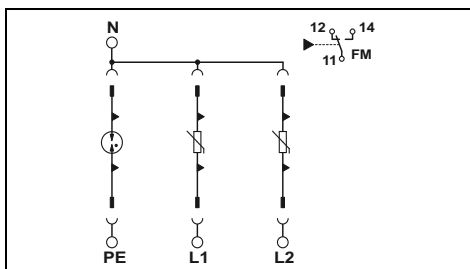
4-conductor system; L1, L2, N, PE



3-conductor system; L1, L2, PEN



3-conductor system; L, N, PE



Technical data

Technical data

Technical data

... 350
II, T2
240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE
350 V AC / 350 V AC / 264 V AC
20 kA
40 kA
≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
315 A (gG)

... 350
II, T2
240/415 V AC (TN-C)
L-PEN
350 V AC
20 kA
40 kA
≤ 1.5 kV
≤ 25 ns
25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
315 A (gG)

... 350	... 350VVF
II, T2	II, T2
240 V AC (TN-S) / 240 V AC (TT)	240 V AC (TN-S) / 240 V AC (TT)
L-N / L-PE / N-PE	L-N / L-PE / N-PE
350 V AC / 350 V AC / 264 V AC	350 V AC / 350 V AC / 264 V AC
20 kA	10 kA / 10 kA / 20 kA
40 kA	20 kA / 20 kA / 40 kA
≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 2.3 kV / ≤ 1.5 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 100 ns
25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)	50 kA
315 A (gG)	200 A (gG)

37.3 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

25.4 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

25.4 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Ordering data

Ordering data

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2S-350-FM	2905338	1
VAL-SEC-T2-2S-350	2905343	1

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2C-350-FM	2905337	1
VAL-SEC-T2-2C-350	2905342	1

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-1S-350-FM	2905333	1
VAL-SEC-T2-1S-350	2905341	1
VAL-SEC-T2-1S-350VF-FM	2909592	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB SEC 175

- Varistor arrester with a low leakage current
- High-performance gas-filled surge arrester for N/PE protection
- Extremely narrow design, just 12 mm per position
- Pluggable
- High continuous voltage of 175 V AC for 120/208 V AC networks with high voltage fluctuations
- Low voltage protection level of 0.85 kV for the L-N mode of protection and 0.95 kV for the N-PE mode of protection
- Optical, mechanical status indicator
- Plugs can be tested with CHECKMASTER 2

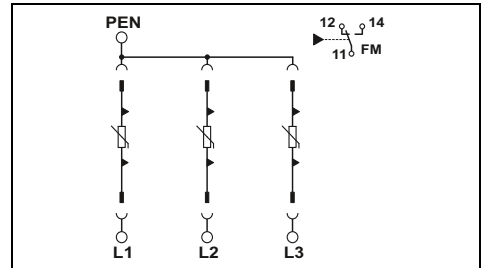
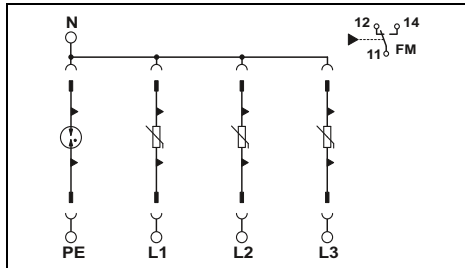
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE



4-conductor system; L1, L2, L3, PEN



Electrical data

IEC test classification
Nominal voltage U_N

Mode of protection
Maximum continuous operating voltage U_C
Nominal discharge current I_n (8/20) μ s
Max. discharge current I_{max} (8/20) μ s
Protection level U_p
Response time t_A
Short-circuit current rating I_{SCCR}

Maximum backup fuse for branch wiring

Technical data

... 175
II, T2
120/208 V AC (TN-S) /
120/208 V AC (TT)
L-N / L-PE / N-PE
175 V AC / 175 V AC / 150 V AC
20 kA
40 kA
 ≤ 0.85 kV / ≤ 1.3 kV / ≤ 0.95 kV
 ≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA (in case of 315 A gG backup fuse) /
50 kA (in case of 200 A gG backup fuse)
315 A (gG)

Technical data

... 175
II, T2
120/208 V AC (TN-C)

L-PEN
175 V AC
20 kA
40 kA
 ≤ 0.85 kV
 ≤ 25 ns
25 kA (in case of 315 A gG backup fuse) /
50 kA (in case of 200 A gG backup fuse)
315 A (gG)

General data

Dimensions W/H/D
IEC connection data Rigid / flexible / AWG
UL connection data AWG
Temperature range
Test standards
Remote indication contact
IEC connection data Rigid / flexible / AWG
UL connection data AWG
Max. operating voltage
Max. operating current

49.2 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

37.3 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Description

VALVETRAB SEC
with remote indication contact

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-3S-175-FM	2905354	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-3C-175-FM	2905353	1

Replacement plug

L-N/L-PEN
N-PE

Accessories

VAL-SEC-T2-175-P	2905355	1
VAL-SEC-T2-N/PE-175-P	2905356	1

Accessories

VAL-SEC-T2-175-P	2905355	1
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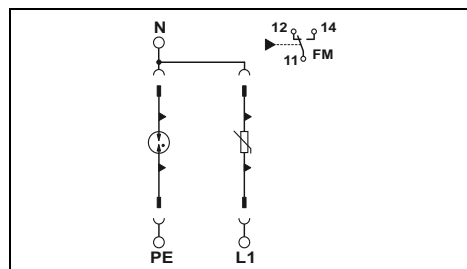
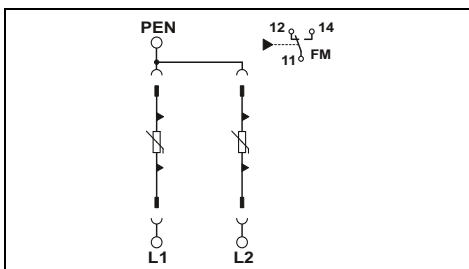
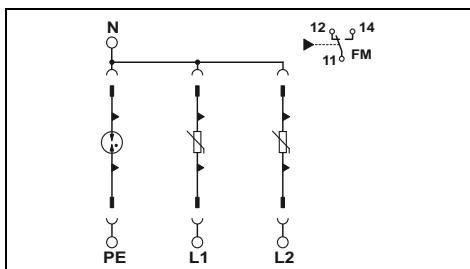
4-conductor system; L1, L2, N, PE



3-conductor system; L1, L2, PEN



3-conductor system; L, N, PE



Technical data

... 175
II, T2
120/208 V AC (TN-S) /
120/208 V AC (TT)
L-N / L-PE / N-PE
175 V AC / 175 V AC / 150 V AC
20 kA
40 kA
≤ 0.85 kV / ≤ 1.3 kV / ≤ 0.95 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA (in case of 315 A gG backup fuse) /
50 kA (in case of 200 A gG backup fuse)
315 A (gG)

37.3 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4

14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2S-175-FM	2905351	1

Accessories

VAL-SEC-T2-175-P	2905355	1
VAL-SEC-T2-N/PE-175-P	2905356	1

Technical data

... 175
II, T2
120/208 V AC (TN-C)
L-PEN
175 V AC
20 kA
40 kA
≤ 0.85 kV
≤ 25 ns
25 kA (in case of 315 A gG backup fuse) /
50 kA (in case of 200 A gG backup fuse)
315 A (gG)

25.4 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4

14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2C-175-FM	2905350	1

Accessories

VAL-SEC-T2-175-P	2905355	1
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Technical data

... 175
II, T2
120 V AC (TN-S) /
120 V AC (TT)
L-N / L-PE / N-PE
175 V AC / 175 V AC / 150 V AC
20 kA
40 kA
≤ 0.85 kV / ≤ 1.3 kV / ≤ 0.95 kV
≤ 25 ns / - / ≤ 100 ns
25 kA (in case of 315 A gG backup fuse) /
50 kA (in case of 200 A gG backup fuse)
315 A (gG)

25.4 mm / 97.9 mm / 74.5 mm
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4

14 ... 2 (rigid)
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 125 V DC (200 mA DC)
1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-1S-175-FM	2905348	1

Accessories

VAL-SEC-T2-175-P	2905355	1
VAL-SEC-T2-N/PE-175-P	2905356	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB SEC DC

- Varistor arrester with a low leakage current
- Extremely narrow design, just 12 mm per position
- High continuous voltage for linear DC current sources with voltage fluctuations
- Pluggable
- Low protection level
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

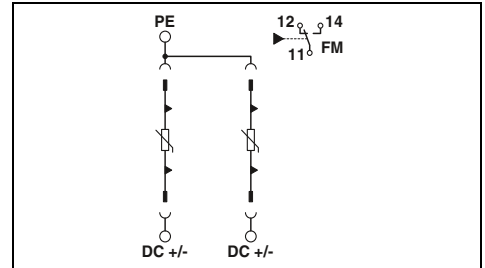
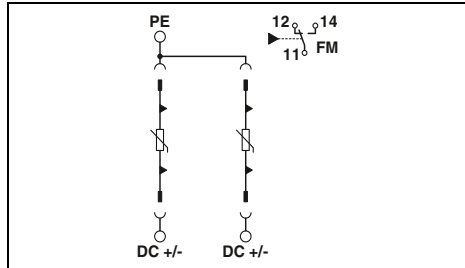


3-conductor system, DC+, DC-, PE
for 48 V DC and 120 V DC



3-conductor system, DC+, DC-, PE
for 220 V DC and 380 V DC

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Technical data

Electrical data	...48 V...	...120 V...
IEC test classification	II, T2	II, T2
Nominal voltage U_N	48 V DC ... 60 V DC	100 V DC ... 120 V DC
Mode of protection	(DC+) - (DC-) / (DC+/DC-) - PE	(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C	75 V DC	150 V DC
Nominal discharge current I_n (8/20) μ s	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	40 kA
Protection level U_p	≤ 0.9 kV / ≤ 0.5 kV	≤ 1.8 kV / ≤ 0.85 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}	0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)	0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)

Technical data

Electrical data	...220 V...	...380 V...
IEC test classification	II, T2	II, T2
Nominal voltage U_N	200 V DC ... 220 V DC	350 V DC ... 400 V DC
Mode of protection	(DC+) - (DC-) / (DC+/DC-) - PE	(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C	250 V DC	450 V DC
Nominal discharge current I_n (8/20) μ s	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	40 kA
Protection level U_p	≤ 3 kV / ≤ 1.5 kV	≤ 3 kV / ≤ 1.5 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}	0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)	0.1 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)

Technical data

Electrical data	...220 V...	...380 V...
IEC test classification	II, T2	II, T2
Nominal voltage U_N	200 V DC ... 220 V DC	350 V DC ... 400 V DC
Mode of protection	(DC+) - (DC-) / (DC+/DC-) - PE	(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C	250 V DC	450 V DC
Nominal discharge current I_n (8/20) μ s	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA	40 kA
Protection level U_p	≤ 3 kV / ≤ 1.5 kV	≤ 3 kV / ≤ 1.5 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}	0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)	0.1 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)

Maximum backup fuse for branch wiring

20 A (gG / B at $I_{SCCR} > 200$ A) 20 A (gG / B at $I_{SCCR} > 200$ A)

20 A (gG / B at $I_{SCCR} > 200$ A) 20 A (gG / B at $I_{SCCR} > 200$ A)

Additional technical data

Maximum continuous operating voltage U_C

- 135 V AC (for operation in safety lighting systems)

264 V AC (for operation in safety lighting systems) -

General data

Dimensions W/H/D		25.4 mm / 97.9 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Temperature range		-40°C ... 80°C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)

General data

Dimensions W/H/D		25.4 mm / 97.9 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Temperature range		-40°C ... 80°C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)

General data

Dimensions W/H/D		25.4 mm / 97.9 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Temperature range		-40°C ... 80°C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB SEC	VAL-SEC-T2-2+0-48DC-FM	2907865	1
	VAL-SEC-T2-2+0-120DC-FM	2907874	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VAL-SEC-T2-2+0-220DC-FM	2907875	1
	VAL-SEC-T2-2+0-380DC-FM	2907876	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
(DC+) - (DC-)/(DC+/DC-) - PE	VAL-SEC-T2-48DC-P	2907877	1
(DC+) - (DC-)/(DC+/DC-) - PE	VAL-SEC-T2-120DC-P	2907878	1
(DC+/DC-) - PE	VAL-SEC-T2-GDT-400DC-P	1052632	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
(DC+) - (DC-)/(DC+/DC-) - PE	VAL-SEC-T2-220DC-P	2907879	1
(DC+) - (DC-)/(DC+/DC-) - PE	VAL-SEC-T2-380DC-P	2907880	1
(DC+/DC-) - PE	VAL-SEC-T2-GDT-800DC-P	1052649	1

Type 2 surge protective device VALVETRAB SEC DC

- Free of leakage current to ground
- Extremely narrow design, just 12 mm per position
- High continuous voltage for linear DC current sources with voltage fluctuations
- Can be used in photovoltaic applications in accordance with EN 50539-11
- Pluggable
- Low protection level
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2



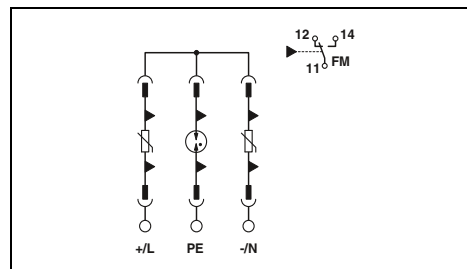
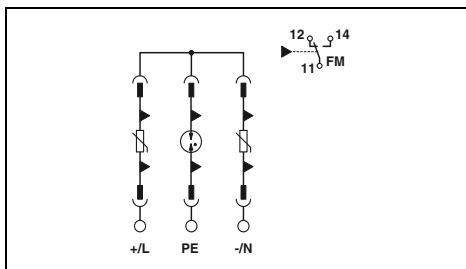
3-conductor system, DC+, DC-, PE
for 48 V DC and 120 V DC,
free of leakage current



3-conductor system, DC+, DC-, PE
for 220 V DC and 380 V DC,
free of leakage current

Notes:

If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Electrical data

IEC test classification	II, T2
Nominal voltage U_N	40 V DC ... 60 V DC
Mode of protection	(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C	75 V DC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 0.9 kV / ≤ 1 kV
Response time t_A	
Short-circuit current rating I_{SCCR}	0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)

Technical data

...48 V...	...120 V...
II, T2	II, T2
40 V DC ... 60 V DC	100 V DC ... 120 V DC
(DC+) - (DC-) / (DC+/DC-) - PE	(DC+) - (DC-) / (DC+/DC-) - PE
75 V DC	150 V DC
20 kA	20 kA
40 kA	40 kA
≤ 0.9 kV / ≤ 1 kV	≤ 1.8 kV / ≤ 1.3 kV

Technical data

...220 V...	...380 V...
II, T2	II, T2
200 V DC ... 220 V DC	350 V DC ... 400 V DC
(DC+) - (DC-) / (DC+/DC-) - PE	(DC+) - (DC-) / (DC+/DC-) - PE
250 V DC	450 V DC
20 kA	20 kA
40 kA	40 kA
≤ 3 kV / ≤ 1.9 kV	≤ 3 kV / ≤ 1.9 kV

Maximum backup fuse for branch wiring

20 A (gG / B at $I_{SCCR} > 200$ A)	20 A (gG / B at $I_{SCCR} > 200$ A)
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20 A (gG / B at $I_{SCCR} > 200$ A)	10 A (gG / B at $I_{SCCR} > 100$ A)
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Additional technical data

Maximum continuous operating voltage U_C

-	135 V AC (for operation in safety lighting systems)
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264 V AC (for operation in safety lighting systems)	-
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General data

Dimensions W/H/D	37.3 mm / 97.9 mm / 74.5 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Test standards	-40°C ... 80°C
Remote indication contact	IEC 61643-11 / EN 61643-11
IEC connection data	PDT contact
Max. operating voltage	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating current	250 V AC / 125 V DC (200 mA DC)
	1 A AC / 1 A DC (30 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2+F-48DC-FM	1033786	1
VAL-SEC-T2-2+F-120DC-FM	1033788	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-2+F-220DC-FM	1033789	1
VAL-SEC-T2-2+F-380DC-FM	1033790	1

Replacement plug

(DC+) - (DC-) / (DC+/DC-) - PE	VAL-SEC-T2-48DC-P	2907877	1
(DC+) - (DC-) / (DC+/DC-) - PE	VAL-SEC-T2-120DC-P	2907878	1
(DC+/DC-) - PE	VAL-SEC-T2-GDT-400DC-P	1052632	1

Accessories

Accessories

VAL-SEC-T2-220DC-P	2907879	1
VAL-SEC-T2-380DC-P	2907880	1
VAL-SEC-T2-GDT-800DC-P	1052649	1

Surge protection and interference suppression filters

Surge protection for the power supply

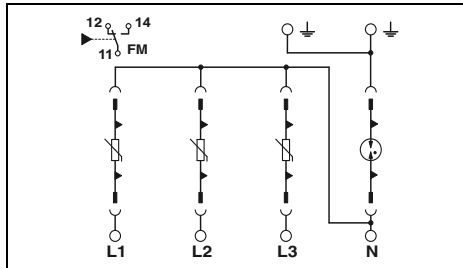
Type 2 surge protective device VALVETRAB MS 230 / 320

- Multi-channel type 2 protective device
- Type 2 surge protective device with consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2

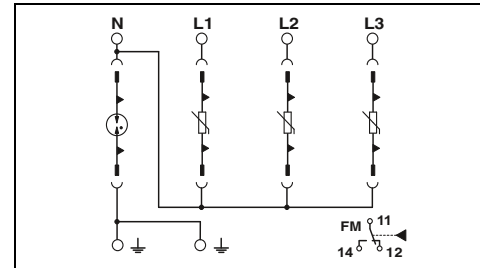
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE, supply line supply from below



5-conductor system; L1, L2, L3, N, PE, supply line supply from above



Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	240/415 V AC (TN-S) / 240/415 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	275 V AC / 275 V AC / 260 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 1.35 kV / ≤ 1.6 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}	- / - / 100 A
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	125 A (gG)

Technical data

VAL-MS 230	VAL-MS 320
II, T2	II, T2
240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE	L-N / L-PE / N-PE
275 V AC / 275 V AC / 260 V AC	335 V AC / 335 V AC / 260 V AC
20 kA	20 kA
40 kA	40 kA
≤ 1.35 kV / ≤ 1.6 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV
- / - / 100 A	- / - / 100 A
≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA	25 kA
125 A (gG)	125 A (gG)

Technical data

VAL-MS 320
II, T2
240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE
335 V AC / 335 V AC / 260 V AC
20 kA
40 kA
≤ 1.6 kV / ≤ 1.9 kV / ≤ 1.5 kV
- / - / 100 A
≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA
125 A (gG)

General data	
Dimensions W/H/D	71 mm / 98.7 mm / 65.7 mm
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	750 mA AC / 1 A DC

Ordering data	
Type	Order No.
VAL-MS 230/3+1	2838209
VAL-MS 230/3+1 FM	2838199
VAL-MS 320/3+1	2859178
VAL-MS 320/3+1/FM	2859181

Ordering data	
Type	Order No.
VAL-MS 320/3+1/FM-UD	2856689

Description	U_C
VALVETRAB, multi-position surge protective device	
without remote indication contact	275 V AC
with remote indication contact	275 V AC
without remote indication contact	335 V AC
with remote indication contact	335 V AC

Accessories			
Type	Order No.	Pcs./Pkt.	
VAL-MS 230 ST	2798844	10	
VAL-MS 320 ST	2838843	10	
F-MS 12 ST	2817990	10	

Accessories			
Type	Order No.	Pcs./Pkt.	
VAL-MS 320-UD ST	2858315	10	
F-MS 12-UD ST	2858328	10	

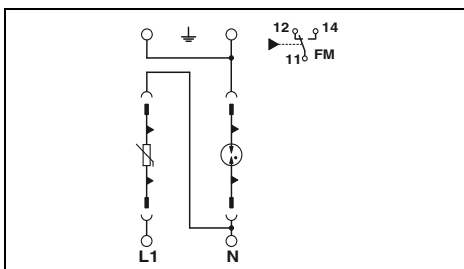
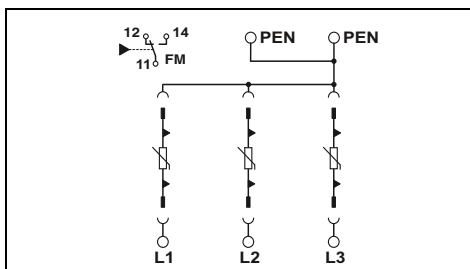
Replacement plug	
L-N/L-PEN	
L-N/L-PEN	
N-PE	



4-conductor system; L1, L2, L3, PEN



3-conductor system; L, N, PE



Technical data

VAL-MS 320
II, T2
240/415 V AC (TN-C)

L-PEN
335 V AC
20 kA
40 kA
≤ 1.5 kV
-
≤ 25 ns
25 kA
125 A (gG)

Technical data

VAL-MS 230	VAL-MS 320
II, T2	II, T2
240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-S) / 240/415 V AC (TT)
L-N / L-PE / N-PE	L-N / L-PE / N-PE
275 V AC / 275 V AC / 260 V AC	335 V AC / 335 V AC / 260 V AC
20 kA	20 kA
40 kA	40 kA
≤ 1.35 kV / ≤ 1.6 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 1.8 kV / ≤ 1.5 kV
- / - / 100 A	- / - / 100 A
≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA	25 kA
125 A (gG)	125 A (gG)

53.4 mm / 98.7 mm / 65.7 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
10 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 30 V DC
1.5 A AC / 1 A DC

35.6 mm / 96.8 mm / 65.7 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
10 ... 2
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
30 ... 14
250 V AC / 30 V DC
1.5 A AC / 1 A DC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 320/3+0	2920230	1
VAL-MS 320/3+0-FM	2920243	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 230/1+1	2804429	1
VAL-MS 230/1+1-FM	2804432	1
VAL-MS 320/1+1	2804380	1
VAL-MS 320/1+1-FM	2804393	1

Accessories

VAL-MS 320 ST	2838843	10
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Accessories

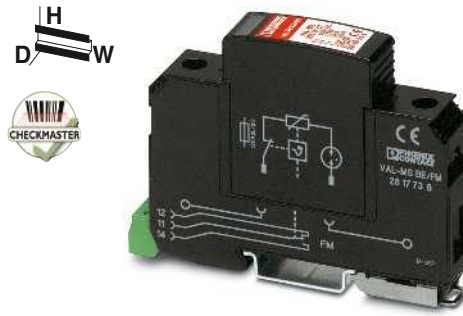
VAL-MS 230 ST	2798844	10
VAL-MS 320 ST	2838843	10
F-MS 12 ST	2817990	10

Surge protection and interference suppression filters

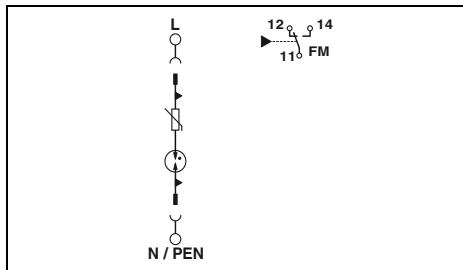
Surge protection for the power supply

Type 2 surge protective device VALVETRAB MS

- DIN-rail-mountable protective devices
- Comprising base element and plug
- Free of leakage current
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



2-conductor system; L, N, PEN
free of leakage current



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	240/415 V AC (TN) / 240/415 V AC (TT) / 230 V AC (IT)
Mode of protection	L-N / L-PE / L-PEN
Maximum continuous operating voltage U_C	350 V AC
Nominal discharge current I_n (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	20 kA
Protection level U_p	≤ 1.5 kV
Response time t_A	≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	125 A (gG)

General data	
Dimensions W/H/D	17.6 mm / 96.8 mm / 65.7 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	AWG 10 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact
IEC connection data	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	30 ... 14
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	1 A AC / 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS			
with remote indication contact	VAL-MS 350 VF/FM	2856579	1
without remote indication contact	VAL-MS 350VF	2856582	1

Accessories

Replacement plug			
L-N/L-PE/L-PEN	VAL-MS 350 VF ST	2856595	10

Type 2 surge protective device VALVETRAB MS

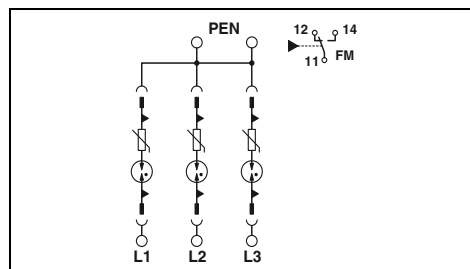
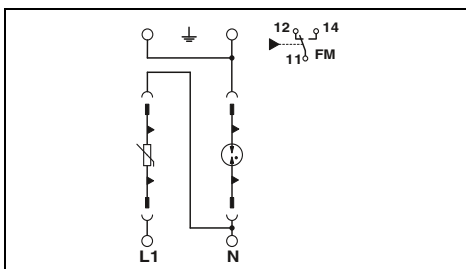
- Also suitable for industry solutions, e.g., railway
- Discharge of lightning currents (10/350) μ s
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



For 2-conductor systems, L, N, PE
capable of carrying lightning current,
free of leakage current



For 3-conductor systems, L1, L2, L3, PE(N)
capable of carrying lightning current,
free of leakage current



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	240/415 V AC (TN-S) / 240/415 V AC (TT)
Mode of protection	
Maximum continuous operating voltage U_C	L-N / L-PE / N-PE 335 V AC / 335 V AC / 260 V AC
Impulse discharge current I_{imp} (10/350) μ s	7 kA / 2.5 kA / 2.5 kA
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 1.5 kV / ≤ 1.8 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}	- / - / 100 A
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	125 A (gG)
General data	
Dimensions W/H/D	35,6 mm / 96,8 mm / 65,7 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	-
Max. operating current	250 V AC / 30 V DC 1.5 A AC / 1 A DC

Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	240/415 V AC (TN-C) / 230 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_C	L-PE / L-PEN 350 V AC
Impulse discharge current I_{imp} (10/350) μ s	2.5 kA
Nominal discharge current I_n (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	20 kA
Protection level U_p	≤ 1.5 kV
Follow current interrupt rating I_{fi}	- / -
Response time t_A	≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	125 A (gG)
General data	
Dimensions W/H/D	53,4 mm / 98,7 mm / 65,7 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	PDT contact
UL connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage	-
Max. operating current	250 V AC / 30 V DC 1.5 A AC / 1 A DC

Ordering data

Description	
VALVETRAB MS with remote indication contact	
Replacement plug	
L-N/L-PEN	VAL-MS 320 RW ST
N-PE	F-MS 12 ST

Type	Order No.	Pcs./Pkt.
VAL-MS 320 RW/1+1-FM/60	1050286	60
VAL-MS 320 RW ST	1050283	10
F-MS 12 ST	2817990	10

Accessories

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 350 VF-RW/3+0-FM/40	1050284	40
VAL-MS 350 VF-RW ST	1050280	10

Accessories

Surge protection and interference suppression filters

Surge protection for the power supply

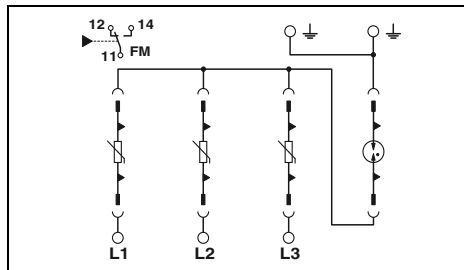
Type 2 surge protective device VALVETRAB MS

- For systems with harmonics, e.g., PV inverters, frequency converters
- Universal pluggability
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



3-conductor system, L1, L2, L3, PE
for supply systems with harmonics

ERC



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	400 V AC (IT)
Mode of protection	L-PE / L-L
Maximum continuous operating voltage U_C	440 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 4 kV / ≤ 3.5 kV
Response time t_A	≤ 25 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	100 A (gG)
General data	
Dimensions W/H/D	71 mm / 98.7 mm / 65.7 mm
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	750 mA AC / 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS with remote indication contact	VAL-MS 400/3+0/VF-FM	2910476	1
VALVETRAB MS with remote indication contact	VAL-MS 400/3+0/VF-FM/32	2909828	32

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
L-N/L-PE/L-PEN	VAL-MS 400 ST	2816399	10
L-PE (for IT systems without N in series with a VAL-MS plug)	F-MS 1100 ST	2909844	1

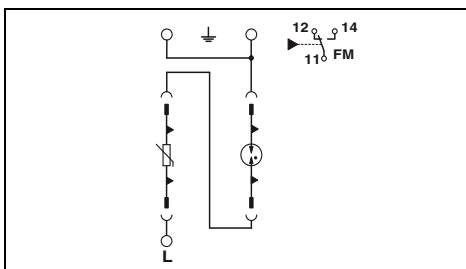
Type 2 surge protective device VALVETRAB MS

- For power supplies with higher supply voltages, such as wind power
- Universal pluggability
- Thermal disconnect device for each individual plug
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



Free of leakage current, for nominal voltages up to 690 V AC, e.g., rotor protection for wind turbine generators



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	400/690 V AC (TN-C) / 690 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_c	L-PE / L-PEN 800 V AC
Nominal discharge current I_n (8/20) μ s	15 kA
Max. discharge current I_{max} (8/20) μ s	30 kA
Protection level U_p	≤ 5 kV
Response time t_A	≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	100 A (gG)
General data	
Dimensions W/H/D	35.6 mm / 96.8 mm / 65.7 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	- AWG
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	- AWG
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	1.5 A AC / 1 A DC

Ordering data

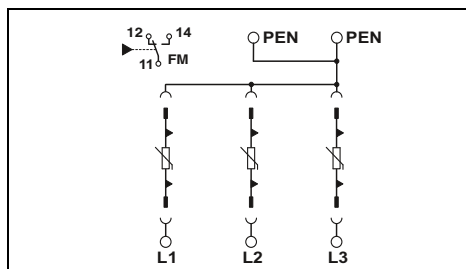
Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS, for mounting on NS 35 with remote indication contact	VAL-MS 800/30 VF/FM	2805402	1
without remote indication contact			

Accessories

Replacement plug	L-PE/L-PEN	VAL-MS 750/30-ST	2920256	10
	L-PE	F-MS 2200/30 ST	2805392	10



4-conductor system; L1, L2, L3, PEN (554/960 V TN-C system)



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	554/960 V AC (TN-C) / 690 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_c	L-PE / L-PEN 760 V AC
Nominal discharge current I_n (8/20) μ s	15 kA
Max. discharge current I_{max} (8/20) μ s	30 kA
Protection level U_p	≤ 2.9 kV
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA
Maximum backup fuse for branch wiring	100 A (gG)
General data	
Dimensions W/H/D	53.4 mm / 98.7 mm / 65.7 mm
IEC connection data	Rigid / flexible / AWG 1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2
UL connection data	- AWG 10 ... 2
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
IEC connection data	Rigid / flexible / AWG 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
UL connection data	- AWG 30 ... 14
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	1.5 A AC / 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS 750/30/3+0-FM	VAL-MS 750/30/3+0-FM	2920272	1
VALVETRAB MS 750/30/3+0	VAL-MS 750/30/3+0	2920269	1

Accessories

Replacement plug	L-PE/L-PEN	VAL-MS 750/30-ST	2920256	10
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB MS

- Surge protection for individual assembly
- Optical, mechanical status indicator of the plug
- Disconnect device in the plug
- Base element coding the first time a plug is inserted
- Plugs can be tested with CHECKMASTER 2

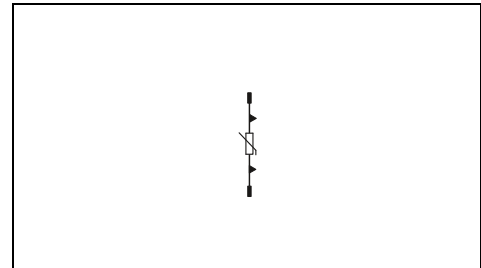
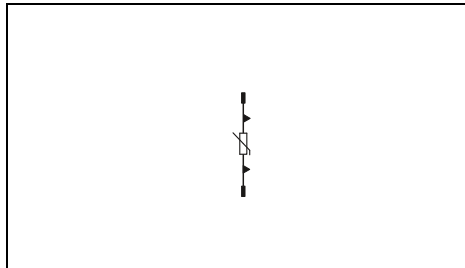
Notes:
 Choose the plug based on technical data.
 Choose the base element corresponding to the required circuit and remote signaling function:
 - TN-C: X+0 - circuit
 - TN-S, TT: X+1 - circuit
 - IT: Y+0 - circuit
 - X = Number of phases
 - Y = Number of phases + if required, neutral conductor
 The number of plugs required corresponds to the number before the "+" in the circuit data, e.g., 3 plugs in a 3+1 circuit
 When using a "+1" circuit, the F-MS 12 plug must be used between N and PE. See page 71



For 24 and 48 V DC



For 120/208 V grounded wye and 120 V split-phase systems



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	60 V AC (TN)
Nominal voltage U_N (UL)	60 V AC
Maximum continuous operating voltage U_C	75 V AC / 100 V DC
Nominal discharge current I_n (8/20) μ s	15 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 0.55 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	120/208 V AC (TN)
Nominal voltage U_N (UL)	120 V AC
Maximum continuous operating voltage U_C	150 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 0.9 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Description	
VALVETRAB surge protection plug	

Type	Order No.	Pcs./Pkt.
VAL-MS 60 ST	2807573	10

Type	Order No.	Pcs./Pkt.
VAL-MS 120 ST	2807586	10

Accessories

Base element, with RI contact		
orthogonal	1+0	VAL-MS BE/FM
	1+0	VAL-MS-T1/T2 BE/O-FM
	1+1	
	2+0	VAL-MS/2+0-BE/FM
orthogonal	2+0	VAL-MS BE/2+0/1U/FM
	3+0	
	3+1	
	4+0	
Base element, without RI contact		
orthogonal	1+0	VAL-MS BE
	1+0	VAL-MS-T1/T2 BE/O
	1+1	
	2+0	VAL-MS/2+0-BE
	3+0	
	3+1	

Type	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/2+0-BE	2804584	1

Type	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/3+1-BE	2838885	1



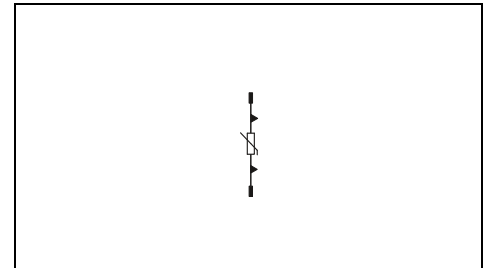
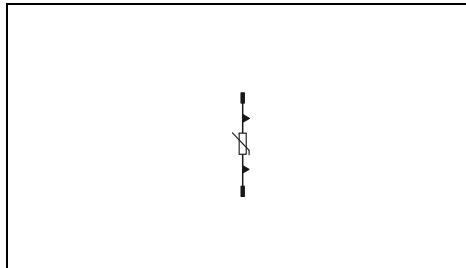
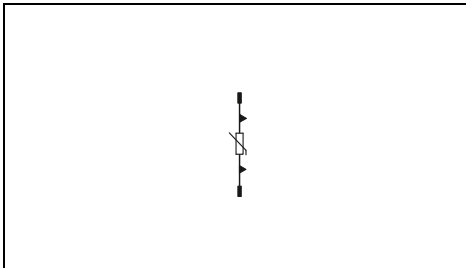
For 240/415 V TN and TT systems



For 240/415 V TN and TT systems,
marking rotated 180°



For 240/415 V TN and TT systems
with significantly higher voltage fluctuations



Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT)

230 V AC
275 V AC
20 kA
40 kA
≤ 1.35 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT)

230 V AC
275 V AC
20 kA
40 kA
≤ 1.35 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT) /
230 V AC (IT)

230 V AC
385 V AC
20 kA
40 kA
≤ 1.8 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 230 ST	2798844	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1 U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1
VAL-MS/3+1-BE	2838885	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 230-UD-ST	2858962	1

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS/3+1-BE/FM-UD	2858674	1
VAL-MS BE	2817741	10

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 230 IT ST	2807599	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1 U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1
VAL-MS/3+1-BE	2838885	1

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB MS

- Surge protection for individual assembly
- Optical, mechanical status indicator of the plug
- Disconnect device in the plug
- Base element coding the first time a plug is inserted
- Plugs can be tested with CHECKMASTER 2

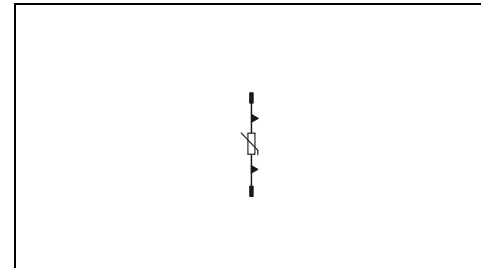
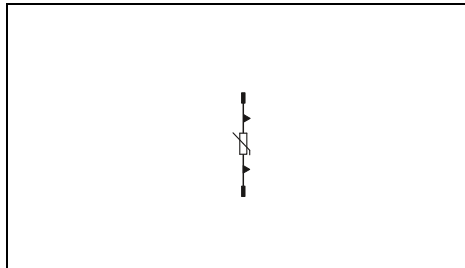
Notes:
Choose the plug based on technical data.
Choose the base element corresponding to the required circuit and remote signaling function:
- TN-C: X+0 - circuit
- TN-S, TT: X+1 - circuit
- IT: Y+0 - circuit
- X = Number of phases
- Y = Number of phases + if required, neutral conductor
The number of plugs required corresponds to the number before the "+" in the circuit data, e.g., 3 plugs in a 3+1 circuit
When using a "+1" circuit, the F-MS 12 plug must be used between N and PE. See page 71



For IT systems with a voltage of 230 V phase-phase



For 240/415 V TN and TT systems with higher voltage fluctuations



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	240/415 V AC (TN) / 240/415 V AC (TT) / 230 V AC (IT)
Nominal voltage U_N (UL)	230 V AC
Maximum continuous operating voltage U_C	385 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 1.8 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	240/415 V AC (TN) / 240/415 V AC (TT)
Nominal voltage U_N (UL)	320 V AC
Maximum continuous operating voltage U_C	335 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 1.5 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Description	
VALVETRAB surge protection plug	

Type	Order No.	Pcs./Pkt.
VAL-MS 230 IT ST	2807599	10

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 320 ST	2838843	10

Accessories

Base element, with RI contact	
orthogonal	1+0
	1+0
	1+1
	2+0
orthogonal	2+0
	3+0
	3+1
	4+0
Base element, without RI contact	
orthogonal	1+0
	1+0
	1+1
	2+0
	3+0
	3+1

Accessories	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1

Accessories

Accessories	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1
VAL-MS/3+1-BE	2838885	1



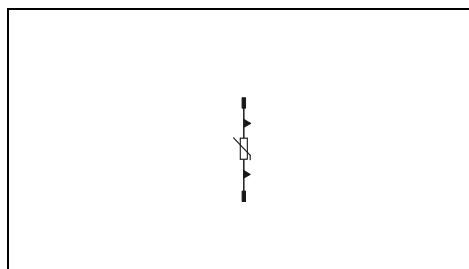
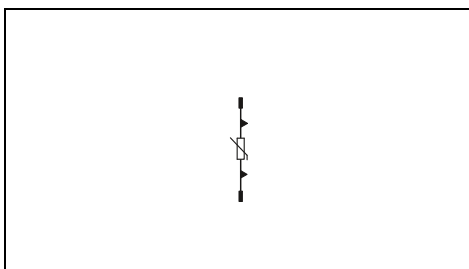
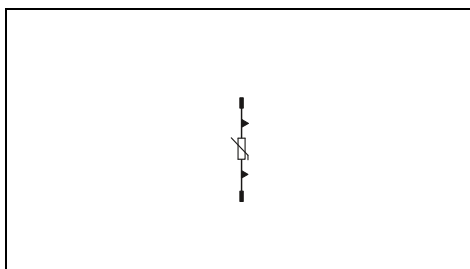
For 240/415 V TN and TT systems with higher voltage fluctuations, marking rotated 180°



For 240/415 V TN and TT systems with significantly higher voltage fluctuations



For 400/690 V TN systems, 400 V IT systems, 500 V IT systems, with higher voltage fluctuations



Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT)

320 V AC
335 V AC
20 kA
40 kA
≤ 1.5 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT) /
230 V AC (IT)

400 V AC
440 V AC
20 kA
40 kA
≤ 2.2 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
400/690 V AC (TN) /
500 V AC (IT)

500 V AC
600 V AC
15 kA
30 kA
≤ 2.7 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 320-UD ST	2858315	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS/3+1-BE/FM-UD	2858674	1
VAL-MS BE	2817741	10

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 400 ST	2816399	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 500 ST	2807609	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/3+0-BE	2881816	1

Surge protection and interference suppression filters

Surge protection for the power supply

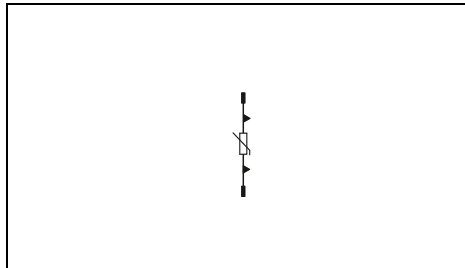
Type 2 surge protective device VALVETRAB MS

- Surge protection for individual assembly
- Optical, mechanical status indicator of the plug
- Disconnect device in the plug
- Base element coding the first time a plug is inserted
- Plugs can be tested with CHECKMASTER 2

Notes:
Choose the plug based on technical data.
Choose the base element corresponding to the required circuit and remote signaling function:
- TN-C: X+0 - circuit
- TN-S, TT: X+1 - circuit
- IT: Y+0 - circuit
- X = Number of phases
- Y = Number of phases + if required, neutral conductor
The number of plugs required corresponds to the number before the "+" in the circuit data, e.g., 3 plugs in a 3+1 circuit
When using a "+1" circuit, the F-MS 12 plug must be used between N and PE. See page 71



For 400/690 V TN systems, 400 V IT systems, 500 V IT systems

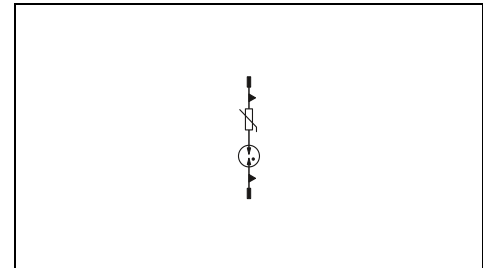


Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	400/690 V AC (TN) / 500 V AC (IT)
Nominal voltage U_N (UL)	400 V AC
Maximum continuous operating voltage U_C	580 V AC
Nominal discharge current I_n (8/20) μ s	15 kA
Max. discharge current I_{max} (8/20) μ s	30 kA
Protection level U_p	≤ 2.5 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11



For 24 V DC, 48 V DC with isolation monitoring, free of leakage current



Technical data

Electrical data	
IEC test classification	II, T2
Nominal voltage U_N (IEC)	5 V AC ... 48 V AC
Nominal voltage U_N (UL)	48 V AC
Maximum continuous operating voltage U_C	75 V AC / 100 V DC
Nominal discharge current I_n (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	20 kA
Protection level U_p	≤ 1.4 kV
General data	
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Description	
VALVETRAB surge protection plug	

Type	Order No.	Pcs./Pkt.
VAL-MS 580-ST	2920434	10

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 75 VF ST	2805318	10

Accessories

Base element, with RI contact			
orthogonal	1+0	VAL-MS BE/FM	2817738
	1+0	VAL-MS-T1/T2 BE/O-FM	2905652
	1+1		
	2+0		
orthogonal	2+0		
	3+0	VAL-MS/3+0-BE/FM	2881803
	3+1		
	4+0	VAL-MS/4+0-BE/FM RN.	2906484
Base element, without RI contact			
orthogonal	1+0	VAL-MS BE	2817741
	1+0	VAL-MS-T1/T2 BE/O	2905650
	1+1		
	2+0		
	3+0	VAL-MS/3+0-BE	2881816
	3+1		

Type	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/3+0-BE	2881816	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1



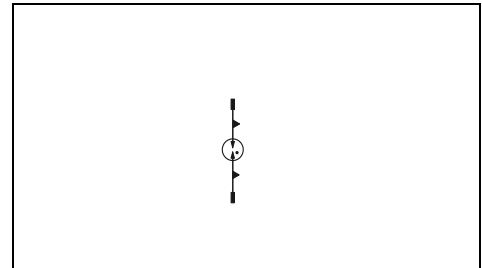
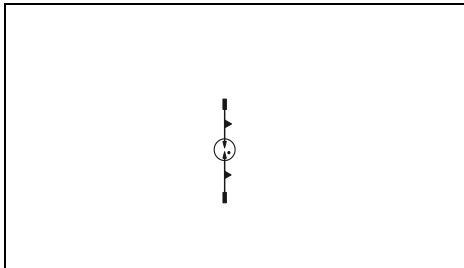
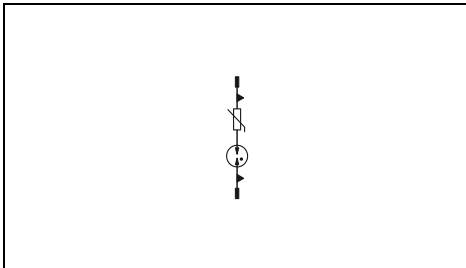
For 240/415 V TN and TT systems with significantly higher voltage fluctuations, free of leakage current



For 240/415 V TN and TT systems on a spark gap basis, can only be used for N-PE



For 240/415 V TN and TT systems on a spark gap basis, can only be used for N-PE, marking rotated 180°



Technical data

II, T2
240/415 V AC (TN) /
240/415 V AC (TT) /
230 V AC (IT)
350 V AC
350 V AC
10 kA
20 kA
≤ 1.5 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
240/415 V AC (TN - only N-PE) /
240/415 V AC (TT - only N-PE)

- V AC
260 V AC
20 kA
40 kA
≤ 1.5 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Technical data

II, T2
240/415 V AC (TN - only N-PE) /
240/415 V AC (TT - only N-PE)

- V AC
260 V AC
20 kA
40 kA
≤ 1.5 kV

17.5 mm / 52.4 mm / 55.3 mm
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS 350 VF ST	2856595	10

Ordering data

Type	Order No.	Pcs./Pkt.
F-MS 12 ST	2817990	10

Ordering data

Type	Order No.	Pcs./Pkt.
F-MS 12-UD ST	2858328	10

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS/3+0-BE/FM	2881803	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS/4+0-BE/FM RN.	2906484	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1
VAL-MS/3+0-BE	2881816	1
VAL-MS/3+1-BE	2838885	1

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/3+1-BE/FM	2838898	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/3+1-BE	2838885	1

Accessories

VAL-MS BE/FM	2817738	10
VAL-MS/3+1-BE/FM-UD	2858674	1
VAL-MS BE	2817741	10

Surge protection and interference suppression filters

Surge protection for the power supply

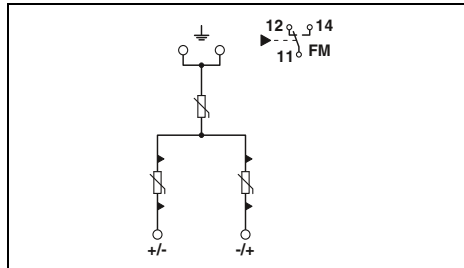
Type 2 surge protective device VALVETRAB MB

- Double terminal block for safe and easy equipotential bonding connection
- Screw shafts with raised domes to ensure safe working
- Main connections with extended insertion funnels for increased resistance to creepage
- Optical, mechanical status indication for the individual arresters
- Visual display for checking the status directly on the device
- Pluggable signal connection for remote status signaling
- Compact design for space-saving installation



One-piece surge protection for PV applications up to 1500 V DC

KEBA



Technical data

Electrical data		
IEC test classification		PV II, T2
Mode of protection		(L+) - (L-) / (L+) - PE / (L-) - PE
Maximum continuous operating voltage U_{CPV}		1500 V DC
Nominal discharge current I_n (8/20) μ s		20 kA
Max. discharge current I_{max} (8/20) μ s		40 kA
Protection level U_p		≤ 4.5 kV
Response time t_A		≤ 25 ns
Short-circuit current I_{SCPV}		2000 A
General data		
Dimensions W/H/D		71.2 mm / 120 mm / 65.5 mm
IEC connection data	Rigid / flexible / AWG	- mm ² / 2.5 ... 35 mm ² / 14 ... 2
Temperature range		-40°C ... 80°C
Test standards		EN 50539-11
Remote indication contact		
IEC connection data	Rigid / flexible / AWG	PDT contact 0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating voltage		250 V AC / 5 V DC ... 30 V DC
Max. operating current		1.5 A AC / 5 mA DC ... 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MB...PV			
with remote indication contact	VAL-MB-T2 1500DC-PV/2+V-FM	2905646	1
without remote indication contact	VAL-MB-T2 1500DC-PV/2+V	2905647	1

Accessories

The product is also suitable for applications in PV systems with a max. short-circuit current $I_{SCPV} = 15$ kA (in accordance with EN 50539-11:2013).

Type 2 surge protective device VALVETRAB MS

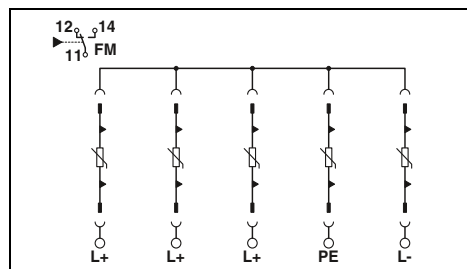
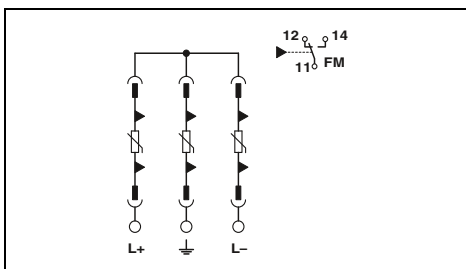
- Type 2 surge protective device with consistent pluggable design
- For insulated and single-sided grounded PV applications
- Reliable contact, thanks to integrated rotating latch
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



Pluggable surge protection, for PV applications up to 1000 V DC, 1 MPP tracker



Pluggable surge protection, for PV applications up to 1000 V DC, 3 MPP trackers



Electrical data	
IEC test classification	
Mode of protection	
Maximum continuous operating voltage U_{CPV}	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Response time t_A	
Short-circuit current I_{SCPV}	
General data	
Dimensions W/H/D	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Temperature range	
Test standards	
Remote indication contact	
IEC connection data	Rigid / flexible / AWG
UL connection data	AWG
Max. operating voltage	
Max. operating current	

Technical data		
... 1500DC	... 1000DC	... 600DC
PV II, T2	PV II, T2	PV II, T2
(L+) - (L-) / (L+)	(L+) - (L-) / (L+)	(L+) - (L-) / (L+)
- PE / (L-) - PE	- PE / (L-) - PE	- PE / (L-) - PE
1500 V DC	1170 V DC	800 V DC
30 kA	40 kA	40 kA
≤ 5 kV	≤ 3.7 kV	≤ 2.7 kV
≤ 25 ns	≤ 25 ns	≤ 25 ns
2000 A	2000 A	2000 A
General data		
53.4 mm / 98.7 mm / 65.7 mm		
1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2		
10 ... 2		
-40°C ... 85°C		
EN 50539-11		
PDT contact		
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16		
30 ... 14		
- / 30 V DC		
1 A AC / 1 A DC		

Technical data	
... 1000DC	
PV II, T2	
(L+) - (L-) / (L+) - PE / (L-) - PE	
1170 V DC	
40 kA	
≤ 3.8 kV	
≤ 25 ns	
2000 A	
General data	
89 mm / 98.57 mm / 64.7 mm	
1.5 ... 35 mm ² / 1.5 ... 25 mm ² / 15 ... 2	
10 ... 2	
-40°C ... 85°C	
EN 50539-11	
PDT contact	
0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16	
30 ... 14	
125 V AC / 30 V DC	
3 A AC / 3 A DC	

Description	
VALVETRAB MS...PV	
with remote indication contact	
without remote indication contact	
VALVETRAB MS...PV	
with remote indication contact	
without remote indication contact	
VALVETRAB MS...PV	
with remote indication contact	
without remote indication contact	

Ordering data			
Type	Order No.	Pcs./Pkt.	
VAL-MS 1500DC-PV/2+V-FM	1033725	1	
VAL-MS 1500DC-PV/2+V	1033708	1	
VAL-MS 1000DC-PV/2+V-FM	2800627	1	
VAL-MS 1000DC-PV/2+V	2800628	1	
VAL-MS 600DC-PV/2+V-FM	2800641	1	
VAL-MS 600DC-PV/2+V	2800642	1	

Ordering data			
Type	Order No.	Pcs./Pkt.	
VAL-MS-CN 1000DC-PV/4+V-FM	2907820	1	

Replacement plug	
1500 V DC	(DC+) - (DC-) / (DC+) - G / (DC-) - G
1000 V DC	(L+) - (L-) / (L+) - G / (L-) - G
600 V DC	(L+) - (L-) / (L+) - G / (L-) - G
Base element	

Accessories			
Type	Order No.	Pcs./Pkt.	
VAL-MS 1500DC-PV-ST	1033727	3	
VAL-MS 1000DC-PV-ST	2800624	1	
VAL-MS 600DC-PV-ST	2800623	1	

Accessories			
Type	Order No.	Pcs./Pkt.	
VAL-MS 4+V/BE/FM	2908725	1	

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device VALVETRAB combi MCB

- Combinations of type 2 surge protective devices with integrated arrester backup fuse
- Overload of the surge protection results in all-position disconnection from the mains
- Signaling to monitoring systems via remote indication contact in the event of an error
- Surge-proof arrester backup fuse tailored to type 2 surge protective devices
- Type 2 surge protective device with consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for all protective plugs
- Plugs can be tested with CHECKMASTER 2

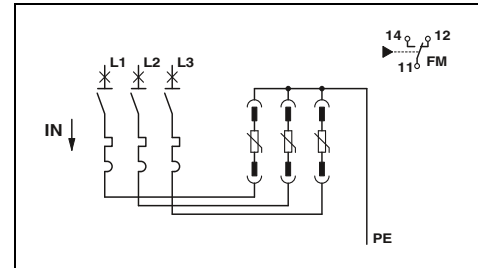
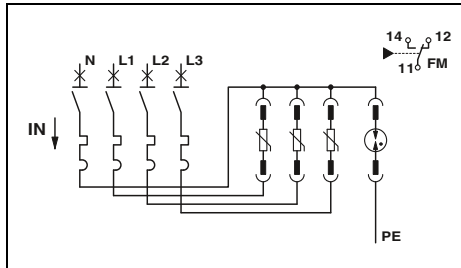
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE with integrated backup fuse



4-conductor system; L1, L2, L3, PEN with integrated backup fuse



Technical data

Electrical data	... 3S-350	... 1S-350
IEC test classification	II, T2	II, T2
Nominal voltage U_N	240/415 V AC (TN-S) / 240/415 V AC (TT)	240 V AC (TN-S) / 240 V AC (TT)
Mode of protection	L-N / L-PE / N-PE	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	350 V AC / 350 V AC / 264 V AC	350 V AC / 350 V AC / 264 V AC
Nominal discharge current I_n (8/20) μ s	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s	30 kA	30 kA
Protection level U_p	≤ 2.5 kV / - / ≤ 1.7 kV	≤ 2.5 kV / - / ≤ 1.7 kV
Follow current interrupt rating I_{fi}	- / - / 100 A	- / - / 100 A
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA	25 kA
General data		
Dimensions W/H/D	131.5 mm / 101 mm / 76 mm	114 mm / 101 mm / 76 mm
IEC connection data	Rigid / flexible / AWG	Rigid / flexible / AWG
Temperature range	-25°C ... 60°C	-25°C ... 60°C
Test standards	IEC 61643-11 / EN 61643-11 / IEC 60364-4-443 /	IEC 61643-11 / EN 61643-11 / IEC 60364-4-443 /
Remote indication contact	PDT contact	PDT contact
IEC connection data	Rigid / flexible / AWG	Rigid / flexible / AWG
Max. operating voltage	250 V AC / 250 V DC	250 V AC / 250 V DC
Max. operating current	2 A AC / 1 mA DC ... 50 mA DC	2 A AC / 1 mA DC ... 50 mA DC

Electrical data	... 3C-350
IEC test classification	II, T2
Nominal voltage U_N	240/415 V AC (TN-C)
Mode of protection	L-PEN
Maximum continuous operating voltage U_C	350 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	30 kA
Protection level U_p	≤ 2.5 kV
Follow current interrupt rating I_{fi}	-
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA
General data	
Dimensions W/H/D	114 mm / 101 mm / 76 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	-25°C ... 60°C
Test standards	IEC 61643-11 / EN 61643-11 / IEC 60364-4-443 /
Remote indication contact	PDT contact
IEC connection data	Rigid / flexible / AWG
Max. operating voltage	250 V AC / 250 V DC
Max. operating current	2 A AC / 1 mA DC ... 50 mA DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB compact, with an arrester backup fuse			
3-phase	VAL-CP-MCB-3S-350/40/FM	2882750	1
1-phase	VAL-CP-MCB-1S-350/40/FM	2882763	1

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB compact, with an arrester backup fuse			
3-phase	VAL-CP-MCB-3C-350/40/FM	2882776	1

Accessories

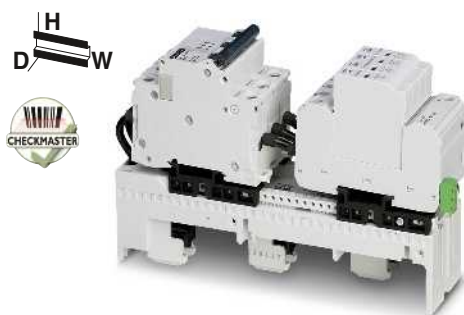
Replacement plug	Type	Order No.	Pcs./Pkt.
L-N/L-PEN	VAL-CP-350-ST-GY	2882718	10
N-PE	VAL-CP-N/PE-350-ST-GY	2882734	10

Replacement plug	Type	Order No.	Pcs./Pkt.
L-N/L-PEN	VAL-CP-350-ST-GY	2882718	10

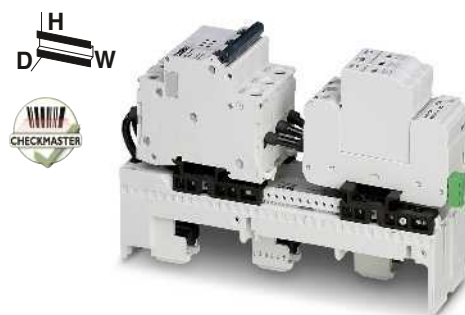
Type 2 surge protective device VALVETRAB combi MCB

- Combinations of type 2 surge protective devices with integrated arrester backup fuse
- For 60 mm system technology
- Tool-free mounting on 5 and 10 mm thick busbars
- Signaling to monitoring systems via remote indication contact in the event of an error
- Surge-proof arrester backup fuse tailored to type 2 surge protective devices
- Type 2 surge protective device with consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for all protective plugs
- Plugs can be tested with CHECKMASTER 2

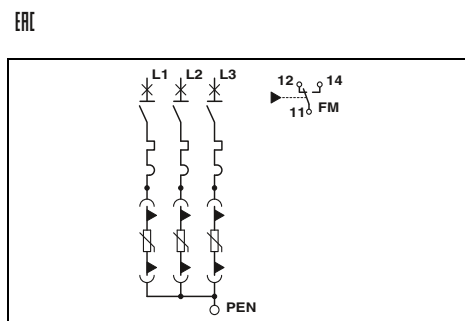
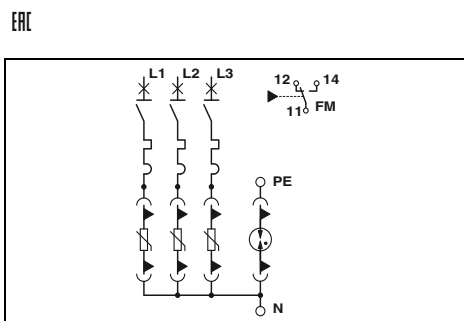
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



5-conductor system; L1, L2, L3, N, PE
for 60 mm system technology



4-conductor system; L1, L2, L3, PEN
for 60 mm system technology



Technical data

II, T2
240/415 V AC (TN-S) /
240/415 V AC (TT)
L-N / L-PE / N-PE
350 V AC / 350 V AC / 264 V AC
20 kA
25 kA / 25 kA / 40 kA
≤ 2.5 kV / - / ≤ 1.5 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA

Technical data

II, T2
240/415 V AC (TN-C) /
240/415 V AC (TT)
L-PEN
350 V AC
20 kA
25 kA
≤ 2.5 kV
≤ 25 ns
25 kA

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-CP-MOSO 60-3S-FM	2804403	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-CP-MOSO 60-3C-FM	2804416	1

Accessories

VAL-CP-350-ST-GY	2882718	10
VAL-CP-N/PE-350-ST-GY	2882734	10

Accessories

VAL-CP-350-ST-GY	2882718	10
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Electrical data	
IEC test classification	
Nominal voltage U_N	
Mode of protection	
Maximum continuous operating voltage U_c	
Nominal discharge current I_n (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Response time t_A	
Short-circuit current rating I_{SCCR}	
General data	
Dimensions W/H/D	54 mm / 220 mm / 134 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	2.5 ... 25 mm ² / 2.5 ... 16 mm ² / 12 ... 4
Test standards	-25°C ... 55°C
Remote indication contact	IEC 61643-11 / EN 61643-11
IEC connection data	PDT contact
Max. operating voltage	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Max. operating current	250 V AC / 125 V DC (200 mA DC)
	1 A AC / 1 A DC (30 V DC)

Description	
VALVETRAB compact	

Replacement plug	L-N/L-PEN N-PE
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device for LED applications

- Universal use for street, tunnel or object lighting
- Flexible installation
- Fixed via integrated elongated holes
- Compact design
- Optical, mechanical status indicator
- Connection in branch or through wiring
- Double or reinforced insulation

new

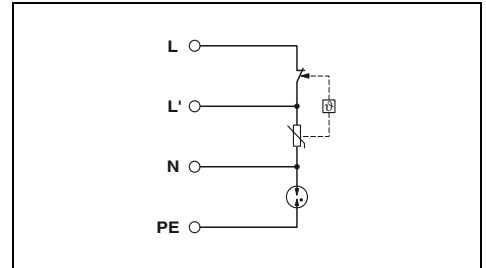
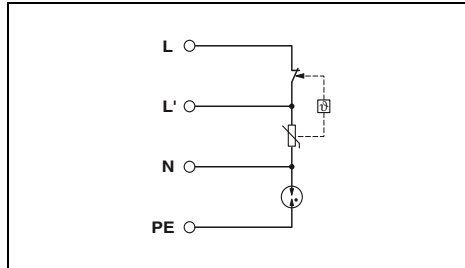


Nominal voltage up to 230 V



Nominal voltage up to 277 V

ERIC KEBA CB



Technical data

Technical data

Electrical data	
IEC test classification	II / III, T2 / T3
Nominal voltage U_N	100 V AC ... 230 V AC (TN-S) / 100 V AC ... 230 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	305 V AC / 255 V AC / 255 V AC
Combination wave U_{OC}	10 kV / 10 kV
Nominal discharge current I_n (8/20) μ s	5 kA / 5 kA / 10 kA
Max. discharge current I_{max} (8/20) μ s	10 kA / 10 kA / 20 kA
Protection level U_p	≤ 1.3 kV / ≤ 1.5 kV / ≤ 1.5 kV
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Maximum backup fuse for branch wiring	16 A (MCB B/C)
General data	
Dimensions W/H/D	36.5 mm / 56 mm / 34 mm
IEC connection data	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / -
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Technical data	
IEC test classification	II / III, T2 / T3
Nominal voltage U_N	100 V AC ... 277 V AC (TN-S) / 100 V AC ... 277 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	320 V AC / 305 V AC / 305 V AC
Combination wave U_{OC}	10 kV
Nominal discharge current I_n (8/20) μ s	5 kA / 5 kA / 10 kA
Max. discharge current I_{max} (8/20) μ s	10 kA / 10 kA / 20 kA
Protection level U_p	≤ 1.3 kV / ≤ 1.5 kV / ≤ 1.4 kV
Response time t_A	≤ 25 ns / - / ≤ 100 ns
Maximum backup fuse for branch wiring	16 A (MCB B/C)
General data	
Dimensions W/H/D	36.5 mm / 56 mm / 34 mm
IEC connection data	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / -
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Technical data	
IEC test classification	II / III, T2 / T3
Nominal voltage U_N	100 V AC ... 277 V AC (TN-S) / 100 V AC ... 277 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	320 V AC / 305 V AC / 305 V AC
Combination wave U_{OC}	10 kV
Nominal discharge current I_n (8/20) μ s	5 kA / 5 kA / 10 kA
Max. discharge current I_{max} (8/20) μ s	10 kA / 10 kA / 20 kA
Protection level U_p	≤ 1.3 kV / ≤ 1.5 kV / ≤ 1.4 kV
Response time t_A	≤ 25 ns / - / ≤ 100 ns
Maximum backup fuse for branch wiring	16 A (MCB B/C)
General data	
Dimensions W/H/D	36.5 mm / 56 mm / 34 mm
IEC connection data	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / -
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Ordering data

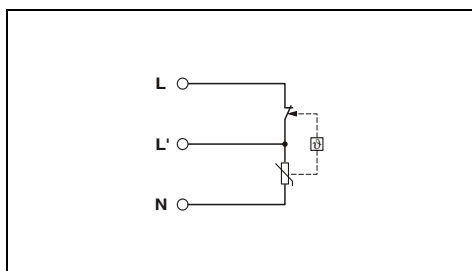
Description	BLOCKTRAB, for universal mounting	
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Type	Order No.	Pcs./Pkt.
BLTF2-1S-305-UT	1078433	10

Type	Order No.	Pcs./Pkt.
BLTF2-1S-320-UT	2906101	10



Nominal voltage up to 277 V



Technical data

II / III, T2 / T3
100 V AC ... 277 V AC

L-N
320 V AC
10 kV
5 kA
10 kA
≤ 1.3 kV
≤ 25 ns
16 A (MCB B/C)

36.5 mm / 56 mm / 34 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / -
-40°C ... 80°C
IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
BLT-T2-320-UT	2906100	10

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device for PCB mounting

- Powerful type 2 surge protection
- Can be soldered directly onto the printed-circuit board
- Very small footprint
- Low height matching standard PCB components
- Available with remote indication contact or visual status indicator as an option
- Safe mechanical disconnection in the event of an overload

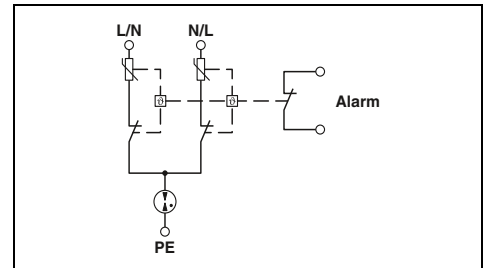
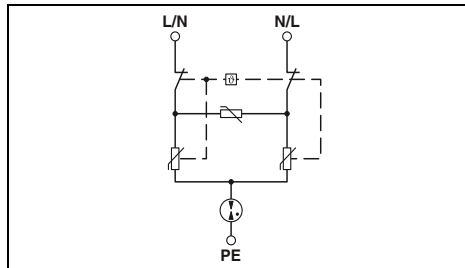
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



3-conductor system; L, N, PE with visual status indicator



3-conductor system; L, N, PE with remote indication contact



Electrical data	
IEC test classification	II, T2
Nominal voltage U_N	230 V AC (TN) / 230 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	350 V AC
Nominal discharge current I_n (8/20) μ s	5 kA
Protection level U_p	≤ 1.5 kV
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	1 kA
Maximum backup fuse for branch wiring	16 A AC (MCB B/general purpose)
General data	
Dimensions W/H/D	24 mm / 15.7 mm / 25.3 mm
Conductive path width	≥ 12 mm (2 OZ) / ≥ 8 mm (3 OZ)
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
Max. operating voltage	- / -
Max. operating current	- / -

Technical data		
Type	Order No.	Pcs./Pkt.
PRT-1S-350/5S	2908551	10

Technical data	
IEC test classification	II, T2
Nominal voltage U_N	230 V AC (TN) / 230 V AC (TT)
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	350 V AC
Nominal discharge current I_n (8/20) μ s	20 kA
Protection level U_p	≤ 2.5 kV / ≤ 1.8 kV / ≤ 1.8 kV
Response time t_A	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	1 kA
Maximum backup fuse for branch wiring	63 A (MCB C)
General data	
Dimensions W/H/D	38.4 mm / 41 mm / 22.4 mm
Conductive path width	≥ 28 mm (2 OZ) / ≥ 19 mm (3 OZ)
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-11 / EN 61643-11
Remote indication contact	
Max. operating voltage	250 V AC / 30 V DC
Max. operating current	1 A AC / 1 A DC

Ordering data		
Type	Order No.	Pcs./Pkt.
PRT-1S-350/5S	2908551	10

Ordering data		
Type	Order No.	Pcs./Pkt.
PRT-1S-350/20/R	2905977	20

Description	
PRINTRAB	

Surge protection and interference suppression filters

Surge protection for the power supply

Type 2 surge protective device for PCB mounting

Solderable surge protection

- Can be soldered directly onto the printed-circuit board
- Very small footprint
- Low height matching standard PCB components
- Available with remote indication contact and/or visual status indicator
- Safe mechanical disconnection in the event of an overload

Solderable base element, 1-pos.

- Pluggable
- Direct soldering and fixing onto the PCB
- Double insulation between the remote signaling and main circuits
- For 1500 V DC and 690 V AC applications
- Suitable for all T1 and T2 VAL-MS ... plugs
- Integrated remote indication contact

new

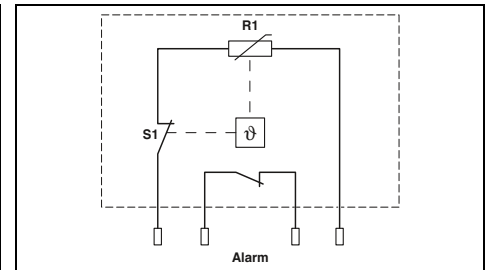
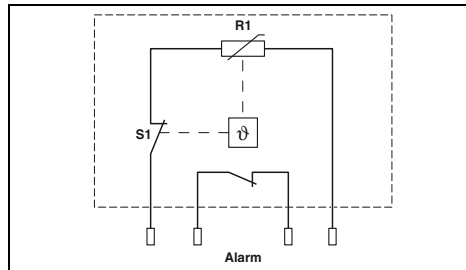


1500 V DC applications, with visual indicator and remote indication contact, double insulation

new



1500 V DC and 690 V AC applications, with visual indicator and remote indication contact, double insulation



Technical data

Electrical data	
IEC test classification	T2, T2
Nominal voltage U_N	400 V AC (TN) / 690 V AC (TN) / 500 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_C	680 V AC (single item)
Maximum continuous operating voltage U_{CPV}	895 V DC (single item) 1790 V DC (2 serial connections)
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 2.7 kV (single item) / ≤ 4.5 kV (2 serial connections)
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA
Short-circuit current I_{SCPV}	-
Maximum backup fuse for branch wiring	125 A (aR)
General data	
Dimensions W/H/D	18.8 mm / 44 mm / 41.9 mm
Conductive path width	≥ 10 mm
Temperature range	-40°C ... 85°C
Test standards	EN 50539-11 / IEC 61643-11 / IEC 61643-11
Remote indication contact	normal/deterioration
Max. operating voltage	30 V AC / 30 V DC
Max. operating current	1 A AC / 1 A DC

Electrical data	
IEC test classification	T2, T2
Nominal voltage U_N	400 V AC (TN) / 690 V AC (TN) / 500 V AC (IT)
Mode of protection	
Maximum continuous operating voltage U_C	550 V AC (single item)
Maximum continuous operating voltage U_{CPV}	750 V DC (single item) 1500 V DC (2 serial connections)
Nominal discharge current I_n (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	40 kA
Protection level U_p	≤ 2.25 kV (single item) / ≤ 4.5 kV (2 serial connections)
Response time t_A	≤ 25 ns
Short-circuit current rating I_{SCCR}	25 kA
Short-circuit current I_{SCPV}	-
Maximum backup fuse for branch wiring	125 A (aR)
General data	
Dimensions W/H/D	18.8 mm / 44 mm / 41.9 mm
Conductive path width	≥ 10 mm
Temperature range	-40°C ... 85°C
Test standards	EN 50539-11 / IEC 61643-11 / IEC 61643-11
Remote indication contact	normal/deterioration
Max. operating voltage	30 V AC / 30 V DC
Max. operating current	1 A AC / 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
PRINTRAB	PRT-PV-P-1500/20-680	1026507	10
VALVETRAB MS			

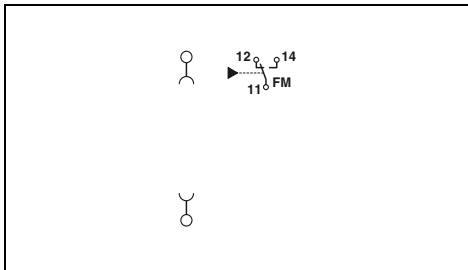
Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS	PRT-PV-P-1500/20-550	1013424	10

new



Solder base element for VAL-MS... plugs



Technical data

I / II, T1 / T2

760 V AC
800 V DC

20 kA
40 kA

-
6000 A (DC)
250 A (gG)

20 mm / 88 mm / 53 mm

-40°C ... 85°C
IEC 61643-11 / EN 61643-11 / EN 50539-11

PDT contact
30 V AC / 30 V DC
1 A AC / 1 A DC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS-BE-PCB-FM	1035864	10

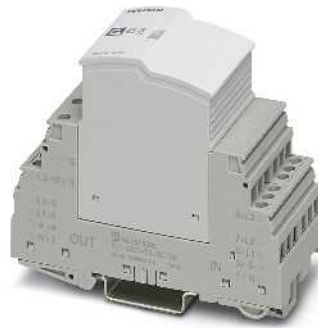
Surge protection and interference suppression filters

Surge protection for the power supply

Type 3 device protection PLUGTRAB SEC

- Varistor-based type 3 surge protection
- For single and three-phase power supply units
- With Push-in or screw connection technology
- Pluggable
- Through wiring
- Optical, mechanical status indicator
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



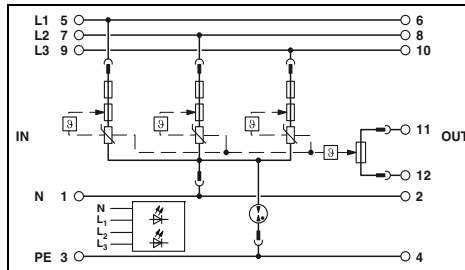
5-conductor system; L1, L2, L3, N, PE



new

3-conductor system, L, N, PE or DC+, DC-, PE, 24 V nominal voltage

ERC



Technical data

III, T3
230 V AC
L-N / L-PE / N-PE
264 V AC
26 A (30°C)
3 kA
6 kV
L-N / L(N)-PE ≤ 1.4 kV / ≤ 1.5 kV
L-N / L(N)-PE ≤ 25 ns / ≤ 100 ns
1.5 kA AC

Maximum backup fuse for branch wiring

not required

General data

Dimensions W/H/D
IEC connection data Rigid / flexible / AWG
Temperature range
Test standards
Remote indication contact
IEC connection data Rigid / flexible / AWG
Max. operating voltage
Max. operating current

35.4 mm / 90 mm / 74.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 70°C
IEC 61643-11 / EN 61643-11
N/C contact
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
250 V AC / 125 V DC
3 A AC / 1 A DC (30 V DC)

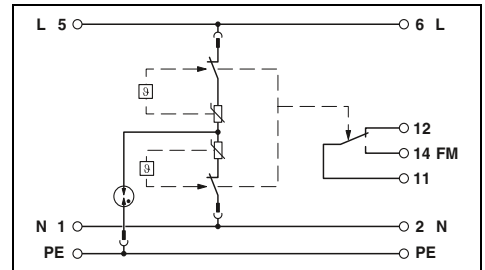
Ordering data

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-3S-230-FM	2905230	1

Accessories

PLT-SEC-T3-3S-230-P	2905236	1
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ERC KEBA CB



Technical data

III, T3
24 V AC
L-N / L-PE / N-PE
34 V AC
44 V DC
26 A (at 30°C)
1 kA
2 kV
≤ 0.2 kV / ≤ 0.6 kV
≤ 25 ns / ≤ 100 ns
10 kA AC
0.25 kA DC (without additional backup fuse) /
5 kA DC (for 20 A gG / B backup fuse)
32 A (gG / B / C)

General data

17.7 mm / 101 mm / 74.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 30 ... 12
250 V AC / 125 V DC
0.5 A AC / 0.5 A DC (75 V DC)

Ordering data

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-24-FM-PT	2907925	5
PLT-SEC-T3-24-FM-UT	2907916	5

Accessories

PLT-SEC-T3-24-P-UT/PT	2907920	10
PLT-SEC-T3-BE-FM-PT	2907929	10
PLT-SEC-T3-BE-FM-UT	2907924	10



new

SIL
evaluated
IEC 61508



3-conductor system, L, N, PE or DC+, DC-, PE,
60 V nominal voltage



new

SIL
evaluated
IEC 61508



3-conductor system, L, N, PE or DC+, DC-, PE,
120 V nominal voltage



new

SIL
evaluated
IEC 61508

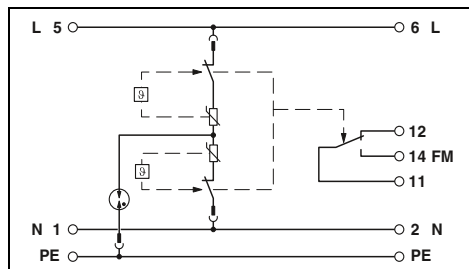
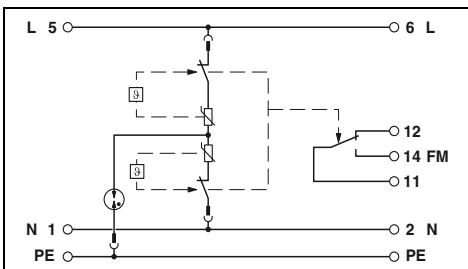
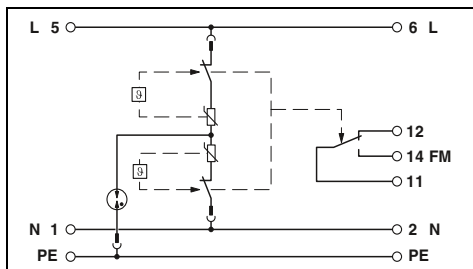


3-conductor system, L, N, PE or DC+, DC-, PE,
240 V nominal voltage

ERC (KEMA) CB

ERC (KEMA) CB

ERC (KEMA) CB



Technical data

Technical data

Technical data

III, T3
60 V AC
L-N / L-PE / N-PE
80 V AC
80 V DC
26 A (at 30°C)
2 kA
4 kV
≤ 0.48 kV / ≤ 0.8 kV
≤ 25 ns / ≤ 100 ns
10 kA AC
0.25 kA DC (without additional backup fuse) /
5 kA DC (for 20 A gG / B backup fuse)
32 A (gG / B / C)

II / III, T2 / T3
120 V AC
L-N / L-PE / N-PE
150 V AC
150 V DC
26 A (at 30°C)
5 kA
6 kV
≤ 0.75 kV (at U_{OC}) / ≤ 0.85 kV
≤ 25 ns / ≤ 100 ns
10 kA AC
0.25 kA DC (without additional backup fuse) /
5 kA DC (for 20 A gG / B backup fuse)
32 A (gG / B / C)

II / III, T2 / T3
240 V AC
L-N / L-PE / N-PE
264 V AC
240 V DC
26 A (at 30°C)
5 kA
6 kV
≤ 1.25 kV (at U_{OC}) / ≤ 1.4 kV
≤ 25 ns / ≤ 100 ns
10 kA AC
0.25 kA DC (without additional backup fuse) /
5 kA DC (for 20 A gG / B backup fuse)
32 A (gG / B / C)

17.7 mm / 101 mm / 74.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 30 ... 12
250 V AC / 125 V DC
0.5 A AC / 0.5 A DC (75 V DC)

17.7 mm / 101 mm / 74.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 30 ... 12
250 V AC / 125 V DC
0.5 A AC / 0.5 A DC (75 V DC)

17.7 mm / 101 mm / 74.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 80°C
IEC 61643-11 / EN 61643-11
PDT contact
0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 30 ... 12
250 V AC / 125 V DC
0.5 A AC / 0.5 A DC (75 V DC)

Ordering data

Ordering data

Ordering data

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-60-FM-PT	2907926	5
PLT-SEC-T3-60-FM-UT	2907917	5

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-120-FM-PT	2907927	5
PLT-SEC-T3-120-FM-UT	2907918	5

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-230-FM-PT	2907928	5
PLT-SEC-T3-230-FM-UT	2907919	5

Accessories

Accessories

Accessories

PLT-SEC-T3-60-P-UT/PT	2907921	10
PLT-SEC-T3-BE-FM-PT	2907929	10
PLT-SEC-T3-BE-FM-UT	2907924	10

PLT-SEC-T3-120-P-UT/PT	2907922	10
PLT-SEC-T3-BE-FM-PT	2907929	10
PLT-SEC-T3-BE-FM-UT	2907924	10

PLT-SEC-T3-230-P-UT/PT	2907923	10
PLT-SEC-T3-BE-FM-PT	2907929	10
PLT-SEC-T3-BE-FM-UT	2907924	10

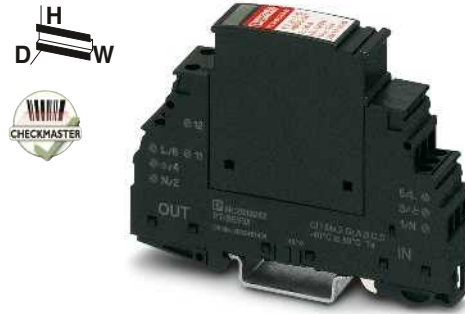
Surge protection and interference suppression filters

Surge protection for the power supply

Type 3 device protection PLUGTRAB

- For 48 V DC or 230 V IT power supply equipment
- Pluggable
- Through wiring
- Optical status indicator via LED
- Tool-free plug replacement
- With floating remote indication contact
- Plugs can be tested with CHECKMASTER 2

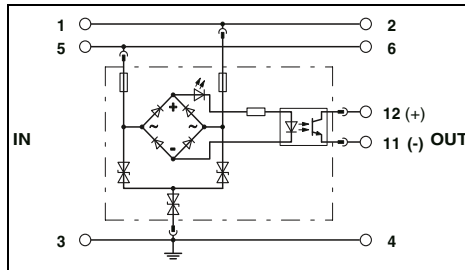
Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



For 48 V DC power supplies



For 230 V AC power supplies,
3-conductor system, L1, L2, PE (IT systems)



Technical data

Electrical data	
IEC test classification	III, T3
Nominal voltage U_N	- / 48 V DC
Mode of protection	L-N / L-PE / N-PE / (L+) - (L-) / (L+/L-) - PE
Maximum continuous operating voltage U_C	60 V DC
Maximum continuous operating voltage U_C	L-N / L-PE
Rated load current I_L	26 A (30°C)
Nominal discharge current I_n (8/20) μ s	500 A
Combined surge U_{OC}	1 kV (2 Ω) / 6 kV (12 Ω)
Protection level U_p	≤ 120 V
Protection level U_p	L-N / L(N)-PE
Response time t_A	≤ 1 ns / ≤ 1 ns
Maximum backup fuse in acc. with IEC	-
Maximum backup fuse for branch wiring	50 A (gG)
Maximum backup fuse for through wiring	25 A (gG)

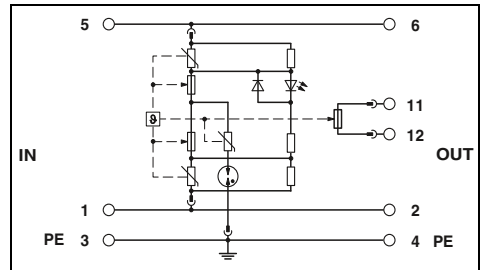
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Test standards	-40°C ... 80°C
	EN 61643-11 / IEC 61643-11

Ordering data

Description	
MAINS-PLUGTRAB , consisting of a plug and base element	
PT 2+1-S-48DC/FM	2817958 10

Accessories

Replacement plug	
PLUGTRAB base element , for mounting on NS 35	
PT 2+1-S-48DC-ST	2839648 10
PT-BE/FM	2839282 10



Technical data

Electrical data	
IEC test classification	III, T3
Nominal voltage U_N	230 V AC
Mode of protection	L-L / L-PE
Maximum continuous operating voltage U_C	275 V AC / 440 V AC
Maximum continuous operating voltage U_C	L-L / L-PE
Rated load current I_L	16 A (60°C)
Nominal discharge current I_n (8/20) μ s	3 kA
Combined surge U_{OC}	6 kV
Protection level U_p	-
Protection level U_p	≤ 1.2 kV / ≤ 1.5 kV
Response time t_A	≤ 25 ns / ≤ 100 ns
Maximum backup fuse in acc. with IEC	16 A (MCB B)
Maximum backup fuse for branch wiring	16 A (MCB B)
Maximum backup fuse for through wiring	16 A (MCB B)

General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Test standards	-40°C ... 70°C
	IEC 61643-11 / EN 61643-11

Ordering data

Description	
MAINS-PLUGTRAB , consisting of a plug and base element	
PLT-T3-IT-230-FM	2906450 1

Accessories

Replacement plug	
PLUGTRAB base element , for mounting on NS 35	
PLT-T3-IT-230-P	2906451 1
PT-BE/FM	2839282 10

Type 3 device protection
TERMITRAB complete

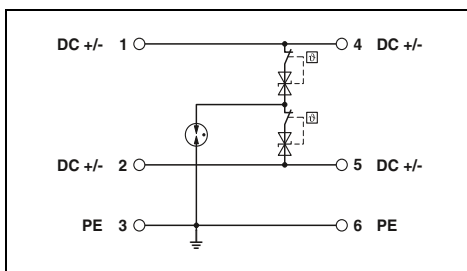
- Diode-based type 3 surge protection
- Overall width of just 6.2 mm
- Same shape as PTCB electrical device circuit breakers
- With Push-in or screw connection technology
- Pluggable
- Integrated mechanical status indicator
- Plugs can be tested with CHECKMASTER 2



new



For 24 V DC power supplies



Technical data

Electrical data	
IEC test classification	III, T3
Nominal voltage U_N	- / 24 V DC
Mode of protection	(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C	30 V DC
Rated load current I_L	6 A (30°C)
Nominal discharge current I_n (8/20) μ s	1 kA
Combined surge U_{oc}	2 kV (2 Ω) / 6 kV (12 Ω)
Protection level U_p	-
	(DC+) - (DC-) ≤ 0.09 kV ($U_{oc} = 2$ kV) / ≤ 0.2 kV ($U_{oc} = 6$ kV)
	(DC+/DC-) - PE ≤ 0.7 kV
Response time t_A	(DC+) - (DC-) ≤ 1 ns
	(DC+/DC-) - PE ≤ 100 ns
Maximum backup fuse for branch wiring	6 A (gG)
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
IEC connection data	Rigid / flexible / AWG
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Test standards	-40°C ... 80°C
	IEC 61643-11 / EN 61643-11

Ordering data		
Type	Order No.	Pcs./Pkt.
TTC-6P-T3-24DC-PT-I	1027586	1
TTC-6P-T3-24DC-UT-I	1027584	1
Accessories		
Replacement plug	TTC-6P-T3-24DC-I-P	1027591
		1

Description	TERMITRAB complete
	Push-in connection technology
	Screw connection technology

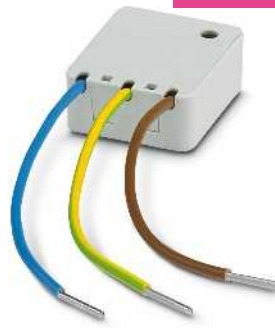
Replacement plug	1L-N & N-PE
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Surge protection and interference suppression filters

Surge protection for the power supply

Type 3 device protection BLOCKTRAB

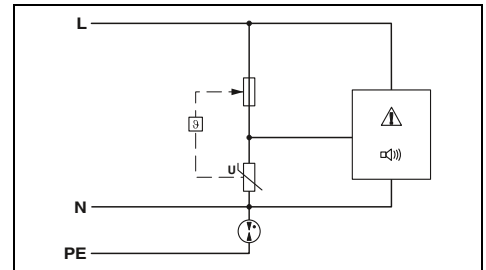
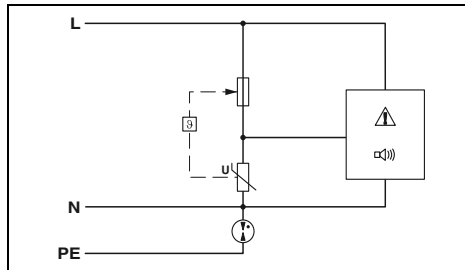
- Type 3 varistor-based surge protective device
- For mounting in a fixed installation
- Audible fault indication
- Thermal disconnect device



For mounting in junction boxes, cable ducts, and underfloor systems



For mounting on standard ground contact sockets



Technical data

Electrical data	
IEC test classification	III, T3
Nominal voltage U_N	230 V AC
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	L-N / L-PE - / -
Rated load current I_L	-
Nominal discharge current I_n (8/20) μ s	-
Combined surge U_{OC}	6 kV
Protection level U_p	≤ 1.5 kV
Response time t_A	L-N / L(N)-PE ≤ 25 ns / ≤ 100 ns
Maximum backup fuse in acc. with IEC	16 A (MCB B)
General data	
Dimensions W/H/D	12,5 mm / 31 mm / 36 mm
IEC connection data	Rigid / flexible / AWG mm^2 / mm^2 / -
Temperature range	-20°C ... 70°C
Test standards	IEC 61643-11 / EN 61643-11

Technical data	
IEC test classification	III, T3
Nominal voltage U_N	230 V AC
Mode of protection	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	L-N / L-PE - / -
Rated load current I_L	-
Nominal discharge current I_n (8/20) μ s	-
Combined surge U_{OC}	6 kV
Protection level U_p	≤ 1.5 kV
Response time t_A	L-N / L(N)-PE ≤ 25 ns / ≤ 100 ns
Maximum backup fuse in acc. with IEC	16 A (MCB B)
General data	
Dimensions W/H/D	53 mm / 53 mm / 32 mm
IEC connection data	Rigid / flexible / AWG mm^2 / mm^2 / -
Temperature range	-20°C ... 70°C
Test standards	IEC 61643-11 / EN 61643-11

Ordering data

Description	Type	Order No.	Pcs./Pkt.
BLOCKTRAB, for universal mounting	BLT3-230-A	1038841	10

Ordering data

Description	Type	Order No.	Pcs./Pkt.
BLOCKTRAB, for universal mounting	BLT-SKT-230-A	1038842	1

Type 3 device protection BLOCKTRAB

- BT-1S-230AC/...** serves as device protection in deep installation boxes (in acc. with DIN 49073), cable ducts, underfloor systems, and end devices.
- With double spring-cage terminal blocks for tool-free conductor connection
 - Side latches for easy fixing
 - Optical or acoustic signaling of disconnection

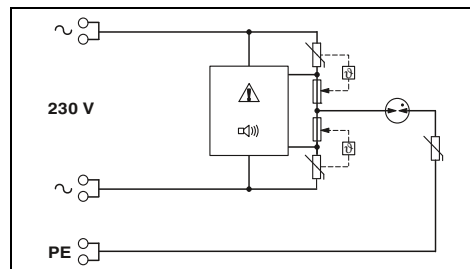
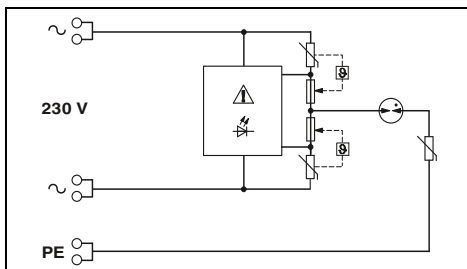


For universal mounting,
optical signaling



For universal mounting,
acoustic signaling

Notes:
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



		Technical data			Technical data		
Electrical data							
IEC test classification		III, T3		III, T3			
Nominal voltage U_N		230 V AC		230 V AC			
Mode of protection		L-N / L-PE / N-PE		L-N / L-PE / N-PE			
Maximum continuous operating voltage U_C	L-N / L-PE	275 V AC / 440 V AC		275 V AC / 440 V AC			
Rated load current I_L		16 A (30°C)		16 A (30°C)			
Nominal discharge current I_n (8/20) μ s		3 kA		3 kA			
Combined surge U_{oc}		6 kV		6 kV			
Protection level U_p	L-N / L(N)-PE	≤ 1.3 kV / ≤ 1.5 kV		≤ 1.3 kV / ≤ 1.5 kV			
Response time t_A	L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns		≤ 25 ns / ≤ 100 ns			
Maximum backup fuse in acc. with IEC		16 A (MCB B)		16 A (MCB B)			
General data							
Dimensions W/H/D		22.5 mm / 43 mm / 27.4 mm		22.5 mm / 43 mm / 26.2 mm			
IEC connection data	Rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14		0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14			
Temperature range		-30°C ... 75°C		-30°C ... 75°C			
Test standards		IEC 61643-11 / EN 61643-11		IEC 61643-11 / EN 61643-11			
		Ordering data			Ordering data		
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
BLOCKTRAB , for universal mounting	230 V AC	BT-1S-230AC/O	2800625	1	BT-1S-230AC/A	2803409	10

Surge protection and interference suppression filters

Surge protection for the power supply

Type 3 device protection MAINTRAB

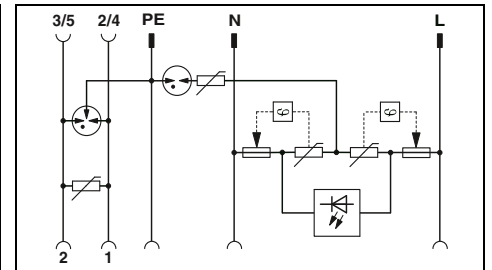
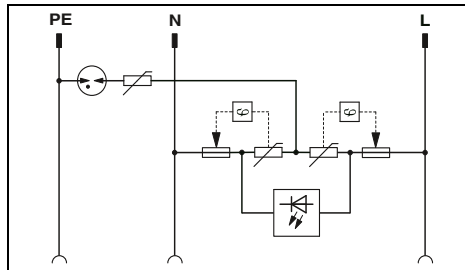
- Attachment plug in black or white
- For individual end devices
- With increased touch-proof protection
- Optical signaling of the surge voltage function via LED
- For protecting the power supply and signal lines
- Including required accessories
- Country-specific versions available



Attachment plug



For telecommunications systems with TAE connection



Technical data

Technical data

Electrical data	
IEC test classification/EN type	- / T3
Nominal voltage U_N	230 V AC
Maximum continuous operating voltage U_C	L-N / L-PE without reference direction 275 V AC / 360 V AC
Combined surge U_{OC}	4 kV
Nominal load current I_L	16 A (30°C)
Rated current	-
Nominal discharge current I_n (8/20) μ s	without reference direction 3 kA (> 5x)
Protection level U_p	Core-Core / Core-Ground / Core-Shield L-N / N-PE / L-PE ≤ 1.2 kV / ≤ 1.5 kV / ≤ 1.5 kV Core-Core / Core-Ground / Core-Shield - / - / -
Response time t_d	L-N / L-PE ≤ 25 ns / ≤ 100 ns Core-Ground / Core-Shield / Shield-Ground - / - / -
Cut-off frequency f_g (3 dB)	In a 100 Ω system Core-Core - In a 75 Ω system Core-Shield -
General data	
Dimensions W/H/D	56 mm / 76 mm / 78 mm
Temperature range	-25°C ... 75°C
Test standards	IEC 61643-11 / EN 61643-11

Mains protection	Data protection
/ T3	C1
230 V AC	
275 V AC / 360 V AC	200 V DC
4 kV	-
16 A (30°C)	150 mA (25°C)
-	1 kA / 2.5 kA / -
3 kA (> 5x)	-
-	≤ 460 V (C2 - 1 kA) / ≤ 900 V (C2 - 2 kA) / -
≤ 1.2 kV / ≤ 1.5 kV / ≤ 1.5 kV	-
-	-
≤ 25 ns / ≤ 100 ns	-
-	-
-	typ. 4 MHz
-	-
IEC 61643-11 / EN 61643-11 / EN 61643-21 /	

Ordering data

Ordering data

Description	can be used in the following:
MAINTRAB , attachment plug with signal lamp for plugging into a socket, for device protection	
black	D, A, NL, E, S, FIN, TR
white	D, A, NL, E, S, FIN, TR
black	D
white	D
black	NL, E, I, S, FIN, TR
black	B, F, CZ, SVK, PL
black	CH

Type	Order No.	Pcs./Pkt.
MNT-1 D	2882200	1
MNT-1 D/WH	2882213	1
MNT-NET B/F	2882226	1
MNT-1 CH II	2882255	1

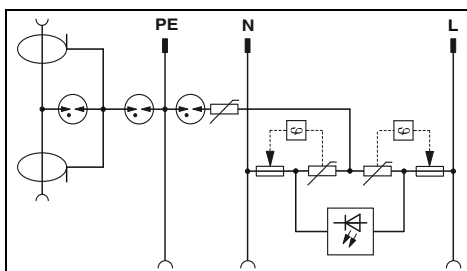
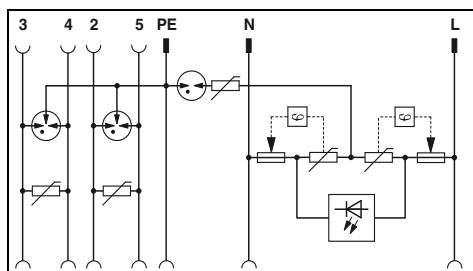
Type	Order No.	Pcs./Pkt.
MNT-TAE D	2882381	1
MNT-TAE D/WH	2882394	1



For telecommunications systems with RJ12 connection



For network and TV antennas/cables and SAT systems, with F connector and IEC adapter



Technical data

Mains protection	Data protection
/ T3	C1
230 V AC	
275 V AC / 360 V AC	200 V DC
-	-
4 kV	-
16 A (30°C)	150 mA (25°C)
-	1 kA / 2.5 kA / -
3 kA (> 5x)	-
-	1 kA / 2.5 kA / -
≤ 1.2 kV / ≤ 1.5 kV / ≤ 1.5 kV	-
-	≤ 460 V (C2 - 1 kA) / ≤ 900 V (C2 - 2 kA) / -
≤ 25 ns / ≤ 100 ns	-
-	≤ 25 ns / ≤ 100 ns / -
-	typ. 4 MHz
-	-

Technical data

Mains protection	Data protection
/ T3	C2
230 V AC	
275 V AC / 360 V AC	24 V DC
-	-
4 kV	-
16 A (30°C)	1.5 A (25°C)
-	1.5 A (25°C)
3 kA (> 5x)	-
-	- / 2.5 kA / 2.5 kA
≤ 1.2 kV / ≤ 1.5 kV / ≤ 1.5 kV	-
-	- / - / ≤ 700 V (C2 - 2 kA)
≤ 25 ns / ≤ 100 ns	-
-	- / - / ≤ 100 ns
-	-
-	typ. 2.5 GHz

63 mm / 103 mm / 78 mm
-25°C ... 75°C
IEC 61643-11 / EN 61643-11 / EN 61643-21 /

63 mm / 107 mm / 78 mm
-25°C ... 75°C
IEC 61643-11 / EN 61643-11 / EN 61643-21 /

Ordering data

Type	Order No.	Pcs./Pkt.
MNT-TELE E	2882417	1
MNT-TEL B/F	2882404	1

Ordering data

Type	Order No.	Pcs./Pkt.
MNT-TV-SAT D	2882284	1
MNT-TV-SAT D/WH	2882297	1
MNT-TV-SAT B/F	2882307	1

Surge protection and interference suppression filters

Surge protection for the power supply

Surge protection for NEMA systems

- VALVETRAB US – Single-phase**
- Surge protection in accordance with UL Listed type 1
 - Just one connection terminal block for GND
 - Consistent pluggable design
 - Disconnect device on each individual plug
 - Optical, mechanical status indication for the individual arresters
 - With floating remote indication contact
 - Mechanical coding of all slots
 - Plugs can be tested with CHECKMASTER 2

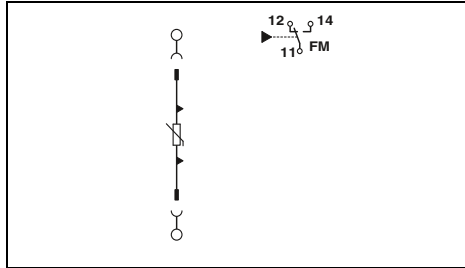


2-conductor system, DC+, DC-, for (-) 48 V DC



3-conductor system, DC+, DC-, G, for (-) 48 V DC

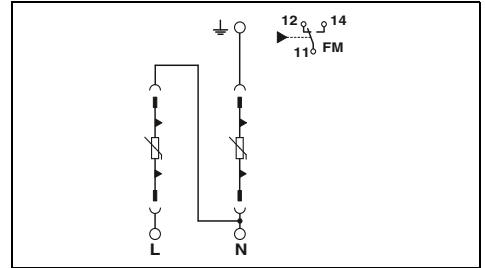
UL US
Total width 17.8 mm



Technical data

	...48/40...	...48/65...
	Electrical data	
UL type	type 4	type 1
Nominal voltage U_N	60 V DC	48 V DC
Mode of protection	(DC+) - (DC-)	(DC+) - (DC-)
Maximum continuous operating voltage (MCOV)	100 V DC	100 V DC
Nominal discharge current I_n	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	40 kA	65 kA
Maximum surge current per phase	40 kA	65 kA
Voltage protection rating (VPR)		400 V
Short-circuit current rating (SCCR)	-	5 kA
General data		
Dimensions W/H/D	17.8 mm / 96.8 mm / 65.5 mm	
UL connection data	AWG	10 ... 2
Standards/specifications	UL 1449 Edition 4	
Remote indication contact	PDT contact	
UL connection data	AWG	30 ... 14
Max. operating voltage	125 V AC	
Max. operating current	1 A AC	

UL US
Total width 35.6 mm



Technical data

	...48/40...	...48/65...
	Electrical data	
UL type	type 4	type 1
Nominal voltage U_N	60 V DC	48 V DC
Mode of protection	(DC+) - (DC-) / (DC+) - G	(DC+) - (DC-) / (DC+) - G
Maximum continuous operating voltage (MCOV)	(DC+) - (DC-): 100 V DC (DC+) - G: 100 V DC (DC-) - G: 200 V DC	(DC+) - (DC-) / (DC+) - G: 100 V DC (DC+) - G: 100 V DC (DC-) - G: 100 V DC
Nominal discharge current I_n	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	40 kA	130 kA
Maximum surge current per phase	40 kA	65 kA
Voltage protection rating (VPR)		(DC+) - (DC-): 400 V (DC+) - G: 400 V (DC-) - G: 600 V
Short-circuit current rating (SCCR)	-	5 kA
General data		
Dimensions W/H/D	35.6 mm / 96.8 mm / 65.5 mm	
UL connection data	AWG	10 ... 2
Standards/specifications	UL 1449 Edition 4	
Remote indication contact	PDT contact	
UL connection data	AWG	30 ... 14
Max. operating voltage	125 V AC	
Max. operating current	1 A AC	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US		
	VAL-US-48/40/1+0-FM	2910343	1
	VAL-US-48/65/1+0-FM	2910345	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US		
	VAL-US-48/40/1+1V-FM	2910344	1
	VAL-US-48/65/1+1V-FM	2910346	1

Accessories

Replacement plug	L-N/L-G/N-G L-N/L-G/N-G	Type	Order No.	Pcs./Pkt.
		VAL-US-48/40-P	2910333	1
	VAL-US-48/65-P	2910328	1	

Accessories

Replacement plug	L-N/L-G/N-G L-N/L-G/N-G	Type	Order No.	Pcs./Pkt.
		VAL-US-48/40-P	2910333	1
	VAL-US-48/65-P	2910328	1	

Surge protection and interference suppression filters

Surge protection for the power supply

Surge protection for NEMA systems

VALVETRAB US – Single-phase

- Surge protection in accordance with UL Listed type 1
- Just one connection terminal block for GND
- Consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



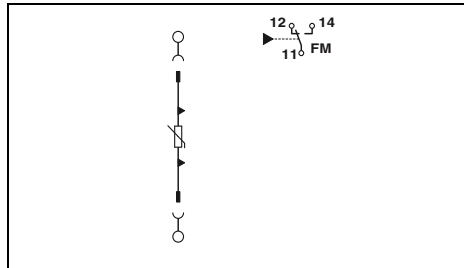
2-conductor system, L, N/G, single-phase



2-conductor system, L, N/G, single-phase



Total width 17.8 mm

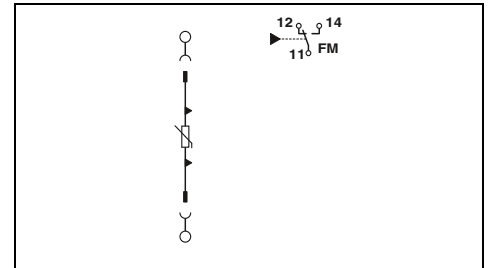


Technical data

Electrical data	...120/40...	...120/65...	...240/40...
	UL type	type 1	type 1
Nominal voltage U_N	120 V AC	120 V AC	240 V AC
Mode of protection	L-N	L-N / L-G	L-N / L-G
Maximum continuous operating voltage (MCOV)	175 V AC	175 V AC	385 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	40 kA	65 kA	40 kA
Maximum surge current per phase	40 kA	65 kA	40 kA
Voltage protection rating (VPR)	700 V	700 V	1500 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data			
Dimensions W/H/D	17.8 mm / 96.8 mm / 65.5 mm		
UL connection data	AWG 10 ... 2		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG 30 ... 14		
Max. operating voltage	125 V AC		
Max. operating current	1 A AC		



Total width 17.8 mm



Technical data

Electrical data	...277/40...	...277/80...	...347/30...
	UL type	type 1	type 1
Nominal voltage U_N	277 V AC	277/480 V AC	347 V AC
Mode of protection	L-N / L-G	L-N / L-G	L-N / L-G
Maximum continuous operating voltage (MCOV)	385 V AC	385 V AC	580 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	40 kA	80 kA	30 kA
Maximum surge current per phase	40 kA	80 kA	30 kA
Voltage protection rating (VPR)	1500 V	1500 V	2000 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data			
Dimensions W/H/D	17.8 mm / 96.8 mm / 65.5 mm		
UL connection data	AWG 10 ... 2		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG 30 ... 14		
Max. operating voltage	125 V AC		
Max. operating current	1 A AC		

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US	VAL-US-120/40/1+0-FM	2910348
	VAL-US-120/65/1+0-FM	2910355	1
	VAL-US-240/40/1+0-FM	2910361	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US	VAL-US-277/40/1+0-FM	2910372
	VAL-US-277/80/1+0-FM	2910377	1
	VAL-US-347/30/1+0-FM	2910381	1

Accessories

Replacement plug		Type	Order No.	Pcs./Pkt.
		L-N/L-G/N-G	VAL-US-120/40-P	2910335
L-N/L-G/N-G	VAL-US-120/65-P	2910330	1	
L-N/L-G/N-G	VAL-US-240/40-P	2910336	1	
N-G				
N-G				

Accessories

Replacement plug		Type	Order No.	Pcs./Pkt.
		L-N/L-G/N-G	VAL-US-277/40-P	2910338
L-N/L-G/N-G	VAL-US-277/80-P	2910331	1	
L-N/L-G/N-G	VAL-US-347/30-P	2910339	1	
N-G				
N-G				



new



3-conductor system, L, N, G, single-phase



new



3-conductor system, L, N, G, single-phase, gas-filled surge arrester between N-G



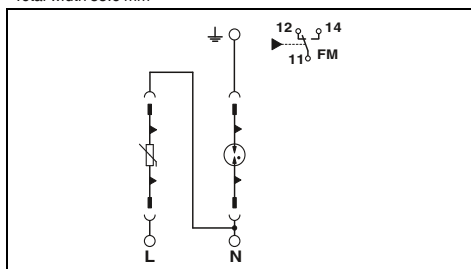
new



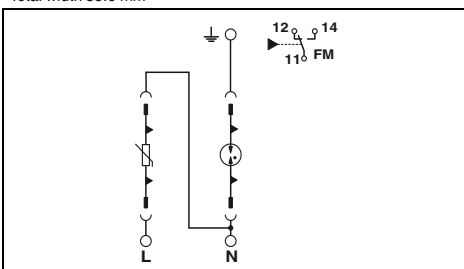
3-conductor system, L, N, G, single-phase, varistor between N-G



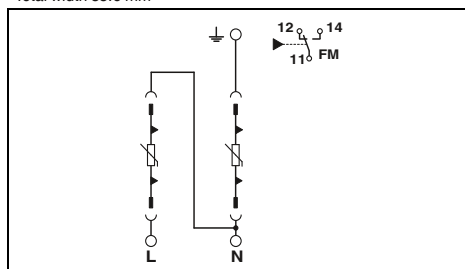
Total width 35.6 mm



Total width 35.6 mm



Total width 35.6 mm



Technical data

...120/40...	...120/65...
type 1	type 1
120 V AC	120 V AC
L-N / L-G / N-G	L-N / L-G / N-G
L-N: 175 V AC	L-N: 175 V AC
L-G: 175 V AC	L-G: 175 V AC
N-G: 305 V AC	N-G: 264 V AC
20 kA	20 kA
80 kA	130 kA
40 kA	65 kA
L-N: 700 V	L-N: 700 V
L-G: 1800 V	L-G: 1500 V
N-G: 1200 V	N-G: 1200 V
200 kA	200 kA

35.6 mm / 96.8 mm / 65.5 mm

10 ... 2

UL 1449 Edition 4

PDT contact

30 ... 14

125 V AC

1 A AC

Technical data

...240/40...	...277/40...
type 1	type 1
240 V AC	277 V AC
L-N / L-G / N-G	L-N / L-G / N-G
L-N: 385 V AC	L-N: 385 V AC
L-G: 385 V AC	L-G: 385 V AC
N-G: 305 V AC	N-G: 305 V AC
20 kA	20 kA
80 kA	80 kA
40 kA	40 kA
L-N: 1500 V	L-N: 1500 V
L-G: 2000 V	L-G: 2000 V
N-G: 1200 V	N-G: 1200 V
200 kA	200 kA

35.6 mm / 96.8 mm / 65.5 mm

10 ... 2

UL 1449 Edition 4

PDT contact

30 ... 14

125 V AC

1 A AC

Technical data

...277/80...	...347/30...
type 1	type 1
277 V AC	347 V AC
L-N / L-G / N-G	L-N / L-G / N-G
L-N: 385 V AC	L-N: 580 V AC
L-G: 750 V AC	L-G: 750 V AC
N-G: 385 V AC	N-G: 580 V AC
20 kA	20 kA
160 kA	60 kA
80 kA	30 kA
L-N: 1500 V	L-N: 2000 V
L-G: 2500 V	L-G: 4000 V
N-G: 1200 V	N-G: 2000 V
200 kA	200 kA

35.6 mm / 96.8 mm / 65.5 mm

10 ... 2

UL 1449 Edition 4

PDT contact

30 ... 14

125 V AC

1 A AC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-120/40/1+1-FM	2910349	1
VAL-US-120/65/1+1-FM	2910356	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-240/40/1+1-FM	2910362	1
VAL-US-277/40/1+1-FM	2910373	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-277/80/1+1V-FM	2910378	1
VAL-US-347/30/1+1V-FM	2910382	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-120/40-P	2910335	1
VAL-US-120/65-P	2910330	1
GDT-US-NG/40-P	2910342	1
GDT-US-NG/80-P	2910332	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-240/40-P	2910336	1
VAL-US-277/40-P	2910338	1
GDT-US-NG/40-P	2910342	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-277/80-P	2910331	1
VAL-US-347/30-P	2910339	1

Surge protection and interference suppression filters

Surge protection for the power supply

Surge protection for NEMA systems

VALVETRAB US – Split-phase

- Surge protection in accordance with UL Listed type 1
- Just one connection terminal block for GND
- Consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



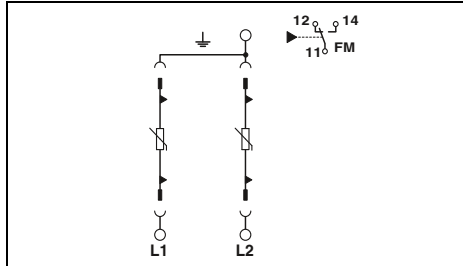
3-conductor system, L1, L2, G, split-phase



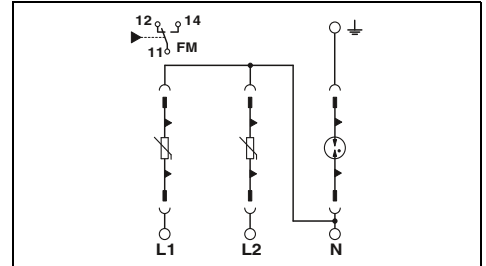
4-conductor system, L1, L2, N, G, split-phase



Total width 35.6 mm



Total width 53.4 mm



Technical data

Electrical data	...120/40...	...120/65...	...240/40...
	UL type	type 1	type 1
Nominal voltage U_N	120/240 V AC (Split-phase)	120/240 V AC (Split-phase)	240 V AC
Mode of protection	L-L / L-G	L-L / L-G	L-L / L-G
Maximum continuous operating voltage (MCOV)	L-L: 350 V AC L-G: 175 V AC	L-L: 350 V AC L-G: 175 V AC	L-L: 750 V AC L-G: 385 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	80 kA	130 kA	80 kA
Maximum surge current per phase	40 kA	65 kA	40 kA
Voltage protection rating (VPR)	L-L: 1200 V L-G: 700 V	L-L: 1200 V L-G: 700 V	L-L: 2500 V L-G: 1500 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data			
Dimensions W/H/D	35.6 mm / 96.8 mm / 65.5 mm		
UL connection data	AWG 10 ... 2		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG 30 ... 14		
Max. operating voltage	125 V AC		
Max. operating current	1 A AC		

Technical data

Electrical data	...120/40...	...120/65...	...240/40...
	UL type	type 1	type 1
Nominal voltage U_N	120/240 V AC (Split-phase)	120/240 V AC (Split-phase)	240 V AC
Mode of protection	L-L / L-N / L-G / N-G	L-L / L-N / L-G / N-G	L-L / L-N / L-G / N-G
Maximum continuous operating voltage (MCOV)	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 305 V AC	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 264 V AC	L-L: 750 V AC L-N: 385 V AC L-G: 385 V AC N-G: 305 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	120 kA	195 kA	120 kA
Maximum surge current per phase	40 kA	65 kA	40 kA
Voltage protection rating (VPR)	L-L: 1200 V L-N: 700 V L-G: 1800 V N-G: 1200 V	L-L: 1200 V L-N: 700 V L-G: 1500 V N-G: 1200 V	L-L: 2500 V L-N: 1500 V L-G: 2000 V N-G: 1200 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data			
Dimensions W/H/D	53.4 mm / 98.7 mm / 65.5 mm		
UL connection data	AWG 10 ... 2		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG 30 ... 14		
Max. operating voltage	125 V AC		
Max. operating current	1 A AC		

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US	VAL-US-120/40/2+0-FM	2910351
	VAL-US-120/65/2+0-FM	2910357	1
	VAL-US-240/40/2+0-FM	2910364	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US	VAL-US-120/40/2+1-FM	2910352
	VAL-US-120/65/2+1-FM	2910358	1
	VAL-US-240/40/2+1-FM	2910365	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
	L-N/L-G/N-G	VAL-US-120/40-P	2910335
L-N/L-G/N-G	VAL-US-120/65-P	2910330	1
L-N/L-G/N-G	VAL-US-240/40-P	2910336	1
N-G			
N-G			

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
	L-N/L-G/N-G	VAL-US-120/40-P	2910335
L-N/L-G/N-G	VAL-US-120/65-P	2910330	1
L-N/L-G/N-G	VAL-US-240/40-P	2910336	1
N-G	GDT-US-NG/40-P	2910342	1
N-G	GDT-US-NG/80-P	2910332	1

Surge protection for NEMA systems

VALVETRAB US – 3-phase wye

- Surge protection in accordance with UL Listed type 1
- Just one connection terminal block for GND
- Consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



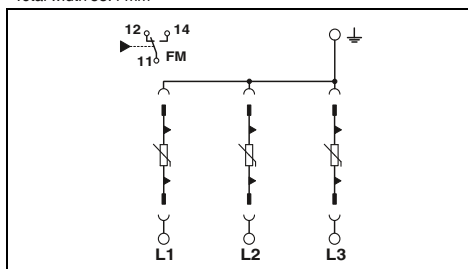
4-conductor system, L1, L2, L3, G, split-phase



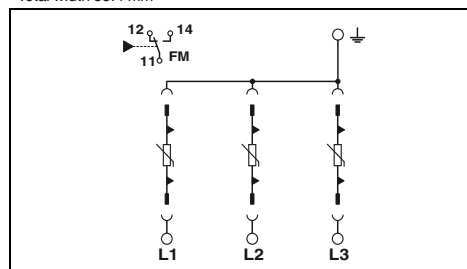
4-conductor system, L1, L2, L3, G, 3-phase wye



Total width 53.4 mm



Total width 53.4 mm



Technical data

Electrical data	UL type	Nominal voltage U_N	Mode of protection	Maximum continuous operating voltage (MCOV)	Nominal discharge current I_n	Total discharge current I_{total} (8/20) μ s	Maximum surge current per phase	Voltage protection rating (VPR)	Short-circuit current rating (SCCR)	General data	Dimensions W/H/D	UL connection data	Standards/specifications	Remote indication contact	UL connection data	Max. operating voltage	Max. operating current
-----------------	---------	-----------------------	--------------------	---	---------------------------------	--	---------------------------------	---------------------------------	-------------------------------------	--------------	------------------	--------------------	--------------------------	---------------------------	--------------------	------------------------	------------------------

...120/40...	...120/65...	...240/40...
type 1	type 1	type 1
120/208 V AC (Wye)	120/208 V AC (Wye)	240 V AC
120/240 V AC (Split-phase)	120/240 V AC (Split-phase)	
L-L / L-G	L-L / L-G	L-L / L-G
L-L: 350 V AC	L-L: 350 V AC	L-L: 750 V AC
L-N: 350 V	L-N: 350 V	L-N: 750 V
L-G: 175 V AC	L-G: 175 V AC	L-G: 385 V AC
N-G: 175 V	N-G: 175 V	N-G: 385 V
20 kA	20 kA	20 kA
120 kA	195 kA	120 kA
40 kA	65 kA	40 kA
L-L: 1200 V	L-L: 1200 V	L-L: 2500 V
L-N: 1200 V	L-N: 1200 V	L-N: 3000 V
L-G: 700 V	L-G: 700 V	L-G: 1500 V
N-G: 700 V	N-G: 700 V	N-G: 1500 V
200 kA	200 kA	200 kA
53.4 mm / 98.7 mm / 65.5 mm		
10 ... 2		
UL 1449 Edition 4		
PDT contact		
30 ... 14		
125 V AC		
1 A AC		

Technical data

...277/80...	...347/30...
type 1	type 1
277/480 V AC (3-phase Wye)	347/600 V AC (3-phase Wye)
	400/690 V AC (3-phase Wye)
L-L / L-G	L-L / L-G
L-L: 750 V AC	L-L: 750 V AC
L-G: 385 V AC	L-G: 580 V AC
20 kA	20 kA
240 kA	90 kA
80 kA	30 kA
L-L: 2500 V	L-L: 4000 V
L-G: 1500 V	L-G: 2000 V
200 kA	200 kA
53.4 mm / 98.7 mm / 77.5 mm	
10 ... 2	
UL 1449 Edition 4	
PDT contact	
30 ... 14	
125 V AC	
1 A AC	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB US	VAL-US-120/40/3+0-FM	2910353	1
	VAL-US-120/65/3+0-FM	2910359	1
	VAL-US-240/40/3+0-FM	2910366	1

Type	Order No.	Pcs./Pkt.
VAL-US-120/40/3+0-FM	2910353	1
VAL-US-120/65/3+0-FM	2910359	1
VAL-US-240/40/3+0-FM	2910366	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-277/80/3+0-FM	1075896	1
VAL-US-347/30/3+0-FM	2910383	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
L-N/L-G/N-G	VAL-US-120/40-P	2910335	1
L-N/L-G/N-G	VAL-US-120/65-P	2910330	1
L-N/L-G/N-G	VAL-US-240/40-P	2910336	1

Type	Order No.	Pcs./Pkt.
VAL-US-120/40-P	2910335	1
VAL-US-120/65-P	2910330	1
VAL-US-240/40-P	2910336	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-277/80-P	2910331	1
VAL-US-347/30-P	2910339	1

Surge protection and interference suppression filters

Surge protection for the power supply

Surge protection for NEMA systems

VALVETRAB US – 3-phase wye

- Surge protection in accordance with UL Listed type 1
- Just one connection terminal block for GND
- Consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



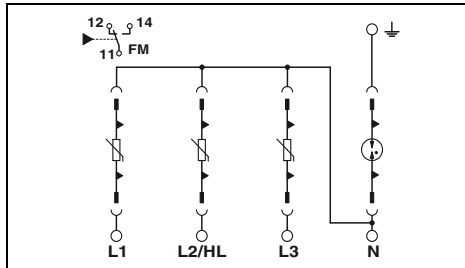
5-conductor system, L1, L2, L3, N, G,
3-phase wye



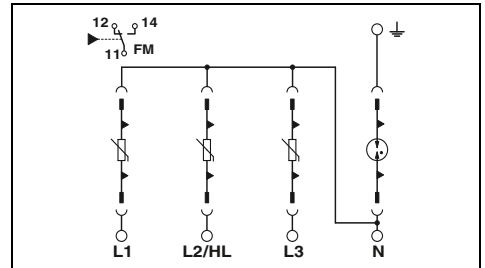
5-conductor system, L1, L2, L3, N, G,
3-phase wye



Total width 71.2 mm



Total width 71.2 mm



Technical data

	...120/40...		...120/65...	
	type 1	type 1	type 1	type 1
Nominal voltage U_N	120/208 V AC (Wye)	120/208 V AC (Wye)	120/208 V AC (Wye)	120/208 V AC (Wye)
Mode of protection	L-N / N-G / L-G	L-N / N-G / L-G	L-N / N-G / L-G	L-N / N-G / L-G
Maximum continuous operating voltage (MCOV)	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 305 V AC	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 264 V AC	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 264 V AC	L-L: 350 V AC L-N: 175 V AC L-G: 175 V AC N-G: 264 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	160 kA	260 kA	160 kA	160 kA
Maximum surge current per phase	40 kA	65 kA	40 kA	40 kA
Voltage protection rating (VPR)	L-L: 1200 V L-N: 700 V L-G: 1800 V N-G: 1200 V	L-L: 1200 V L-N: 700 V L-G: 1500 V N-G: 1200 V	L-L: 1200 V L-N: 700 V L-G: 1500 V N-G: 1200 V	L-L: 1200 V L-N: 700 V L-G: 1500 V N-G: 1200 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA	200 kA
General data				
Dimensions W/H/D	71.2 mm / 98.7 mm / 65.5 mm			
UL connection data	AWG	10 ... 2		10 ... 2
Standards/specifications	UL 1449 Edition 4			
Remote indication contact	PDT contact			
UL connection data	AWG	30 ... 14		30 ... 14
Max. operating voltage	125 V AC			
Max. operating current	1 A AC			

Technical data

	...240/40...		...277/40...	
	type 1	type 1	type 1	type 1
Nominal voltage U_N	240/415 V AC (Wye)	240/415 V AC (Wye)	277/480 V AC (Wye)	277/480 V AC (Wye)
Mode of protection	L-N / N-G / L-G	L-N / N-G / L-G	L-N / N-G / L-G	L-N / N-G / L-G
Maximum continuous operating voltage (MCOV)	L-L: 750 V AC L-N: 385 V AC L-G: 385 V AC N-G: 305 V AC	L-L: 750 V AC L-N: 385 V AC L-G: 385 V AC N-G: 305 V AC	L-L: 750 V AC L-N: 385 V AC L-G: 385 V AC N-G: 305 V AC	L-L: 750 V AC L-N: 385 V AC L-G: 385 V AC N-G: 305 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	160 kA	160 kA	160 kA	160 kA
Maximum surge current per phase	40 kA	40 kA	40 kA	40 kA
Voltage protection rating (VPR)	L-L: 2500 V L-N: 1500 V L-G: 2000 V N-G: 1200 V	L-L: 2500 V L-N: 1500 V L-G: 2000 V N-G: 1200 V	L-L: 2500 V L-N: 1500 V L-G: 2000 V N-G: 1200 V	L-L: 2500 V L-N: 1500 V L-G: 2000 V N-G: 1200 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA	200 kA
General data				
Dimensions W/H/D	71.2 mm / 98.7 mm / 65.5 mm			
UL connection data	10 ... 2			
Standards/specifications	UL 1449 Edition 4			
Remote indication contact	PDT contact			
UL connection data	30 ... 14			
Max. operating voltage	125 V AC			
Max. operating current	1 A AC			

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US		
	VAL-US-120/40/3+1-FM	2910354	1
	VAL-US-120/65/3+1-FM	2910360	1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
	VALVETRAB US		
	VAL-US-240/40/3+1-FM	2910367	1
	VAL-US-277/40/3+1-FM	2910374	1

Accessories

Replacement plug		Type	Order No.	Pcs./Pkt.
	L-N/L-G/N-G	VAL-US-120/40-P	2910335	1
	L-N/L-G/N-G	VAL-US-120/65-P	2910330	1
	N-G	GDT-US-NG/40-P	2910342	1
	N-G	GDT-US-NG/80-P	2910332	1

Accessories

Replacement plug		Type	Order No.	Pcs./Pkt.
	L-N/L-G/N-G	VAL-US-240/40-P	2910336	1
	L-N/L-G/N-G	VAL-US-277/40-P	2910338	1
	N-G	GDT-US-NG/40-P	2910342	1



new



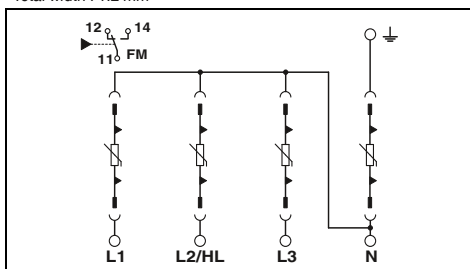
new

5-conductor system, L1, L2, L3, N, G,
3-phase wye

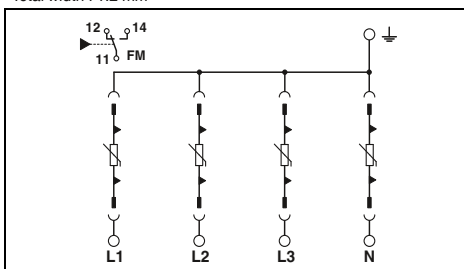
5-conductor system, L1, L2, L3, N, G,
3-phase wye



Total width 71.2 mm



Total width 71.2 mm



Technical data

...277/80...	...347/30...
type 1	type 1
277/480 V AC (Wye)	347/600 V AC (Wye) 400/690 V AC (Wye)
L-N / N-G / L-G	L-N / N-G / L-G
L-L: 750 V AC	L-L: 750 V AC
L-N: 385 V AC	L-N: 580 V AC
L-G: 750 V AC	L-G: 750 V AC
N-G: 385 V AC	N-G: 580 V AC
20 kA	20 kA
320 kA	30 kA
80 kA	30 kA
L-L: 2500 V	L-L: 4000 V
L-N: 1500 V	L-N: 2000 V
L-G: 2500 V	L-G: 4000 V
N-G: 1200 V	N-G: 2000 V
200 kA	200 kA

71.2 mm / 98.7 mm / 65.5 mm

10 ... 2

UL 1449 Edition 4

PDT contact

30 ... 14

125 V AC

1 A AC

Technical data

...277/40...	...277/80...
type 1	type 1
277/480 V AC	277/480 V AC
L-L / L-N / L-G / N-G	L-L / L-N / L-G / N-G
L-L: 750 V AC	L-L: 750 V AC
L-N: 750 V AC	L-N: 750 V AC
L-G: 385 V AC	L-G: 385 V AC
N-G: 385 V AC	N-G: 385 V AC
20 kA	20 kA
160 kA	320 kA
40 kA	80 kA
L-L: 2500 V	L-L: 2500 V
L-N: 1500 V	L-N: 2500 V
L-G: 2000 V	L-G: 1500 V
N-G: 1500 V	N-G: 1200 V
200 kA	200 kA

71.2 mm / 98.7 mm / 65.5 mm

10 ... 2

UL 1449 Edition 4

PDT contact

30 ... 14

125 V AC

1 A AC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-277/80/3+1V-FM	2910379	1
VAL-US-347/30/3+1V-FM	1079099	1

Accessories

VAL-US-277/80-P	2910331	1
VAL-US-347/30-P	2910339	1

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-277/40/4+0-FM	2910375	1
VAL-US-277/80/4+0-FM	2910380	1

Accessories

VAL-US-277/40-P	2910338	1
VAL-US-277/80-P	2910331	1

Surge protection and interference suppression filters

Surge protection for the power supply

Surge protection for NEMA systems

VALVETRAB US – Delta

- Surge protection in accordance with UL Listed type 1
- Just one connection terminal block for GND
- Consistent pluggable design
- Disconnect device on each individual plug
- Optical, mechanical status indication for the individual arresters
- With floating remote indication contact
- Mechanical coding of all slots
- Plugs can be tested with CHECKMASTER 2



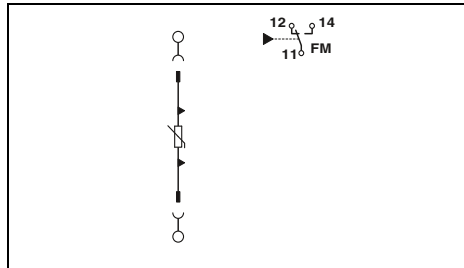
2-conductor system, L, N/G, single-phase for delta



3-conductor system, L1, L2, G, 3-phase corner-grounded delta



Total width 17.8 mm



Technical data

Electrical data	...240D/40...	...480D/30...	...600D/30...
UL type	type 1	type 1	type 1
Nominal voltage U_N	240 V AC (Single-phase)	480 V AC (Single-phase)	600 V AC
Mode of protection	L-G	L-G	L-G
Maximum continuous operating voltage (MCOV)	275 V AC	580 V AC	750 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	40 kA	30 kA	30 kA
Maximum surge current per phase	40 kA	30 kA	30 kA
Voltage protection rating (VPR)	1000 V	2000 V	2500 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data	17.8 mm / 96.8 mm / 65.5 mm		
Dimensions W/H/D	10 ... 2		
UL connection data	AWG		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG		
Max. operating voltage	30 ... 14		
Max. operating current	125 V AC		
	1 A AC		

Ordering data

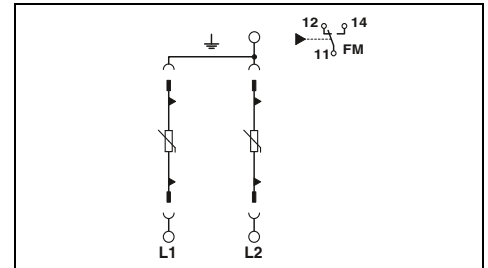
Description	Type	Order No.	Pcs./Pkt.
VALVETRAB US	VAL-US-240D/40/1+0-FM	2910368	1
	VAL-US-480D/30/1+0-FM	2910384	1
	VAL-US-600D/30/1+0-FM	2910388	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
L-L/L-G	VAL-US-240D/40-P	2910337	1
L-L/L-G	VAL-US-480D/30-P	2910340	1
L-L/L-G	VAL-US-600D/30-P	2910341	1
N-G			



Total width 35.6 mm



Technical data

Electrical data	...240D/40...	...480D/30...	...600D/30...
UL type	type 1	type 1	type 1
Nominal voltage U_N	240 V AC (3-phase corner-grounded delta)	480 V AC (3-phase corner-grounded delta)	600 V AC
Mode of protection	L-L / L-G	L-L / L-G	L-L / L-G
Maximum continuous operating voltage (MCOV)	L-L: 550 V L-G: 275 V AC	L-L: 750 V AC L-G: 580 V AC	L-L: 750 V AC L-G: 750 V AC
Nominal discharge current I_n	20 kA	20 kA	20 kA
Total discharge current I_{total} (8/20) μ s	80 kA	60 kA	60 kA
Maximum surge current per phase	40 kA	30 kA	30 kA
Voltage protection rating (VPR)	L-L: 1800 V L-G: 1000 V	L-L: 4000 V L-G: 2000 V	L-L: 4000 V L-G: 2500 V
Short-circuit current rating (SCCR)	200 kA	200 kA	200 kA
General data	35.6 mm / 96.8 mm / 65.5 mm		
Dimensions W/H/D	10 ... 2		
UL connection data	AWG		
Standards/specifications	UL 1449 Edition 4		
Remote indication contact	PDT contact		
UL connection data	AWG		
Max. operating voltage	30 ... 14		
Max. operating current	125 V AC		
	1 A AC		

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB US	VAL-US-240D/40/2+0-FM	2910369	1
	VAL-US-480D/30/2+0-FM	2910385	1
	VAL-US-600D/30/2+0-FM	2910390	1

Accessories

Replacement plug	Type	Order No.	Pcs./Pkt.
L-L/L-G	VAL-US-240D/40-P	2910337	1
L-L/L-G	VAL-US-480D/30-P	2910340	1
L-L/L-G	VAL-US-600D/30-P	2910341	1



new



4-conductor system, L1, L2, L3, G,
3-phase delta



new



5-conductor system, L1, HL, L3, N, G,
high-leg delta



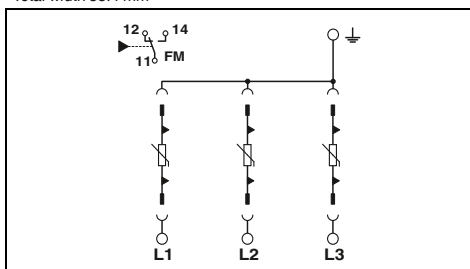
new



5-conductor system, L1, HL, L3, N, G,
high-leg delta



Total width 53.4 mm



Technical data

...240D/40...	...480D/30...	...600D/30...
type 1	type 1	type 1
240 V AC (3-phase delta)	480 V AC (3-phase delta)	600 V AC
L-L / L-G L-L: 550 V AC L-G: 275 V AC	L-L / L-G L-L: 750 V AC L-G: 580 V AC	L-L / L-G L-L: 750 V AC L-G: 750 V AC
20 kA 120 kA 40 kA L-L: 1800 V L-G: 1000 V	20 kA 90 kA 30 kA L-L: 4000 V L-G: 2000 V	20 kA 90 kA 30 kA L-L: 4000 V L-G: 2500 V
200 kA	200 kA	200 kA

53.4 mm / 98.7 mm / 65.5 mm
10 ... 2
UL 1449 Edition 4
PDT contact
30 ... 14
125 V AC
1 A AC

Ordering data

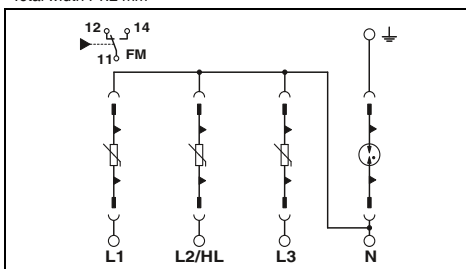
Type	Order No.	Pcs./Pkt.
VAL-US-240D/40/3+0-FM	2910370	1
VAL-US-480D/30/3+0-FM	2910386	1
VAL-US-600D/30/3+0-FM	2910391	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-240D/40-P	2910337	1
VAL-US-480D/30-P	2910340	1
VAL-US-600D/30-P	2910341	1



Total width 71.2 mm



Technical data

...240HLD/40...
type 1
120/240 V AC (High-leg delta)
L-N (HL-N) / N-G / L-G (HL-G) L-L: 350 V AC HL-L: 450 V AC L-N: 175 V AC HL-N: 275 V AC L-G: 175 V AC N-G: 305 V AC
20 kA 160 kA 40 kA L-L: 1200 V HL-L: 1500 V L-N: 700 V HL-N: 1000 V L-G: 1200 V N-G: 1200 V
200 kA

71.2 mm / 98.7 mm / 65.5 mm
10 ... 2
UL 1449 Edition 4
PDT contact
30 ... 14
125 V AC
1 A AC

Ordering data

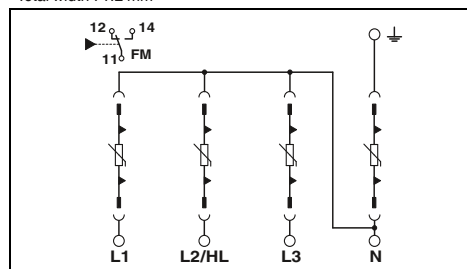
Type	Order No.	Pcs./Pkt.
VAL-US-240HLD/40/3+1-FM	2910371	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-120/40-P	2910335	1
VAL-US-240D/40-P	2910337	1
GDT-US-NG/40-P	2910342	1



Total width 71.2 mm



Technical data

...480HLD/30...
type 1
240/480 V AC (High-leg delta)
L-N (HL-N) / N-G / L-G (HL-G) L-L: 750 V AC HL-L: 750 V AC L-N: 385 V AC HL-N: 580 V AC L-G: 750 V AC N-G: 385 V AC
20 kA 120 kA 30 kA L-L: 2500 V HL-L: 3000 V L-N: 1500 V HL-N: 2000 V L-G: 3000 V N-G: 1500 V
200 kA

71.2 mm / 98.7 mm / 65.5 mm
10 ... 2
UL 1449 Edition 4
PDT contact
30 ... 14
125 V AC
1 A AC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-US-480HLD/30/3+1V-FM	2910387	1

Accessories

Type	Order No.	Pcs./Pkt.
VAL-US-240/40-P	2910336	1
VAL-US-480D/30-P	2910340	1

Surge protection and interference suppression filters

Surge protection for the power supply

Feed-through terminal block and equipotential bonding strip

Feed-through terminal block

- For wiring mixed combinations of lightning current and surge arresters

Equipotential bonding strip

- For main equipotential bonding in accordance with DIN VDE 0100
- Also for lightning protection equipotential bonding in accordance with DIN EN 62305



Feed-through terminal block



Equipotential bonding strip

Total width 17.7 mm

Technical data

Electrical data	
Maximum continuous operating voltage U_c	500 V AC
Nominal current I_N	-
Impulse discharge curr. I_{imp} (10/350) μ s	Peak value 100 kA
General data	
Dimensions W/H/D	17.7 mm / 89.8 mm / 65.5 mm
Connection data rigid / flexible / AWG	0.5 ... 35 mm ² / 0.5 ... 25 mm ² / 20 ... 2
Temperature range	-40°C ... 85°C
Flammability rating in accordance with UL 94	V-0
Test standards	EN 60947-7-1 / IEC 61643-11 / EN 61643-11

Ordering data

Description	Feed-through terminal block with biconnect connecting terminal blocks as wiring aid for lightning current and surge arrester applications.	
Equipotential bonding strip	DK-BIC-35	

Type	Order No.	Pcs./Pkt.
DK-BIC-35	2749880	1

Total width 59 mm

Technical data

Electrical data	
Maximum continuous operating voltage U_c	-
Nominal current I_N	-
Impulse discharge curr. I_{imp} (10/350) μ s	Peak value -
General data	
Dimensions W/H/D	59 mm / 149 mm / -
Connection data rigid / flexible / AWG	2.5 ... 95 mm ² / mm ² / -
Temperature range	-
Flammability rating in accordance with UL 94	-
Test standards	-

Ordering data

Type	Order No.	Pcs./Pkt.
PAS-1	2765615	1

Wiring bridges and marking materials

Marking material

- For clear and logical identification
- Can be marked with the MARKING system or by hand using B-STIFT

Wiring bridges

- 1-phase with various numbers of positions



Wiring bridges



Marking label for the SEC product range

Total width 20 mm

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Wiring bridge , for wiring applications with lightning current and surge arresters; these can be found on the website under the corresponding items						
2-pos.	MPB 18/1- 2	2809209	10			
3-pos.	MPB 18/1- 3	2809212	10			
4-pos.	MPB 18/1- 4	2809225	10			
5-pos.	MPB 18/1- 5	2817864	10			
6-pos.	MPB 18/1- 6	2748564	10			
8-pos.	MPB 18/1- 8	2748577	10			
9-pos.	MPB 18/1- 9	2748580	10			
12-pos.	MPB 18/1-12	2748593	10			
57-pos.	MPB 18/1-57	2809238	1			
Wiring bridge , 35 mm ²						
6-pos.	MPB 18/1-6/35	2908705	10			
8-pos.	MPB 18/1-8/35	2908704	10			
Continuous labels , can be marked with thermal transfer printers, can be separated with a cutter, pitch as desired, strip length up to 1000 mm,						
1 roll = 40 m continuous, height: 20 mm				EML (20XE)R	0803452	1
Color: yellow				EML (20XE)R YE	0803453	1

Isolating spark gap and accessories

- Isolating spark gap for indirect equipotential bonding
- Protection of insulating flanges in pipelines
- Can be used in Ex protection zone 1
- Accessories for lightning current absorbing connection



Spark gap



Electrical data
Lightning protection class
Lightning surge current I_{imp} (10/350) μ s
Nominal discharge current I_n (8/20) μ s
Rated power-frequency withstand voltage U_{wAC}
Rated DC withstand voltage U_{wDC}
Rated impulse sparkover voltage $U_{t,imp}$
General data
Dimensions: length/housing diameter
Temperature range
Test standards
Approvals
EC-type examination certificate in accordance with ATEX ATEX
IECEX

Technical data	
H	100 mm +2 mm / 45.50 mm
100 kA	
100 kA	
250 V AC	
354 V DC	
≤ 1.25 kV	
	100 mm +2 mm / 45.50 mm
	-20°C ... 60°C
	IEC 62561-3 / EN 62561-3
	DEKRA 14ATEX0050 X
	Ex II 2 G Ex d IIC T6 Gb
	Ex II 2 D Ex tb IIIC T80°C Db IP 66/67
	Ex d IIC T6 Gb
	Ex tb IIIC T80°C Db IP66/67

Description	Drill hole diameter
Isolating spark gap for the Ex area	
Fixing bracket	11 mm
	14 mm
	18 mm
	22 mm
	26 mm
	30 mm
	33 mm
	36 mm
	39 mm
	42 mm
	48 mm
	56 mm
	62 mm
Mounting rail	11 mm
	14 mm
	18 mm
	22 mm
	26 mm
	30 mm
	33 mm
	36 mm
	39 mm
	42 mm
Connecting cable , conductor cross section: 25 mm ² , conductor designation: H01 N2-D	
Cable length: 100 mm	
Cable length: 200 mm	
Cable length: 300 mm	

Ordering data		
Type	Order No.	Pcs./Pkt.
FLT-ISG-100-EX	2905579	1



Fixing bracket



Mounting rail



Connecting cable

Ordering data			Ordering data			Ordering data		
Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
FLT-ISG-BR-11	2905580	1						
FLT-ISG-BR-14	2905581	1						
FLT-ISG-BR-18	2905582	1						
FLT-ISG-BR-22	2905583	1						
FLT-ISG-BR-26	2905757	1						
FLT-ISG-BR-30	2905758	1						
FLT-ISG-BR-33	2905759	1						
FLT-ISG-BR-36	2905760	1						
FLT-ISG-BR-39	2905761	1						
FLT-ISG-BR-42	2905762	1						
FLT-ISG-BR-48	2905763	1						
FLT-ISG-BR-56	2905764	1						
FLT-ISG-BR-62	2905765	1						
			FLT-ISG-PL-11	2905584	1			
			FLT-ISG-PL-14	2905586	1			
			FLT-ISG-PL-18	2905587	1			
			FLT-ISG-PL-22	2905588	1			
			FLT-ISG-PL-26	2905745	1			
			FLT-ISG-PL-30	2905746	1			
			FLT-ISG-PL-33	2905747	1			
			FLT-ISG-PL-36	2905754	1			
			FLT-ISG-PL-39	2905755	1			
			FLT-ISG-PL-42	2905756	1			
						FLT-ISG-CA-100	2905589	1
						FLT-ISG-CA-200	2905590	1
						FLT-ISG-CA-300	2905591	1



Surge protection in thin layers – TERMITRAB complete

Starting from an overall width of 3.5 mm, the TERMITRAB complete product range is a tailored product range for almost all applications in measurement and control technology. Depending on the type of signal to be protected, with TERMITRAB complete you will find an ideally suited circuit version in the portfolio.

Signaling and disconnection

The mechanical status indicator functions without additional auxiliary energy and displays the disconnection of a protective element in the event of an overload. This means you are constantly informed of the status and can replace the overloaded protective device.

Remote signaling

Thanks to the remote signaling modules that are available as an option, you can decide whether and when you require this feature. To monitor retrospectively, you can easily align remote signaling modules to protective devices that are already installed. If a protective element is disconnected in the event of an overload, the disconnect device closes the monitoring channel and group remote signaling is triggered. The overloaded device is detected on site by the status indicator – and that is purely mechanically, without auxiliary energy.

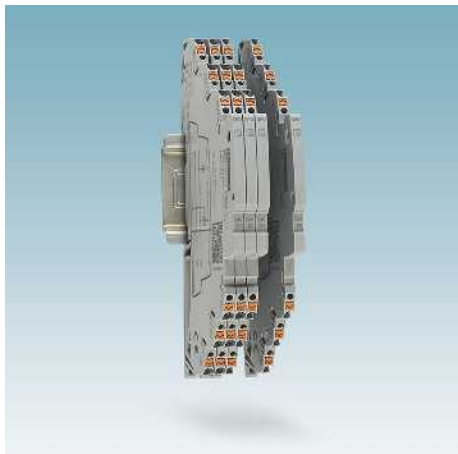
Universal use

The areas of application for TERMITRAB complete are so diverse that they can be used in any industry. Thanks to the narrow overall width, starting from 3.5 mm, the product range is ideal for process technology, as very often a high packing density is required in the distribution cabinets. They protect up to 572 signals on one meter, which means that your systems can be made smaller. The various approvals permit use in onshore and offshore systems, e.g., for petrochemicals or wind power. The tailored TERMITRAB complete portfolio offers you the widest range of features, and therefore an optimum product selection for your applications. This means you can reliably protect your signals against surge voltages – from the field to the controller.

Quick wiring

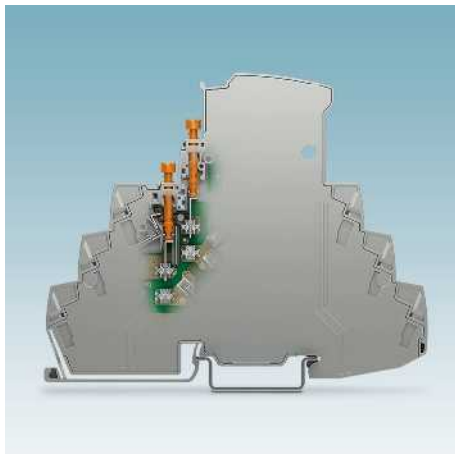
TERMITRAB complete is available with conventional screw connection and innovative Push-in connection technology. It guarantees quick and easy installation in the control cabinet. At the same time, the Push-in connection technology enables mechanical wiring of the surge protective devices, within the scope of tomorrow's intelligent automation solutions.

i Your web code: **#0292**



The narrowest surge protection

Starting from an overall width of 3.5 mm, TERMITRAB complete is the world's first surge protection solution for measurement and control technology.



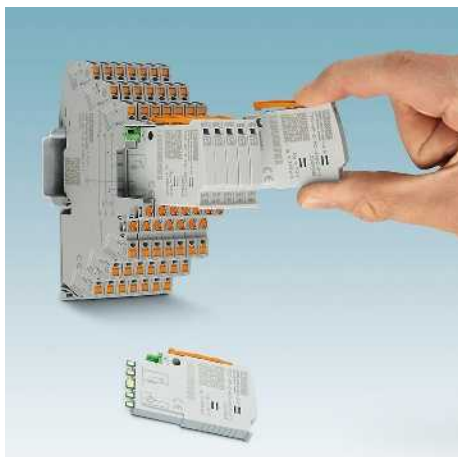
Innovative knife disconnection

The integrated knife disconnection enables the signal path to be broken up, e.g., to carry out isolation measurements. An open signal path is easy to detect from the projecting function screws. The screws are equipped with overwind protection.



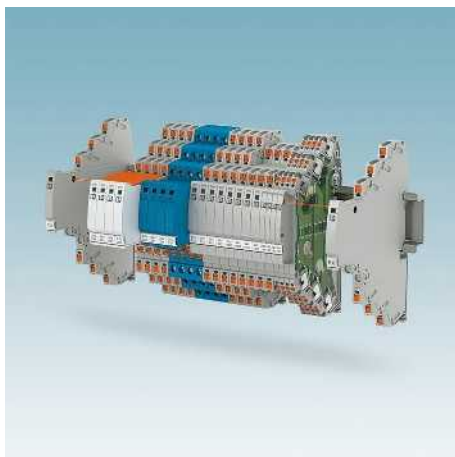
Optional visual remote signaling

Up to 40 protective devices are visually monitored with the optional remote signaling modules. Add further protective devices easily to the monitoring system without additional wiring effort.



Plug in, remove, and test

For repeated tests, remove the plugs of multi-piece protective devices without impedance. The signals are not interrupted and the controllers do not immediately detect an impedance change in the measuring circuit. Testing and documentation takes place in the CHECKMASTER 2. If a replacement is required, the affected plug is simply replaced without accessing the installation.



Tailored portfolio

The portfolio ranges from single-stage, one-piece protective devices to multi-stage pluggable versions. A range of voltage and circuit versions that are optimized for different applications and various connection technologies complete the product range.



Versatile

Certain applications require special tests and approvals. TERMITRAB complete meets the requirements of Underwriters Laboratories (UL). Furthermore, versions with ATEX, IEC Ex, and GL approvals are available.



Intelligent and systematic surge protection – PLUGTRAB PT-IQ

The PLUGTRAB PT-IQ product range is the first to offer predictive function monitoring for surge protective devices in the context of measurement and control technology. Boasting a whole range of additional features, the new surge protection system is a real highlight from Phoenix Contact.

Always know what is happening – Predictive monitoring

The individual components of the protective devices are permanently monitored. When the performance limit has been reached as a result of frequent surge voltages, this is indicated by the yellow status symbol. The arrester continues to function and your system is still protected. However, replacement of the protective plug is recommended. This ensures you are informed even earlier and can replace your surge protection before the protective plug is overloaded (red signal). Furthermore, if you use the remote signaling option, you can check how well your system is being protected from anywhere and at any time.

Permanent and error-free installation

The PLUGTRAB PT-IQ minimizes the amount of wiring required. This is made possible by the DIN rail connector (TBUS), which is easily clipped onto the DIN rail. A controller handles the distribution of the power supply and implements remote signaling of all connected surge protective devices via the TBUS. All you have to do then is install the surge protective devices on the TBUS – and you're done! The plug and base element are coded to avoid installation errors during replacement.

Limitless extension

The controller monitors all arresters which are connected to the controller via the TBUS. You can bridge the TBUS across DIN rails to monitor even more protective devices. After 28 protective devices, an additional controller must be installed to supply voltage. Remote signaling can be performed from any controller in the system.

Other surge protective devices

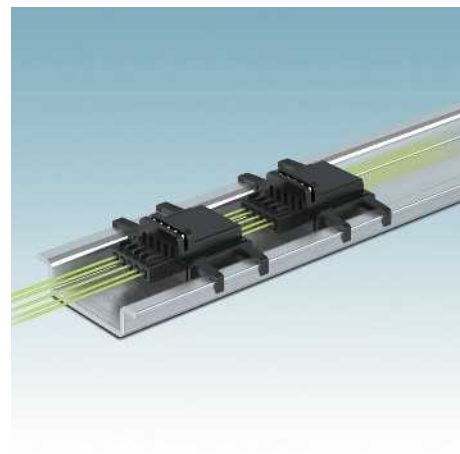
PLUGTRAB PT are pluggable protective devices without remote signaling, also with circuit versions for intrinsically safe signal circuits.

The multi-level terminal blocks in the TERMITRAB or LINETRAB product ranges have an overall width of just 6.2 mm yet are able to offer protection for up to four signal wires.

As they are installed directly on measuring sensors, the SURGETRAB screw connection modules are able to provide reliable protection against transients even in EX i and Ex d applications.

The products in the COMTRAB modular range have been designed specifically for use in marshaling distributors.

i Your web code: #0144



Group message

- Green: protective device OK
- Yellow: performance limit reached, replacement recommended
- Red: protective device overloaded, replace

Multi-stage remote signaling

Connect the remote signaling to the controller that acts as a supply and remote module (one-off connection operation). The status is output according to the priority as red, yellow or green. This ensures you always know what is happening and can always keep an eye on your system's protection.

TBUS DIN rail connector

The DIN rail connector (TBUS) supplies voltage to the protection modules and forwards the status of each individual arrester to the controller. You benefit from the reduced wiring costs and can implement surge protection quickly without errors.



For Ex zone 2

With the PLUGTRAB PT-IQ Ex protective devices, it is possible for the first time to install protective devices with multi-stage monitoring and remote signaling directly in Ex zone 2. The intrinsically safe protective circuits can be led up to Ex zone 0.

Special systems

Implement protection in the field directly at the measuring sensor with SURGETRAB screw connection modules.

Easy selection

With just a few clicks, our MCR configurator helps you find the ideal protection for your application. Refine the product selection further by defining additional properties. If the quick search function does not find a solution for your application, use the advanced search to find more products. You can access the MCR configurator using the web code:

i Your web code: #1389

Surge protection and interference filters

Surge protection for measurement and control technology

Selection guide





Explanation of the IEC categories

LPZ zone	Test category for SPD in acc. with IEC 61643-21	Test class for SPD in acc. with IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

Interface-based product selection for surge protection

The STOP-IT (Selection of Protection for Information Technology) selection guide provides support in choosing your surge protection solution for a variety of additional interfaces in information and MCR technology.

i Your web code: #2079

	DIN rail mounting
	Push-in connection
	Screw connection
	Cables
1)	Also available with screw connection technology



Data for fault analysis in accordance with IEC 61508 is available on the Internet.















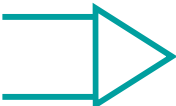


















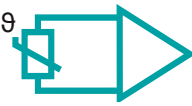














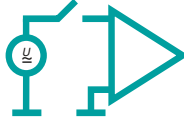













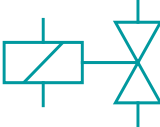









Note

Products bearing this stamp (plug elements) can be tested with CHECKMASTER 2.

Application

Installation properties

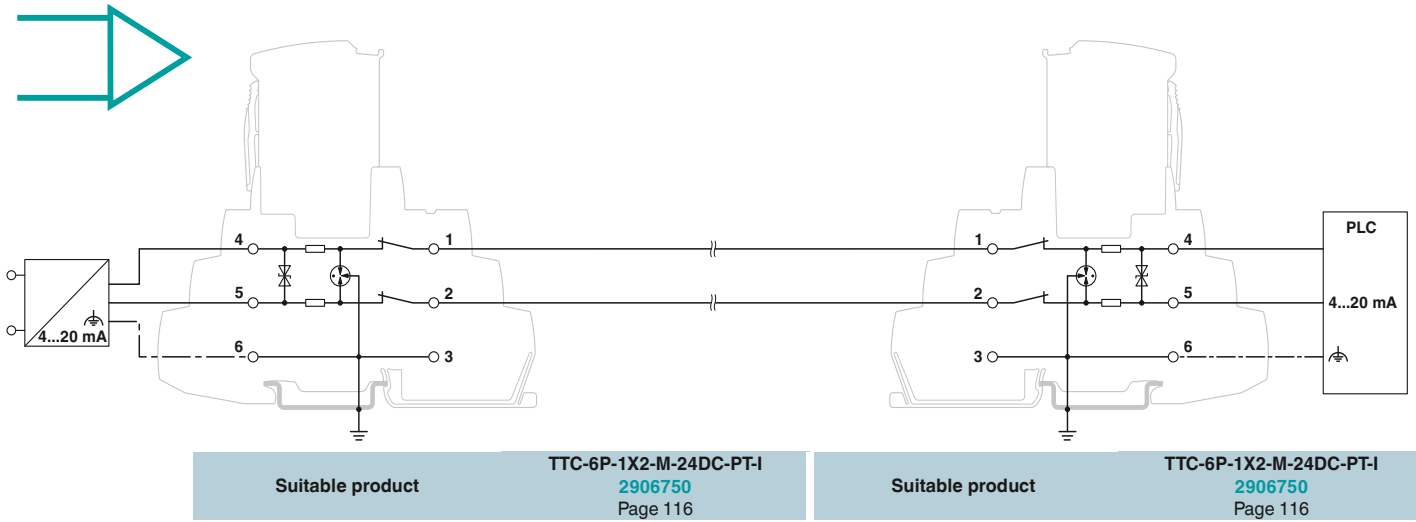
					
					1)
					1)
					
					
					
					
	0(4) mA ... 20 mA current loops				
					1)
					1)
					
					
					
					
					1)
					1)
					
	Resistance-dependent measurement e.g., with Pt 100				1)
					1)
					
					
					
					1)
					1)
					
	Digital input/ digital output	Common reference conductor: isolated from ground			1)
					1)
					
		Common reference conductor: grounded directly			1)
					
					1)
					1)
					
	Digital output > 600 mA	Common reference conductor: isolated from ground			1)
					1)
					
		Common reference conductor: grounded directly			1)

Overall width in mm	IEC category	Status display	Pluggable	Knife disconnection	IQ function monitoring	Protected wires	Surge protective device (SPD)	Order No.	Page
3.5	D1/C2/C1					2	TTC-3-1X2-24DC-PT	2907325	119
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-1X2-M-24DC-PT-I	2906750	116
17.5	D1/C2/C1	✓	✓		✓	3	PT-IQ-1X2-24DC-PT	2801255	120
> 17.5	D1/C2/C1					2	S-PT-1X2-24DC	2880668	125
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-1X2-M-EX-24DC-UT-I	2906824	152
17.5	D1/C2/C1	✓	✓		✓	2	PT-IQ-1X2-EX-24DC-UT	2801512	153
> 17.5	D1/C2/C1					2	S-PT-EX-24DC	2800034	154
3.5	D1/C2/C1					3	TTC-3-2X1-24DC-PT	2907326	131
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-F-M-24DC-PT-I	2906794	129
17.5	D1/C2/C1	✓	✓		✓	3	PT-IQ-2X1+F-24DC-PT	2801248	133
> 17.5	D1/C2/C1					4	S-PT-4-EX-24DC	2800036	141
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-M-EX-24DC-UT-I	2906825	157
> 17.5	D1/C2/C1					4	S-PT-4-EX-24DC	2800036	141
3.5	D1/C2/C1					2	TTC-3-1X2-24DC-PT	2907325	119
6.2	D1/C2/C1	✓	✓			2	TTC-6P-1X2-12DC-PT-I	2908193	116
17.5	D1/C2/C1	✓	✓		✓	2	PT-IQ-3-HF+F-12DC-PT	2801289	169
> 17.5	D1/C2/C1					2	S-PT-1X2-24DC	2880668	125
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-2-HC-M-24DC-PT-I	2906755	136
6.2	D1/C2/C1	✓	✓			3	TTC-6P-3-24DC-PT-I	1061383	143
> 17.5	D1/C2/C1					2	S-PT-EX-24DC	2800034	154
6.2	D1/C2/C1	✓	✓			3	TTC-6P-3-EX-24DC-UT-I	1064665	158
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-F-M-24DC-PT-I	2906794	129
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1+F-24DC-PT	2801272	133
> 17.5	D1/C2/C1					5	S-PT-4-EX-24DC	2800036	141
3.5	D1/C2/C1					3	TTC-3-2X1-24DC-PT	2907326	131
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-M-24DC-PT-I	2906753	128
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1-24DC-PT	2801271	133
> 17.5	D1/C2/C1					5	S-PT-4-EX-24DC	2800036	141
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2-HC-M-24DC-PT-I	2906755	136
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1+F-24DC-PT	2801272	133
> 17.5	D1/C2/C1					2	S-PT-EX-24DC	2800034	154
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1-24DC-PT	2801271	133

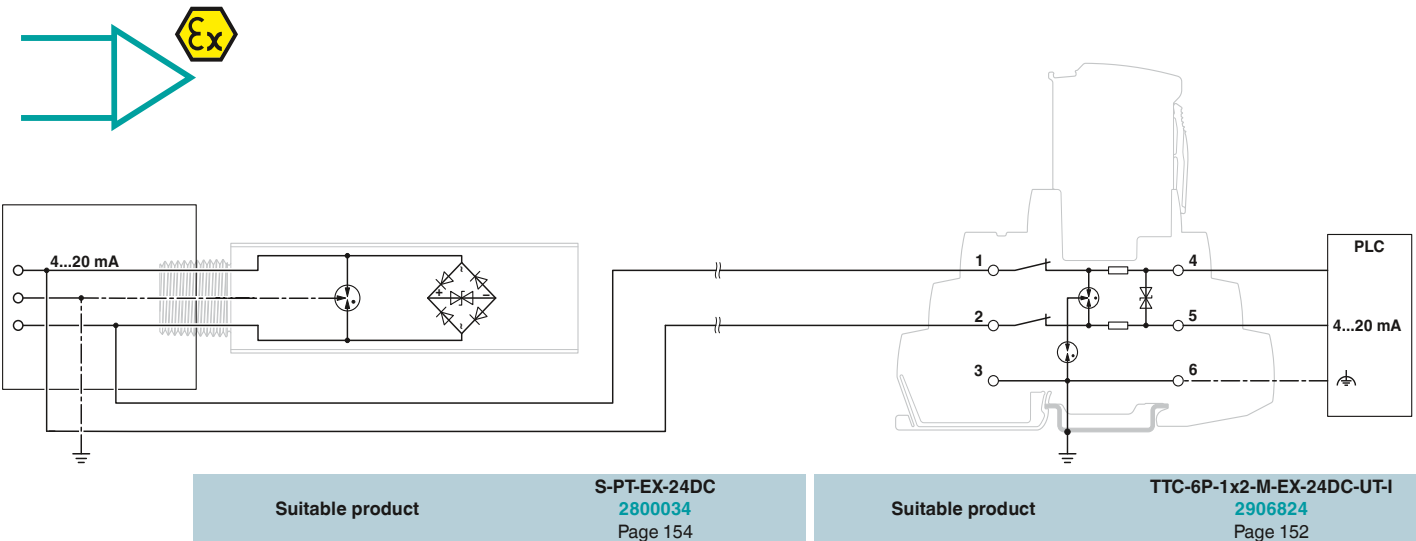
Surge protection and interference filters

Surge protection for measurement and control technology

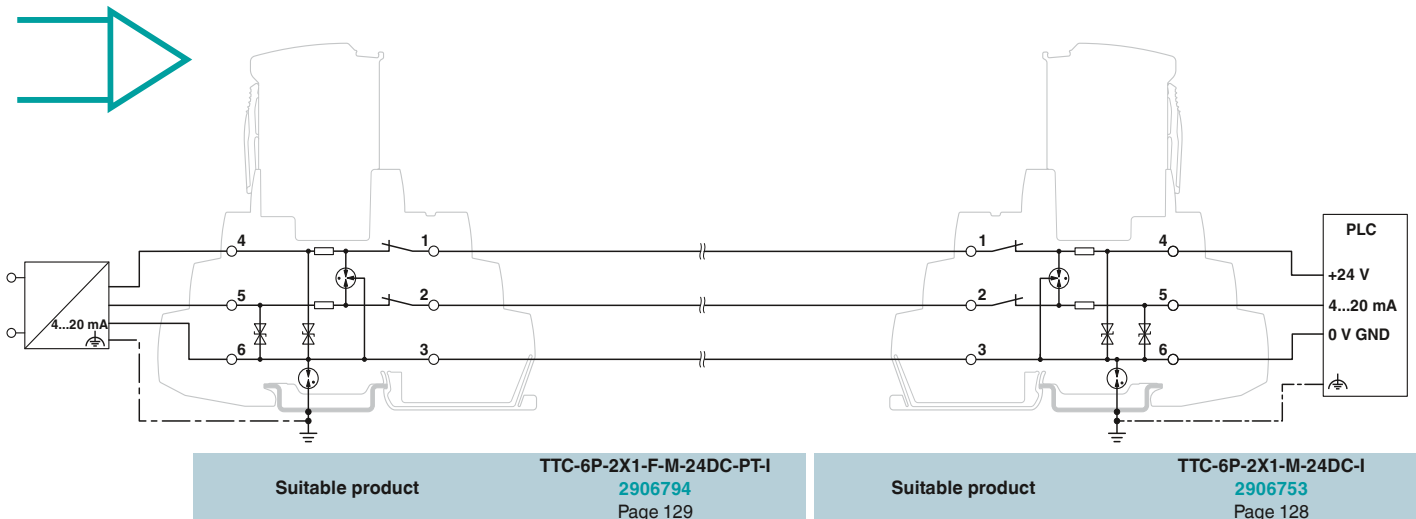
Protection of a 0(4) ... 20 mA current loop



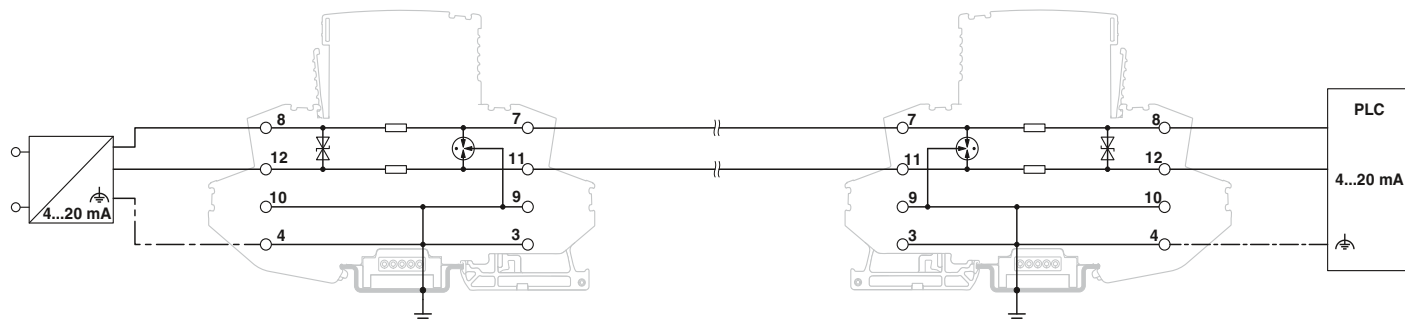
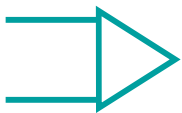
Protection of a 0(4) ... 20 mA current loop, intrinsically safe circuit



Protection of a 0(4) ... 20 mA current loop and additional power supply



Protection of a 0(4) ... 20 mA current loop



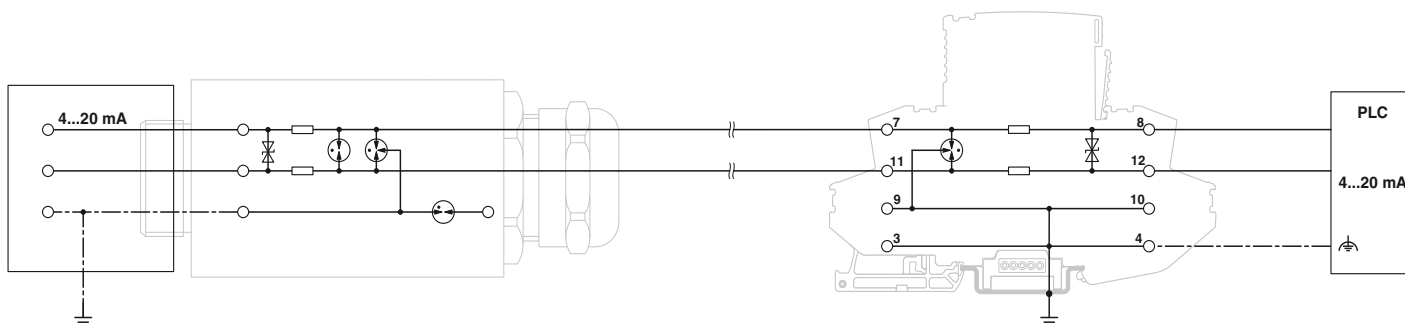
Suitable product

PT-IQ-1X2-24DC-PT
2801255
Page 120

Suitable product

PT-IQ-1X2-24DC-PT
2801255
Page 120

Protection of a 0(4) ... 20 mA current loop, intrinsically safe circuit



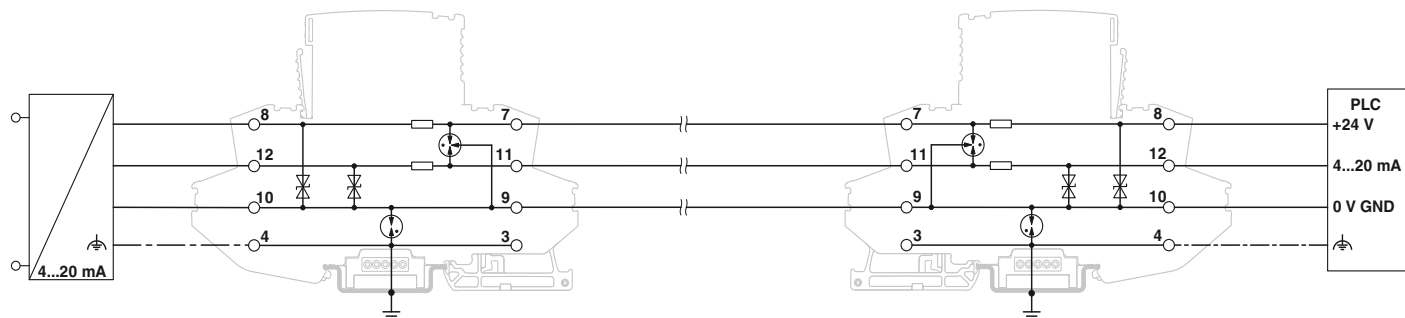
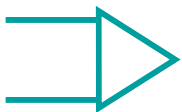
Suitable product

S-PT-EX(I)-24DC
2880671
Page 154

Suitable product

PT-IQ-1X2-EX-24DC-UT
2801512
Page 153

Protection of a 0(4) ... 20 mA current loop and additional power supply



Suitable product

PT-IQ-2X1+F-24DC-PT
2801248
Page 133

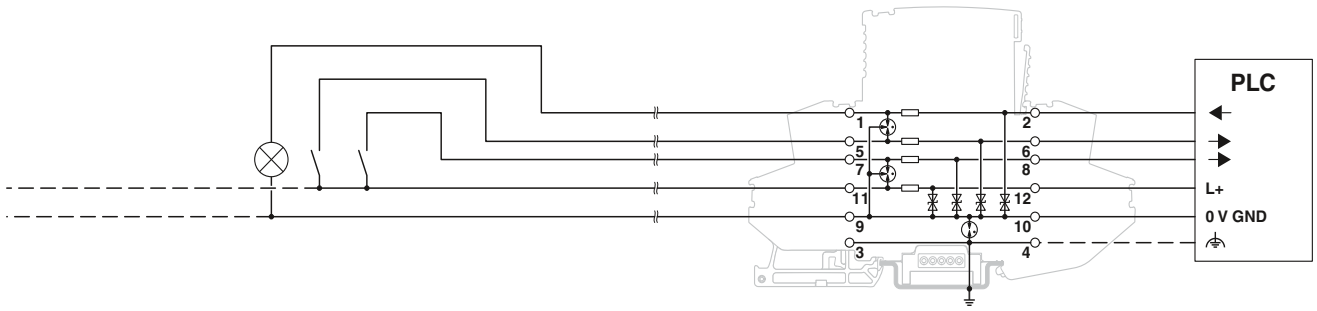
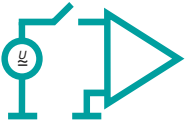
Suitable product

PT-IQ-2X1+F-24DC-PT
2801248
Page 133

Surge protection and interference filters

Surge protection for measurement and control technology

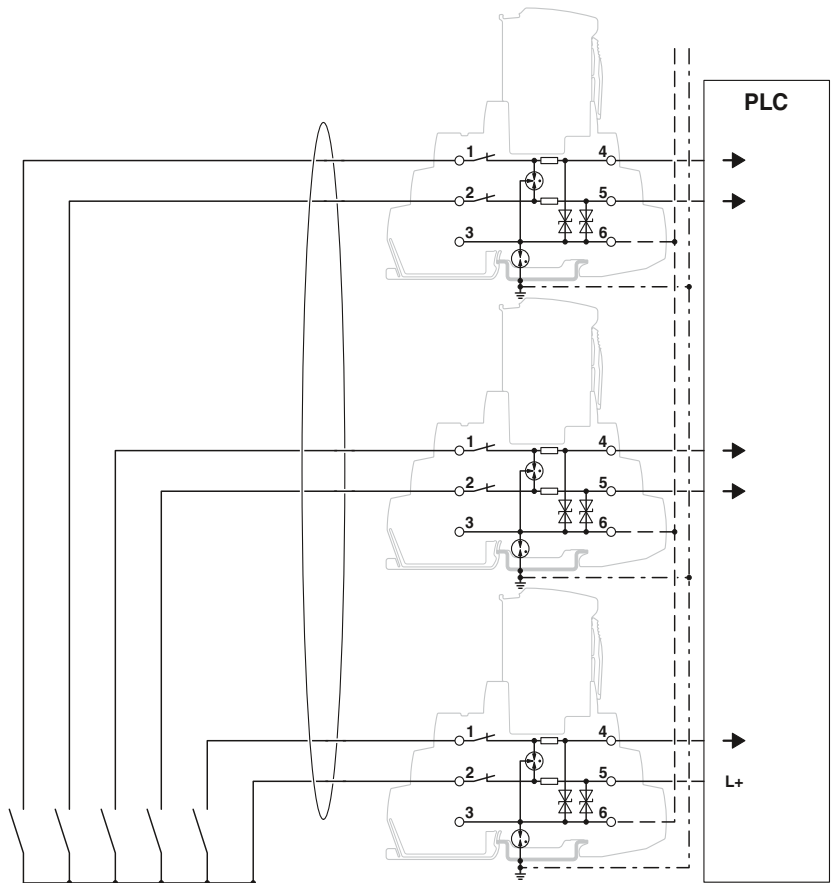
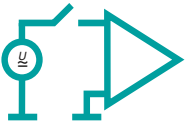
Protection of a digital I/O (24 V), reference conductor not grounded



Suitable product

PT-IQ-4X1+F-24DC-PT
2801272
Page 133

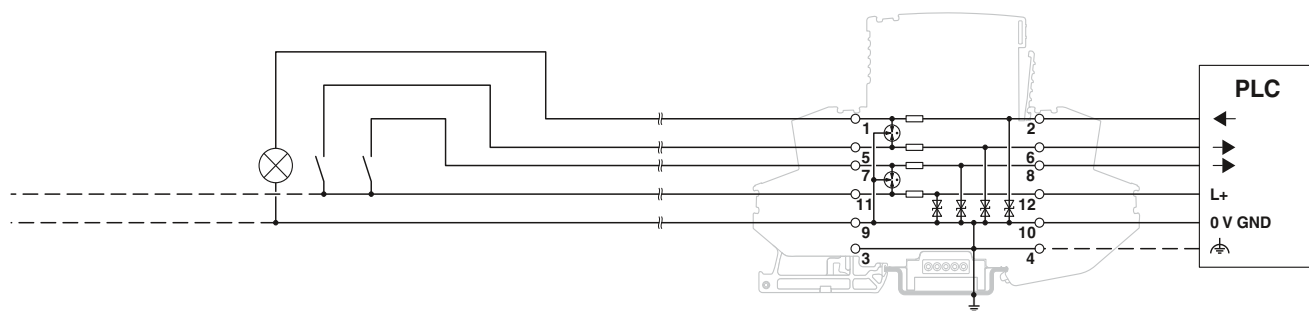
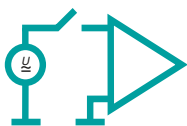
Protection of digital inputs (24 V), floating, voltage protection level optimization between all wires by means of bridge



Suitable product

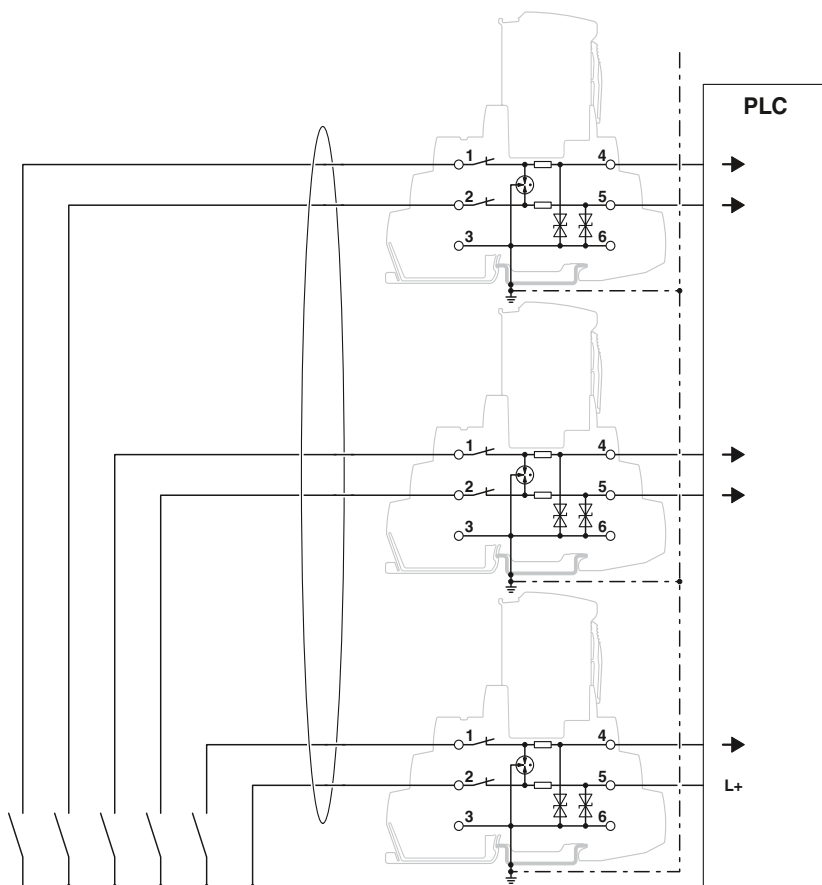
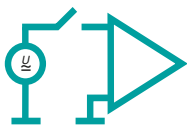
TTC-6P-2X1-F-M-24DC-PT-I
2906794
Page 129

Protection of a digital I/O (24 V), reference conductor grounded



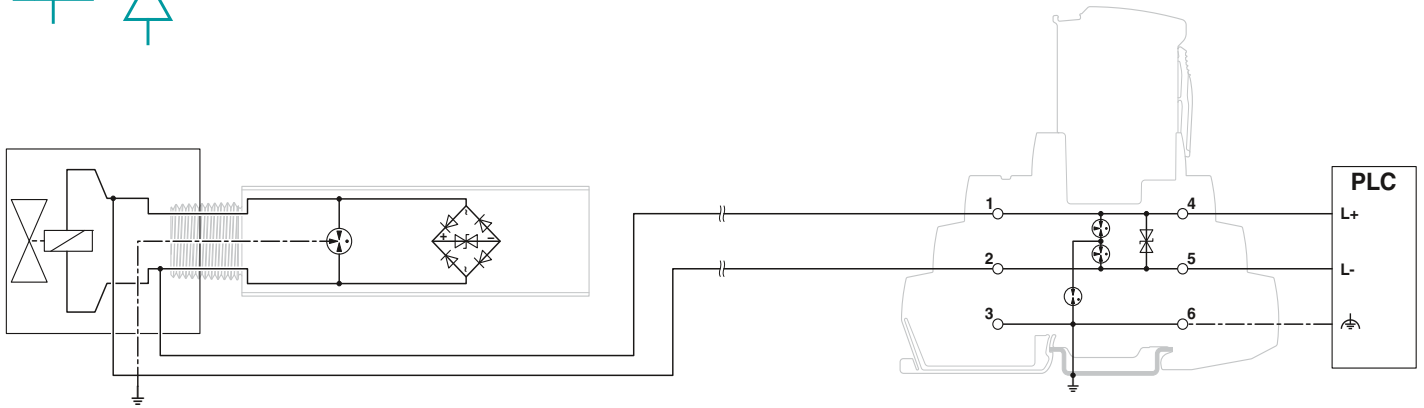
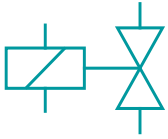
Suitable product **PT-IQ-4X1-24DC-PT**
2801271
Page 133

Protection of digital inputs (24 V), voltage protection level optimization between all wires via grounded DIN rail (ground potential)



Suitable product **TTC-6P-2X1-M-24DC-PT-I**
2906753
Page 128

Protection of a digital output (actuator)



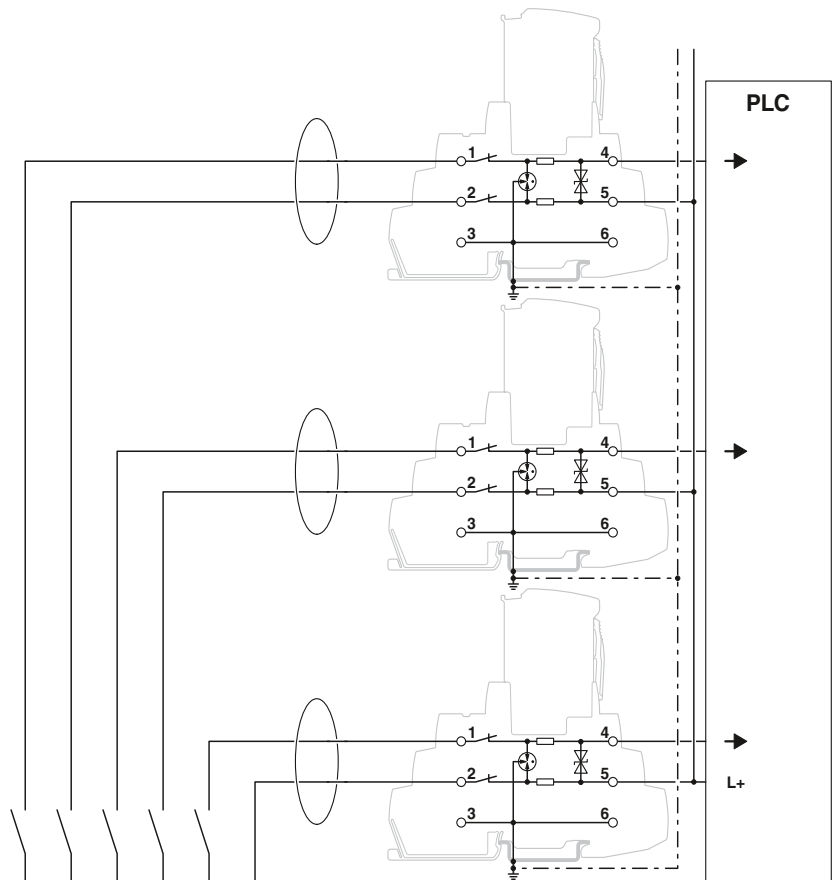
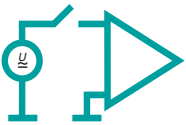
Suitable product

S-PT-EX-24DC
2800034
Page 154

Suitable product

TTC-6P-2-HC-M-24DC-PT-I
2906755
Page 136

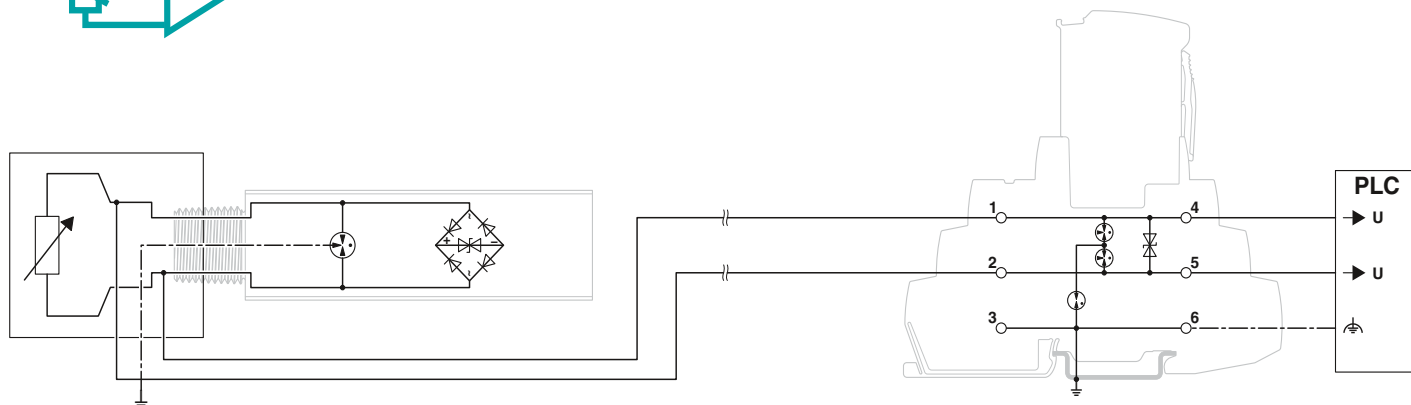
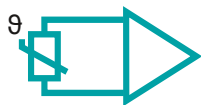
Protection of digital inputs (24 V), version with individual floating circuits



Suitable product

TTC-6P-1X2-M-24DC-PT-I
2906750
Page 116

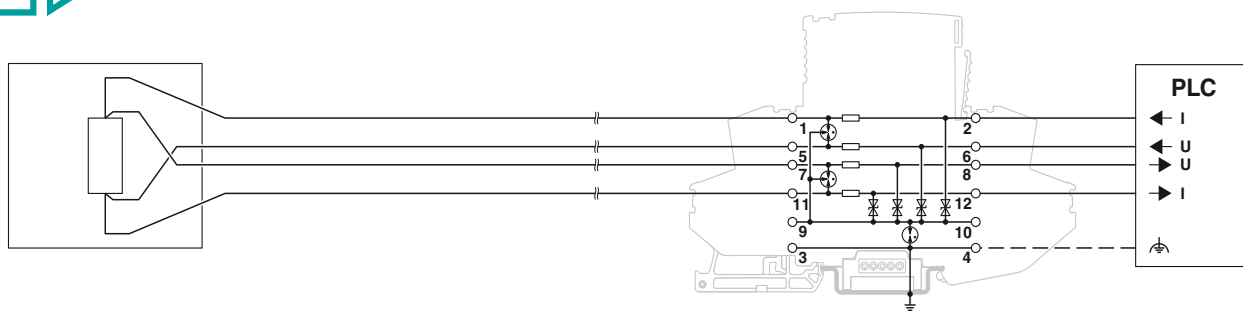
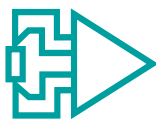
Protection of two-wire temperature measurement



Suitable product **S-PT-EX-24DC**
2800034
Page 154

Suitable product **TTC-6P-2-HC-M-24DC-PT-I**
2906755
Page 136

Protection of four-wire temperature measurement



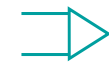
Suitable product **PT-IQ-4X1+F-12DC-PT**
2801272
Page 133

Surge protection and interference filters

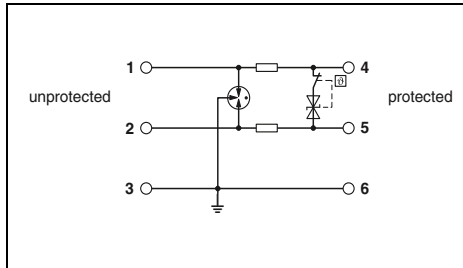
Surge protection for measurement and control technology

Isolated signal circuits TERMITRAB complete

- Pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Impedance-neutral insertion and removal
- Coded plug versions
- With knife disconnection as an option
- Integrated mechanical status indicator
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2

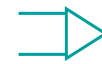


Double wire (loop), floating, 3/6 connection grounded directly, e.g., for 4 ... 20 mA current loop

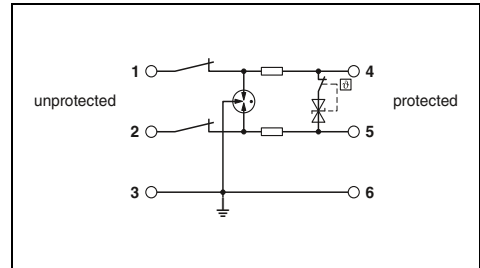


Technical data

Electrical data	... 12DC	... 24DC	... 48DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	15 V DC / 10 V AC	30 V DC / 21 V AC	55.2 V DC / 39 V AC
Rated current	600 mA (56°C)	600 mA (56°C)	160 mA (75°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) μ s			
	Core-Core	5 kA	5 kA
	Core-Ground	5 kA	5 kA
Total discharge current I_{total} (8/20) μ s	10 kA	10 kA	10 kA
Protection level U_p			
	Core-Core	≤ 25 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)
	Core-Ground	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)			
	Symmetrical in the 150 Ω system	typ. 420 kHz	typ. 940 kHz
Resistance per path		1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D		6.2 mm / 105.8 mm / 100 mm	
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
Temperature range		-40°C ... 85°C	
Test standards		IEC 61643-21 / EN 61643-21	



Double wire (loop), floating, 3/6 connection grounded directly, with knife disconnection, e.g., for 4 ... 20 mA current loop



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	30 V DC / 21 V AC
Rated current	600 mA (56°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core
	Core-Ground
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core
	Core-Ground
Cut-off frequency f_g (3 dB)	
	Symmetrical in the 150 Ω system
Resistance per path	typ. 940 kHz
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N
TERMITRAB complete, with Push-in connection technology	
	12 V DC
	24 V DC
	48 V DC
TERMITRAB complete, with screw connection technology	
	12 V DC
	24 V DC
	48 V DC

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-12DC-PT-I	2908193	1
TTC-6P-1X2-24DC-PT-I	2906815	1
TTC-6P-1X2-48DC-PT-I	2908195	1
TTC-6P-1X2-12DC-UT-I	2908192	1
TTC-6P-1X2-24DC-UT-I	2906809	1
TTC-6P-1X2-48DC-UT-I	2908194	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-M-24DC-PT-I	2906750	1
TTC-6P-1X2-M-24DC-UT-I	2906738	1

Accessories

Replacement plug	Voltage
	12 V DC
	24 V DC
	48 V DC
Remote signaling set	
Push-in connection technology	
Screw connection technology	
Fuse carrier	

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-12DC-I-P	2907839	1
TTC-6P-1X2-24DC-I-P	2907840	1
TTC-6P-1X2-48DC-I-P	2907841	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Accessories

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-24DC-I-P	2907840	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50



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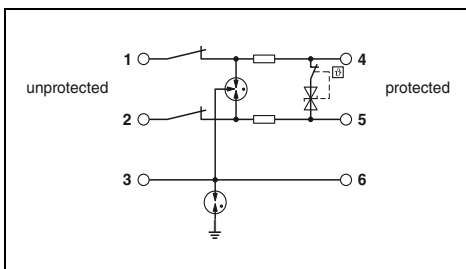
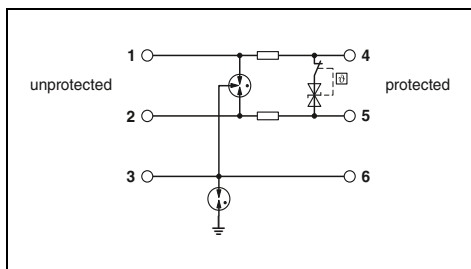
Double wire (loop), floating, 3/6 connection grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop



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Double wire (loop), floating, 3/6 connection grounded via gas-filled surge arrester, with knife disconnection, e.g., for 4 ... 20m A current loop



Technical data

... 12DC	... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
15 V DC / 10 V AC	30 V DC / 21 V AC	55.2 V DC / 39 V AC
600 mA (56°C)	600 mA (56°C)	160 mA (75°C)
0.5 kA	0.5 kA	0.5 kA
5 kA	5 kA	5 kA
5 kA	5 kA	5 kA
10 kA	10 kA	10 kA
≤ 25 V (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)
typ. 420 kHz	typ. 940 kHz	typ. 1.8 MHz
1.65 Ω	1.65 Ω	1.65 Ω
6.2 mm / 105.8 mm / 100 mm		
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
-40°C ... 85°C		
IEC 61643-21 / EN 61643-21		

Technical data

... 24DC
C1 / C2 / C3 / D1
30 V DC / 21 V AC
600 mA (56°C)
0.5 kA
5 kA
5 kA
10 kA
≤ 50 V (C3 - 25 A)
≤ 1.3 kV (C3 - 25 A)
typ. 940 kHz
1.65 Ω
6.2 mm / 105.8 mm / 100 mm
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-F-12DC-PT-I	2908198	1
TTC-6P-1X2-F-24DC-PT-I	1065318	1
TTC-6P-1X2-F-48DC-PT-I	2908200	1
TTC-6P-1X2-F-12DC-UT-I	2908196	1
TTC-6P-1X2-F-24DC-UT-I	1065317	1
TTC-6P-1X2-F-48DC-UT-I	2908199	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-F-M-24DC-PT-I	2906790	1
TTC-6P-1X2-F-M-24DC-UT-I	2906781	1

Accessories

TTC-6P-1X2-12DC-I-P	2907839	1
TTC-6P-1X2-24DC-I-P	2907840	1
TTC-6P-1X2-48DC-I-P	2907841	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Accessories

TTC-6P-1X2-24DC-I-P	2907840	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Surge protection and interference filters

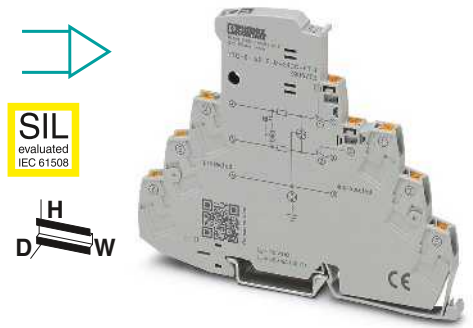
Surge protection for measurement and control technology

Isolated signal circuits TERMITRAB complete

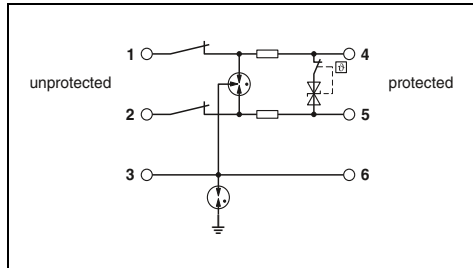
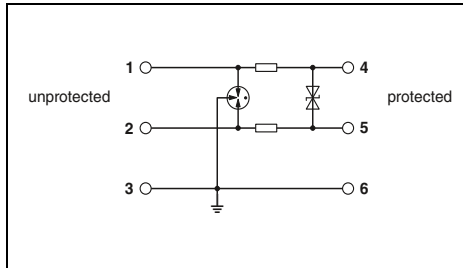
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- With integrated mechanical status indicator and knife disconnection as an option
- Optional remote signaling module monitors up to 40 items, without additional wiring



Double wire (loop), floating, 3/6 connection grounded directly, e.g., for 4 ... 20 mA current loop



Double wire (loop), floating, 3/6 connection grounded via gas-filled surge arrester, with knife disconnection, e.g., for 4 ... 20mA current loop



Technical data

Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core ≤ 50 V (C3 - 25 A)
	Core-Ground ≤ 700 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 940 kHz
	Symmetrical in the 150 Ω system 1.65 Ω
Resistance per path	
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Technical data	
C1 / C2 / C3 / D1	
30 V DC / 21 V AC	
600 mA (40°C)	
0.5 kA	
	5 kA
	5 kA
	10 kA
	≤ 50 V (C3 - 25 A)
	≤ 700 V (C3 - 25 A)
	typ. 940 kHz
	1.65 Ω
General data	
6.2 mm / 105.8 mm / 69.5 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C	
IEC 61643-21 / EN 61643-21	

Technical data	
C1 / C2 / C3 / D1	
30 V DC / 21 V AC	
600 mA (40°C)	
0.5 kA	
	5 kA
	5 kA
	10 kA
	≤ 50 V (C3 - 25 A)
	≤ 1.3 kV (C3 - 25 A)
	typ. 940 kHz
	1.65 Ω
General data	
6.2 mm / 105.8 mm / 83.5 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C	
IEC 61643-21 / EN 61643-21	

Ordering data

Ordering data

Description	Voltage U_N
TERMITRAB complete, with Push-in connection technology	
Without status indicator	24 V DC
With status indicator	24 V DC
TERMITRAB complete, with screw connection technology	
Without status indicator	24 V DC
With status indicator	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6-1X2-24DC-PT	2906804	1
TTC-6-1X2-M-24DC-PT-I	2906726	1
TTC-6-1X2-24DC-UT	2906798	1
TTC-6-1X2-M-24DC-UT-I	2906713	1

Type	Order No.	Pcs./Pkt.
TTC-6-1X2-F-M-24DC-PT-I	2906772	1
TTC-6-1X2-F-M-24DC-UT-I	2906764	1

Accessories

Accessories

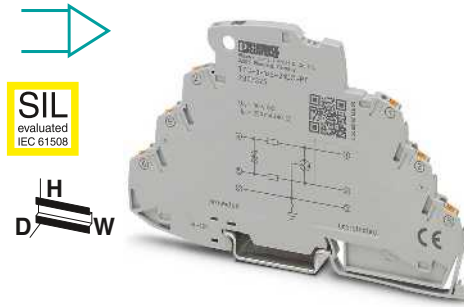
Remote signaling set	
Push-in connection technology	
Screw connection technology	
Fuse carrier	

Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

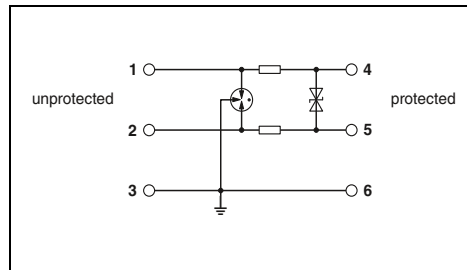
Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

**Isolated signal circuits
TERMITRAB complete**

- Overall width of just 3.5 mm
- With Push-in connection technology



**Double wire (loop), floating,
e.g., for 4 ... 20 mA current loops**



Technical data

Electrical data		C1 / C2 / C3 / D1
IEC test classification/EN type		30 V DC / 21 V AC
Maximum continuous operating voltage U_C		250 mA (70°C)
Rated current		0.5 kA
Pulse discharge current I_{imp} (10/350) μ s		
Nominal discharge current I_n (8/20) μ s		
	Core-Core	5 kA
	Core-Ground	5 kA
		10 kA
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
	Core-Core	≤ 45 V
		(C3 - 30 A)
	Core-Ground	≤ 1000 V
		(C3 - 100 A)
Cut-off frequency f_g (3 dB)		typ. 2.4 MHz
Resistance per path		2.2 Ω
General data		
Dimensions W/H/D		3.5 mm / 106 mm / 69.5 mm
Connection data rigid / flexible / AWG		0.2 ... 1.5 mm ² / 0.2 ... 1.5 mm ² / 24 ... 16
Temperature range		-40°C ... 85°C
Test standards		IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with Push-in connection technology	24 V DC	TTC-3-1X2-24DC-PT	2907325	1

Accessories

End cover	TTC-3-LCP	2908843	50
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Surge protection and interference filters

Surge protection for measurement and control technology

Isolated signal circuits PLUGTRAB PT-IQ

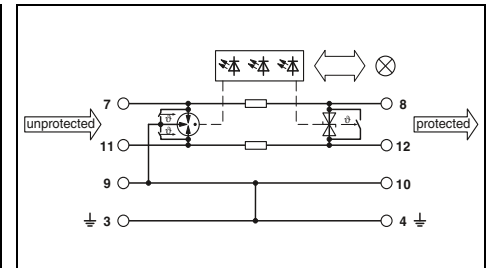
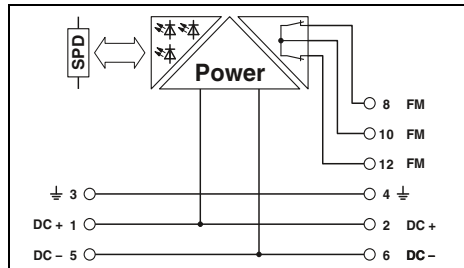
- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 28 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- PT-IQ... base element with Push-in or screw connection technology
- Base element remains an integral part of the installation
- Corresponding replacement plugs can be found on our website



Supply and remote signaling module



Double wire (loop), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop



Technical data

Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_c	-
Rated current	-
Pulse discharge current I_{imp} (10/350) μ s	-
Nominal discharge current I_n (8/20) μ s	-
	Core-Core
	Core-Ground
Total discharge current I_{total} (8/20) μ s	-
Protection level U_p	-
	Core-Core
	Core-Ground
Resistance per path	-
General data	
Dimensions W/H/D	
- for Push-in connection technology	17.7 mm / 109.3 mm / 77.5 mm
- for screw connection technology	17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 70°C
Test standards	EN 61000-6-2 / EN 61000-6-3 / EN 60950-1
Remote indication contact	2x N/C contacts
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Max. operating voltage	30 V AC (50/60 Hz) / 50 V DC
Max. operating current	1 A (up to 50°C)

Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
1000 mA (40°C)	300 mA
2.5 kA	2.5 kA
10 kA	10 kA
10 kA	10 kA
20 kA	20 kA
≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)
1.2 Ω	1.2 Ω
	17.7 mm / 109.3 mm / 77.5 mm
	17.7 mm / 91.1 mm / 77.5 mm
	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
	-40°C ... 70°C
	IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3
	via DIN rail connector
	- mm ² / - mm ² / -

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB , supply and remote signaling module				
Push-in connection technology		PT-IQ-PTB-PT	2801296	1
Screw connection technology		PT-IQ-PTB-UT	2800768	1
PLUGTRAB , with Push-in connection technology				
	5 V DC			
	12 V DC			
	24 V DC			
	48 V DC			
PLUGTRAB , with screw connection technology				
	12 V DC			
	24 V DC			
	48 V DC			

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2-24DC-PT	2801255	1
PT-IQ-1X2-48DC-PT	2801257	1
PT-IQ-1X2-24DC-UT	2800976	1
PT-IQ-1X2-48DC-UT	2800978	1



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Double wire (loop), floating, connection 9/10 grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop



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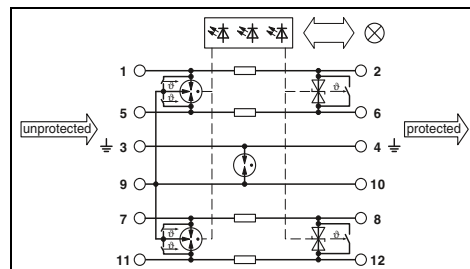
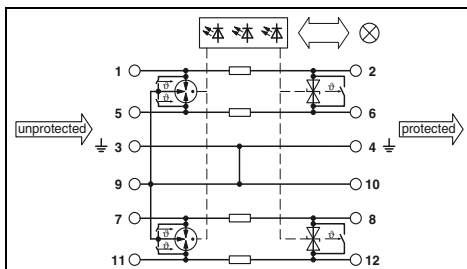
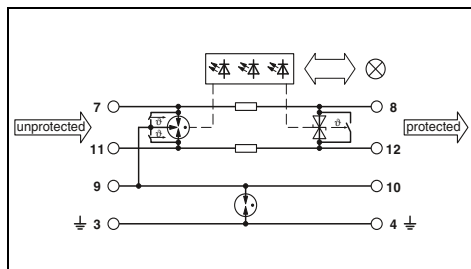
2 double wires (loops), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop



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2 double wires (loops), floating, connection 9/10 grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop



Technical data

... 24DC
C1 / C2 / C3 /
D1
30 V DC /
21 V AC
1000 mA (40°C)
2.5 kA

10 kA
10 kA
20 kA

≤ 55 V
(C3 - 25 A)
≤ 1000 V
(C3 - 25 A)
1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm
17.7 mm / 91.1 mm / 77.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 70°C
IEC 61643-21 / EN 61643-21 / EN 61000-6-2 /
EN 61000-6-3
via DIN rail connector
- mm² / - mm² / -

Technical data

... 24DC
C1 / C2 / C3 /
D1
30 V DC /
21 V AC
700 mA (50°C)
2.5 kA

10 kA
10 kA
20 kA

≤ 55 V
(C3 - 25 A)
≤ 700 V
(C3 - 25 A)
1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm
17.7 mm / 91 mm / 77.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 70°C
IEC 61643-21 / EN 61643-21 / EN 61000-6-3 /
EN 61000-6-2
via DIN rail connector
- mm² / - mm² / -

... 48DC
C1 / C2 / C3 /
D1
53 V DC /
37 V AC
300 mA
2.5 kA

10 kA
10 kA
20 kA

≤ 90 V
(C3 - 25 A)
≤ 700 V
(C3 - 25 A)
1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm
17.7 mm / 91 mm / 77.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 70°C
IEC 61643-21 / EN 61643-21 / EN 61000-6-3 /
EN 61000-6-2
via DIN rail connector
- mm² / - mm² / -

Technical data

... 5DC ... 12DC ... 24DC ... 48DC
C1 / C2 / C3 / C1 / C2 / C3 / C1 / C2 / C3 / C1 / C2 / C3 /
D1 D1 D1 D1
6 V DC / 15 V DC / 30 V DC / 53 V DC /
4 V AC 10 V AC 21 V AC 37 V AC
700 mA (50°C) 700 mA (50°C) 700 mA (50°C) 300 mA
2.5 kA 2.5 kA 2.5 kA 2.5 kA

10 kA 10 kA 10 kA 10 kA
10 kA 10 kA 10 kA 10 kA
20 kA 20 kA 20 kA 20 kA

≤ 25 V ≤ 35 V ≤ 55 V ≤ 90 V
(C3 - 25 A) (C3 - 25 A) (C3 - 25 A) (C3 - 25 A)
≤ 1000 V ≤ 1000 V ≤ 1000 V ≤ 1000 V
(C3 - 25 A) (C3 - 25 A) (C3 - 25 A) (C3 - 25 A)
1.2 Ω 1.2 Ω 1.2 Ω 1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm
17.7 mm / 91 mm / 77.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 70°C
IEC 61643-21 / EN 61643-21 / EN 61000-6-3 /
EN 61000-6-2
via DIN rail connector
- mm² / - mm² / -

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2+F-24DC-PT	2801256	1
PT-IQ-1X2+F-24DC-UT	2800977	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2-24DC-PT	2801263	1
PT-IQ-2X2-24DC-UT	2800980	1
PT-IQ-2X2-48DC-UT	2800986	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2+F-5DC-PT	2801260	1
PT-IQ-2X2+F-12DC-PT	2801262	1
PT-IQ-2X2+F-24DC-PT	2801264	1
PT-IQ-2X2+F-48DC-PT	2801266	1
PT-IQ-2X2+F-12DC-UT	2800985	1
PT-IQ-2X2+F-24DC-UT	2800981	1
PT-IQ-2X2+F-48DC-UT	2800987	1

Surge protection and interference filters

Surge protection for measurement and control technology

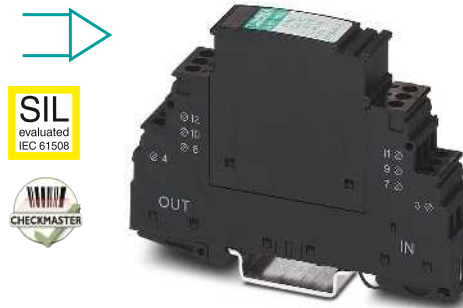
Isolated signal circuits PLUGTRAB PT

- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2

Note:

Base elements are grounded differently. For **PT .x.-BE**, connections 9/10 (GND) are connected directly to the mounting foot.

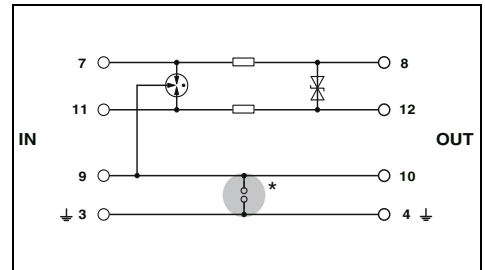
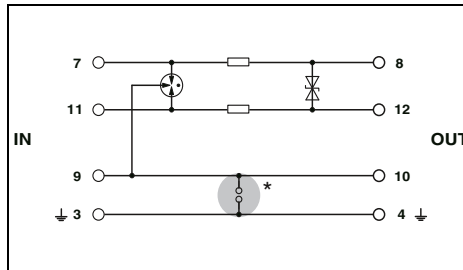
For **PT .x.+F-BE**, connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.



Double wire (loop), floating, e.g., for 4 ... 20 mA current loops



Double wire (loop), floating, e.g., for 4 ... 20 mA current loops



Electrical data	
IEC test classification/EN type	... 5DC / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	6 V DC / 4 V AC
Rated current	450 mA (45°C)
Pulse discharge current I_{imp} (10/350) μ s	2.5 kA
Nominal discharge current I_n (8/20) μ s	2.5 kA
Total discharge current I_{total} (8/20) μ s	Core-Core
	Core-Ground
Max. discharge current I_{max} (8/20) μ s	Core-Core
	Core-Ground
Protection level U_p	Core-Core
	Core-Ground
Output voltage limitation at 1 kV/ μ s	Core-Core
	Core-Ground
Cut-off frequency f_g (3 dB)	Core-Core
	Core-Ground
Resistance per path	2.2 Ω
Symmetrical in the 50 Ω system	
General data	
Dimensions W/H/D	17.7 mm / 45 mm / 52 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Technical data			
... 5DC	... 12DC	... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
6 V DC / 4 V AC	13 V DC / 9 V AC	28 V DC / 20 V AC	53 V DC / 37 V AC
450 mA (45°C)	450 mA (45°C)	450 mA (45°C)	450 mA (45°C)
2.5 kA	2.5 kA	2.5 kA	2.5 kA
10 kA	10 kA	10 kA	10 kA
10 kA	10 kA	10 kA	10 kA
20 kA	20 kA	20 kA	20 kA
10 kA	10 kA	10 kA	20 kA (in total)
≤ 40 V	≤ 50 V	≤ 70 V	≤ 80 V
(C2 - 10 kV / 5 kA)	(C2 - 10 kV / 5 kA)	(C2 - 10 kV / 5 kA)	(C1 - 1 kV / 500 A)
≤ 450 V	≤ 450 V	≤ 450 V	≤ 450 V
(C1 - 1 kV / 500 A with PT 1X2-BE)	(C1 - 1 kV / 500 A with PT 1X2-BE)	(C1 - 1 kV / 500 A with PT 1X2-BE)	(C1 - 1 kV / 500 A with PT 1X2-BE)
≤ 10 V	≤ 18 V	≤ 40 V	≤ 70 V
≤ 450 V (with PT 1X2-BE)	≤ 450 V (with PT 1X2-BE)	≤ 450 V (with PT 1X2-BE)	≤ 450 V (with PT 1X2-BE)
typ. 1 MHz	typ. 3 MHz	typ. 4.5 MHz	typ. 10 MHz
2.2 Ω	2.2 Ω	2.2 Ω	2.2 Ω
General data			
17.7 mm / 45 mm / 52 mm			
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12			
-40°C ... 85°C			
IEC 61643-21 / EN 61643-21			

Technical data	
... 24AC	C1 / C2 / C3 / D1
40 V DC / 28 V AC	450 mA (45°C)
2.5 kA	2.5 kA
10 kA	10 kA
10 kA	10 kA
20 kA	20 kA
10 kA	10 kA
≤ 80 V	(C2 - 10 kV / 5 kA)
≤ 450 V	(C1 - 1 kV / 500 A with PT 1X2-BE)
≤ 55 V	≤ 450 V (with PT 1X2-BE)
typ. 8 MHz	2.2 Ω
General data	
17.7 mm / 45 mm / 52 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C	
IEC 61643-21 / EN 61643-21	

Description	Voltage U_N
PLUGTRAB plug, with protective circuit for plugging into base element PT	5 V DC
	12 V DC
	24 V DC
	48 V DC
	24 V AC
PLUGTRAB base element, for mounting on NS 35	
Bridge between 3/4 (\pm) and 9/10	PT 1X2-BE
Gas-filled surge arrester between 3/4 (\pm) and 9/10	PT 1X2+F-BE

Ordering data		
Type	Order No.	Pcs./Pkt.
PT 1X2- 5DC-ST	2856016	10
PT 1X2-12DC-ST	2856029	10
PT 1X2-24DC-ST	2856032	10
PT 1X2-48DC-ST	2803658	10
PT 1X2-BE	2856113	10
PT 1X2+F-BE	2856126	10

Ordering data		
Type	Order No.	Pcs./Pkt.
PT 1X2-24AC-ST	2856058	10
PT 1X2-BE	2856113	10
PT 1X2+F-BE	2856126	10



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2 double wires (loops), floating,
e.g., for 4 ... 20 mA current loops



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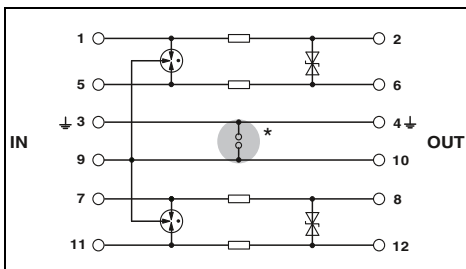


2 double wires (loops), floating,
e.g., for 4 ... 20 mA current loops

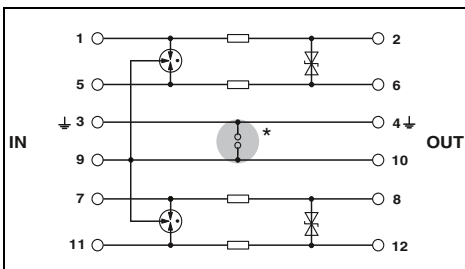


Combination of double wire protection (floating)
and single-phase power supply

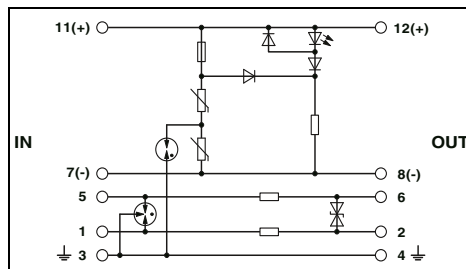
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Technical data

... 5DC	... 12DC	... 24DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
6 V DC / 4 V AC	13 V DC / 9 V AC	28 V DC / 20 V AC
450 mA (45°C)	450 mA (45°C)	450 mA (45°C)
2.5 kA	2.5 kA	2.5 kA
10 kA	10 kA	10 kA
10 kA	10 kA	10 kA
20 kA	20 kA	20 kA
10 kA	10 kA	10 kA
-	-	≤ 450 V (C1 - 1 kV / 500 A with PT 2X2-BE)
≤ 10 V	≤ 18 V	≤ 40 V
≤ 450 V	≤ 450 V	≤ 450 V (with PT 2X2-BE)
typ. 1 MHz	typ. 3 MHz	typ. 4.5 MHz
2.2 Ω	2.2 Ω	2.2 Ω

Technical data

... 24AC
C1 / C2 / C3 / D1
40 V DC / 28 V AC
450 mA (45°C)
2.5 kA
10 kA
10 kA
20 kA
20 kA
≤ 80 V (C2 - 10 kV / 5 kA)
≤ 450 V (C2 - 10 kV / 5 kA with PT 2X2-BE)
≤ 55 V
≤ 450 V (with PT 2X2-BE)
typ. 8 MHz
2.2 Ω

Technical data

Mains protection	Data protection
44 V DC / 34 V AC	40 V DC / 28 V AC
6 A (30°C)	450 mA (45°C)
-	2.5 kA
-	20 kA
2 kA	20 kA (in total)
≤ 0.18 kV	≤ 80 V (C2 - 10 kV / 5 kA)
≤ 0.55 kV	≤ 450 V (C2 - 10 kV / 5 kA)
-	≤ 55 V
-	≤ 25 V
-	typ. 8 MHz
-	2.2 Ω

17.5 mm / 44.8 mm / 51.7 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21

17.5 mm / 44.8 mm / 51.7 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

17.5 mm / 44.8 mm / 51.7 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-11 / EN 61643-11 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2X2- 5DC-ST	2838241	10
PT 2X2-12DC-ST	2838254	10
PT 2X2-24DC-ST	2838228	10
PT 2X2-BE	2839208	10
PT 2X2+F-BE	2839224	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2X2-24AC-ST	2838283	10
PT 2X2-BE	2839208	10
PT 2X2+F-BE	2839224	10

Ordering data

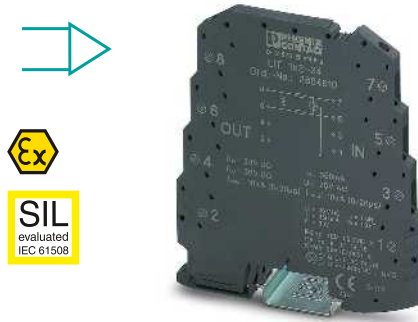
Type	Order No.	Pcs./Pkt.
PT PE/S+1X2-24-ST	2819008	10
PT PE/S+1X2-BE	2856265	10

Surge protection and interference filters

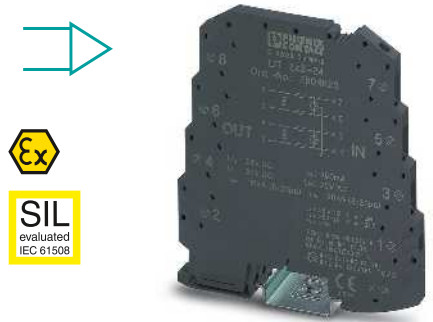
Surge protection for measurement and control technology

Isolated signal circuits LINETRAB LIT

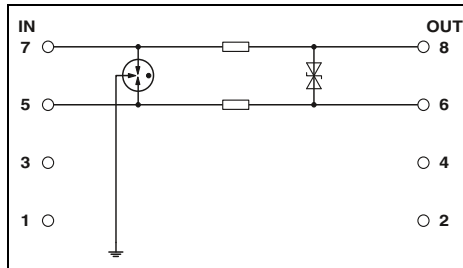
- Protection of up to four signal wires with an overall width of 6.2 mm
- Can be used in binary, analog, and intrinsically safe circuits



Double wire (loop), floating,
e.g., for 4 ... 20 mA current loops



2 double wires (loops), floating,
e.g., for 4 ... 20 mA current loops



Technical data

Electrical data		C1 / C2 / C3 / D1
IEC test classification/EN type		36 V DC / 25 V AC
Maximum continuous operating voltage U_C		350 mA (40°C)
Rated current		500 A
Pulse discharge current I_{imp} (10/350) μ s		5 kA
Nominal discharge current I_n (8/20) μ s		5 kA
		Core-Core
		10 kA
Total discharge current I_{total} (8/20) μ s		Core-Core
Protection level U_p		≤ 50 V
		(C3 - 10 A)
		Core-Ground
		≤ 650 V
		(C1 - 500 V / 250 A)
Cut-off frequency f_g (3 dB)		typ. 6 MHz
		3.3 Ω
Resistance per path		Symmetrical in the 50 Ω system

General data

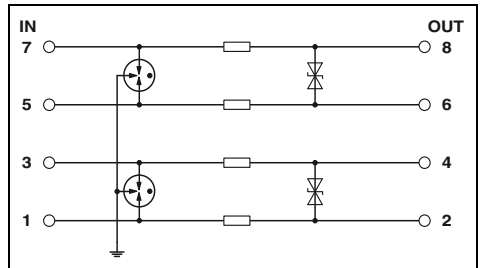
Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm
Connection data rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14
Temperature range	-40°C ... 80°C
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11

Safety data

EC-type examination certificate in accordance with ATEX	KEMA 09ATEX0051 X
Maximum inner capacity C_i	typ. 1.3 nF
Maximum inner inductance L_i	< 1 μ H
Maximum input current I_i	350 mA (T4 / $\leq 80^\circ$ C)
Maximum input voltage U_i	36 V DC
Maximum input power P_i	3 W

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
LINETRAB	24 V DC	LIT 1X2-24	2804610	10



Technical data

Electrical data		C1 / C2 / C3 / D1
IEC test classification/EN type		36 V DC / 25 V AC
Maximum continuous operating voltage U_C		350 mA (40°C)
Rated current		500 A
Pulse discharge current I_{imp} (10/350) μ s		5 kA
Nominal discharge current I_n (8/20) μ s		5 kA
		Core-Core
		20 kA
Total discharge current I_{total} (8/20) μ s		Core-Core
Protection level U_p		≤ 50 V
		(C3 - 10 A)
		Core-Ground
		≤ 650 V
		(C1 - 500 V / 250 A)
Cut-off frequency f_g (3 dB)		typ. 6 MHz
		3.3 Ω
Resistance per path		Symmetrical in the 50 Ω system

Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm
Connection data rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14
Temperature range	-40°C ... 80°C
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11

EC-type examination certificate in accordance with ATEX	KEMA 09ATEX0051 X
Maximum inner capacity C_i	typ. 1.3 nF
Maximum inner inductance L_i	< 1 μ H
Maximum input current I_i	350 mA (T4 / $\leq 80^\circ$ C)
Maximum input voltage U_i	36 V DC
Maximum input power P_i	3 W

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
LINETRAB	24 V DC	LIT 2X2-24	2804623	10

Isolated signal circuits
SURGETRAB S-PT

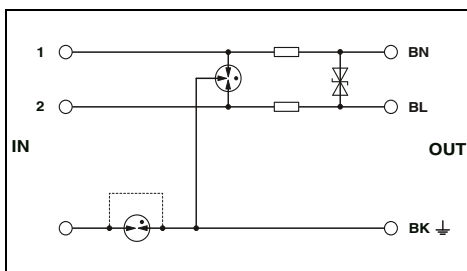
- Easy assembly, directly on the field device
- Arresters in hexagonal tube with various outer threads
- **S-PT-1x2...** installation in the signal path feed-through



Double wire (loop), floating, e.g., for 4 ... 20 mA current loops

Notes:
For more information about Ex approvals, visit phoenixcontact.com
For additional safety data, visit phoenixcontact.net/products

ERC



Technical data

Electrical data	
Maximum continuous operating voltage U_c	40 V DC / 28 V AC
Rated current	450 mA (55°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 10 kA
	Core-Ground 10 kA (per path)
Maximum permitted short-circuit current at installation location	1 A
Total discharge current I_{total} (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	10 kA (per path)
Protection level U_p	
	Core-Core ≤ 80 V (C2 - 10 kV / 5 kA)
	Core-Ground ≤ 450 V (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/ μ s	
	Core-Core ≤ 55 V
	Core-Ground ≤ 450 V (Direct grounding)
Resistance per path	2.2 Ω
General data	
Dimensions W/H/D	33.5 mm / 33.5 mm / 137 mm
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21

Ordering data

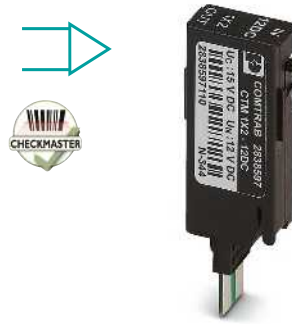
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SURGETRAB , protective adapter for installation on measuring sensors				
Outer thread: M20 x 1.5	24 V DC	S-PT-1X2-24DC	2880668	1
Outer thread: 1/2" 14 NPT	24 V DC	S-PT-1X2-24DC-1/2"	2882569	1
Outer thread: 3/4" 14 NPT	24 V DC	S-PT-1X2-24DC-3/4"	2882598	1

Surge protection and interference filters

Surge protection for measurement and control technology

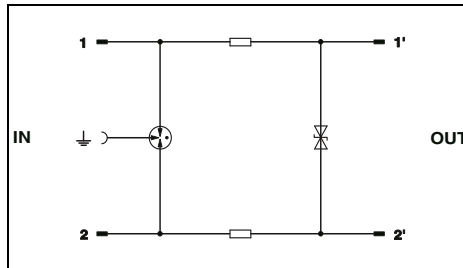
Isolated signal circuits COMTRAB CTM

- Space-saving LSA-PLUS connection technology
- Can be used in LSA-PLUS disconnect and control strips or CT-TERMIBLOCK
- The CTM 10-MAG surge protection magazine can be fitted with ten different protective plugs



Double wire (loop), floating

ERC



Technical data

	Technical data		
	... 12DC	... 24DC	... 60DC
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	± 15 V DC / 10 V AC	± 30 V DC / 21 V AC	60 V DC / 50 V AC
Rated current	380 mA AC (25°C)	380 mA AC (25°C)	380 mA AC (25°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA	1 kA	1 kA
Nominal discharge current I_n (8/20) μ s			
Total discharge current I_{total} (8/20) μ s	Core-Core	5 kA	5 kA
	Core-Ground	5 kA	5 kA
		10 kA	10 kA
Protection level U_p	Core-Core	≤ 25 V (C3 - 7.5 kV/100 A)	≤ 160 V (C3 - 100 A)
	Core-Ground	≤ 700 V (C3 - 7.5 kV/100 A)	≤ 700 V (C3 - 100 A)
		≤ 700 V (C3 - 7.5 kV/100 A)	≤ 700 V (C3 - 100 A)
Cut-off frequency f_g (3 dB)			
Resistance per path	3.3 Ω	3.3 Ω	3.3 Ω
General data			
Dimensions W/H/D	9.5 mm / 21 mm / 53.5 mm		
Temperature range	-25°C ... 75°C		
Test standards	IEC 61643-21		

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
COMTRAB modular	12 V DC	CTM 1X2- 12DC	2838597	10
	24 V DC	CTM 1X2- 24DC	2838513	10
	60 V DC	CTM 1X2- 60DC	2838568	10

Accessories

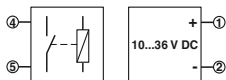
Magazine , with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip				
Grounding plug				
	CTM 10-MAG	2838610	5	
	CTM EST	2838649	10	
Screw terminal block , with disconnect contacts for accommodating the CT and CTM protective plugs, design: 10 double wires				
	CT-TERMIBLOCK 10 DA	0441711	10	

Accessories

TERMITRAB complete

Remote signaling set

- Overall width of just 2 x 6.2 mm
- With Push-in or screw connection technology
- Floating remote indication contact
- Visual status indicator on the module
- Monitors up to 40 neighboring SPDs
- No SPD wiring necessary
- No programming necessary



Transceiver module for remote signaling of TTC-6...-I products

General data		Technical data		
Dimensions W/H/D		6.2 mm / 105.8 mm / 83.5 mm		
Temperature range		-40°C ... 60°C		
Test standards		EN 61000-6-2 / EN 61000-6-3		
Remote indication contact		N/C contact		
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
Max. operating voltage		24 V AC / 36 V DC		
Max. operating current		500 mA AC (peak) / 500 mA DC		
Description		Ordering data		
Remote signaling set	Push-in connection technology	Type	Order No.	Pcs./Pkt.
	Screw connection technology	TTC-6-FMRS-PT	2907811	1
		TTC-6-FMRS-UT	2907810	1

Accessories

TERMITRAB complete

Fuse carrier

- For standard 5 x 20 mm miniature fuses
- Can be combined with TTC screw versions
- Can also be used with pluggable TTC products including knife disconnection
- Maximum space savings



Fuse carrier

Electrical data		Technical data		
Max. operating voltage		60 V DC		
Max. operating current		6.3 A (P _v = 1.6 W)		
General data		Ordering data		
Dimensions W/H/D		Type	Order No.	Pcs./Pkt.
Connection data rigid / flexible / AWG		TTC-6-FC-UT	1054762	50
Temperature range				
Test standards				

Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential

TERMITRAB complete

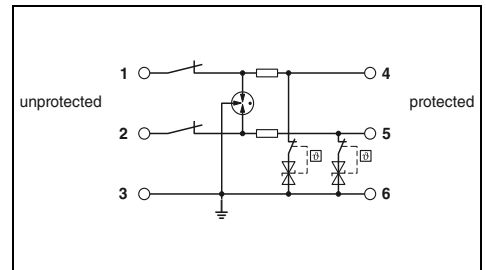
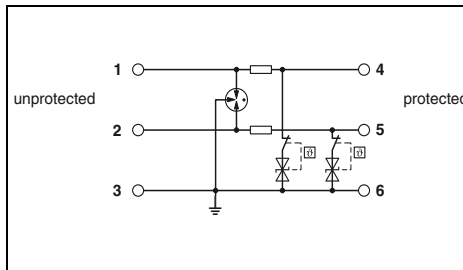
- Pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With knife disconnection as an option
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2



2-conductor with common reference potential, 3/6 connection grounded directly, e.g., for binary signals



2-conductor with common reference potential, 3/6 connection grounded directly, with knife disconnection, e.g., for binary signals



Technical data

Electrical data	... 12DC	... 24DC	... 48DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 37 V AC
Rated current	600 mA (56°C)	600 mA (56°C)	220 mA (75°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) μ s			
	Core-Core	-	-
	Core-Ground	5 kA	5 kA
Total discharge current I_{total} (8/20) μ s		10 kA	10 kA
Protection level U_p			
	Core-Ground	≤ 25 V (C3 - 25 A)	≤ 45 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)		typ. 440 kHz	typ. 960 kHz
Resistance per path	Asymmetrical in the 150 Ω system	1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D		6.2 mm / 105.8 mm / 100 mm	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 85°C	-40°C ... 85°C
Test standards		IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with Push-in connection technology				
	12 V DC	TTC-6P-2X1-12DC-PT-I	2908202	1
	24 V DC	TTC-6P-2X1-24DC-PT-I	2906816	1
	48 V DC	TTC-6P-2X1-48DC-PT-I	2908204	1
TERMITRAB complete, with screw connection technology				
	12 V DC	TTC-6P-2X1-12DC-UT-I	2908201	1
	24 V DC	TTC-6P-2X1-24DC-UT-I	2906810	1
	48 V DC	TTC-6P-2X1-48DC-UT-I	2908203	1

Accessories

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
Replacement plug				
	12 V DC	TTC-6P-2X1-12DC-I-P	2907842	1
	24 V DC	TTC-6P-2X1-24DC-I-P	2907843	1
	48 V DC	TTC-6P-2X1-48DC-I-P	2907844	1
Remote signaling set				
Push-in connection technology		TTC-6-FMRS-PT	2907811	1
Screw connection technology		TTC-6-FMRS-UT	2907810	1
Fuse carrier				
		TTC-6-FC-UT	1054762	50

Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	30 V DC / 21 V AC
Rated current	600 mA (56°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core
	Core-Ground
Total discharge current I_{total} (8/20) μ s	5 kA
Protection level U_p	
	Core-Ground
Cut-off frequency f_g (3 dB)	typ. 960 kHz
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with Push-in connection technology				
	24 V DC	TTC-6P-2X1-M-24DC-PT-I	2906753	1
TERMITRAB complete, with screw connection technology				
	24 V DC	TTC-6P-2X1-M-24DC-UT-I	2906741	1

Accessories

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
Replacement plug				
	24 V DC	TTC-6P-2X1-24DC-I-P	2907843	1
Remote signaling set				
Push-in connection technology		TTC-6-FMRS-PT	2907811	1
Screw connection technology		TTC-6-FMRS-UT	2907810	1
Fuse carrier				
		TTC-6-FC-UT	1054762	50



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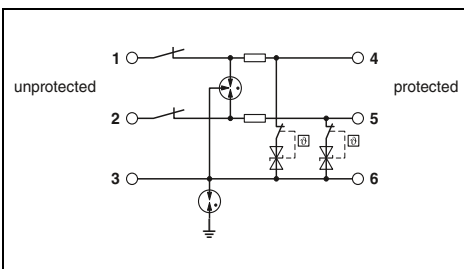
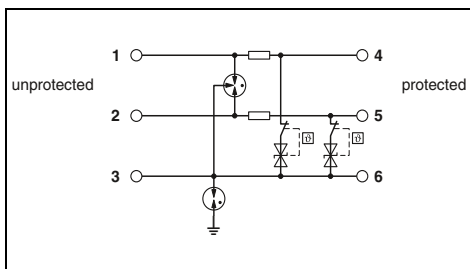
**2-conductor with common reference potential,
3/6 connection grounded via gas-filled
surge arrester, e.g., for binary signals**



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IEC 61508



**2-conductor with common reference potential,
3/6 connection grounded via gas-filled surge arrester,
with knife disconnection, e.g., for binary signals**



Technical data		
... 12DC	... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 37 V AC
600 mA (56°C)	600 mA (56°C)	220 mA (75°C)
0.5 kA	0.5 kA	0.5 kA
-	-	-
5 kA	5 kA	5 kA
10 kA	10 kA	10 kA
≤ 1.2 kV (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)	≤ 800 V (C3 - 25 A)
-	-	-
1.65 Ω	1.65 Ω	1.65 Ω
6.2 mm / 105.8 mm / 100 mm		
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
-40°C ... 85°C		
IEC 61643-21 / EN 61643-21		

Technical data
... 24DC
C1 / C2 / C3 / D1
30 V DC / 21 V AC
600 mA (56°C)
0.5 kA
-
5 kA
10 kA
≤ 1.1 kV (C3 - 25 A)
-
1.65 Ω
6.2 mm / 105.8 mm / 100 mm
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Ordering data		
Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-F-12DC-PT-I	2908206	1
TTC-6P-2X1-F-24DC-PT-I	1065320	1
TTC-6P-2X1-F-48DC-PT-I	2908209	1
TTC-6P-2X1-F-12DC-UT-I	2908205	1
TTC-6P-2X1-F-24DC-UT-I	1065319	1
TTC-6P-2X1-F-48DC-UT-I	2908208	1

Ordering data		
Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-F-M-24DC-PT-I	2906794	1
TTC-6P-2X1-F-M-24DC-UT-I	2906784	1

Accessories		
TTC-6P-2X1-12DC-I-P	2907842	1
TTC-6P-2X1-24DC-I-P	2907843	1
TTC-6P-2X1-48DC-I-P	2907844	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Accessories		
TTC-6P-2X1-24DC-I-P	2907843	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential

TERMITRAB complete

- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- With integrated mechanical status indicator and knife disconnection as an option
- Optional remote signaling module monitors up to 40 items, without additional wiring



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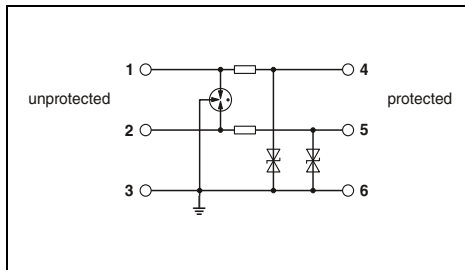
2-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, with or without status indicator and knife disconnection, e.g., for binary signals



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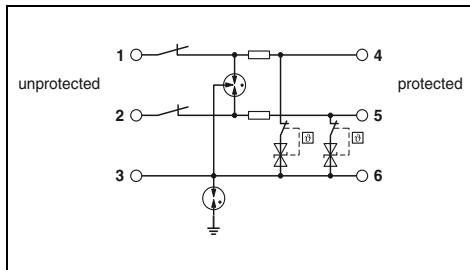


2-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, with knife disconnection, e.g., for binary signals



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core -
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core -
	Core-Ground ≤ 45 V
	(C3 - 25 A)
Cut-off frequency f_g (3 dB)	
	Asymmetrical in the 150 Ω system
Resistance per path	typ. 960 kHz
General data	1.65 Ω
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core -
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core -
	Core-Ground ≤ 1.1 kV
	(C3 - 25 A)
Cut-off frequency f_g (3 dB)	
	-
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N
TERMITRAB complete , with Push-in connection technology	
Without status indicator	24 V DC
With status indicator	24 V DC
TERMITRAB complete , with screw connection technology	
Without status indicator	24 V DC
With status indicator	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6-2X1-24DC-PT	2906805	1
TTC-6-2X1-M-24DC-PT-I	2906729	1
TTC-6-2X1-24DC-UT	2906799	1
TTC-6-2X1-M-24DC-UT-I	2906716	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-2X1-F-M-24DC-PT-I	2906776	1
TTC-6-2X1-F-M-24DC-UT-I	2906767	1

Accessories

Remote signaling set	
Push-in connection technology	
Screw connection technology	
Fuse carrier	

Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

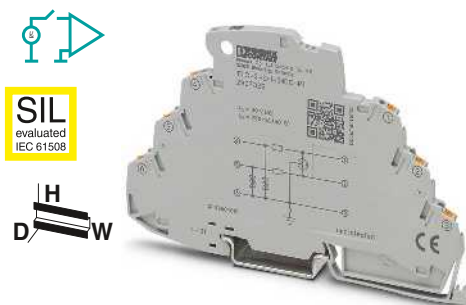
Accessories

Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

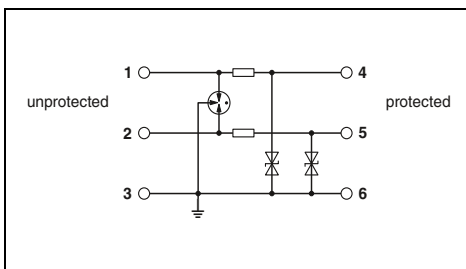
Signals with common reference potential

TERMITRAB complete

- Overall width of just 3.5 mm
- With Push-in connection technology



2-conductor with common reference potential, e.g., for binary signals



Electrical data	IEC test classification/EN type	Core-Core	-
Maximum continuous operating voltage U_C	Rated current	Core-Ground	5 kA
Pulse discharge current I_{imp} (10/350) μ s	Nominal discharge current I_n (8/20) μ s		10 kA
Total discharge current I_{total} (8/20) μ s	Protection level U_p	Core-Core	-
		Core-Ground	≤ 50 V (C3 - 30 A)
Cut-off frequency f_g (3 dB)	Asymmetrical in the 150 Ω system		-
Resistance per path			2.2 Ω
General data	Dimensions W/H/D		3.5 mm / 106 mm / 69.5 mm
Connection data rigid / flexible / AWG	Temperature range		0.2 ... 1.5 mm ² / 0.2 ... 1.5 mm ² / 24 ... 16 -40°C ... 85°C
Test standards			IEC 61643-21 / EN 61643-21

Technical data

... 24DC	C1 / C2 / C3 / D1	250 mA (70°C)	0.5 kA
30 V DC / 21 V AC			

Description	Voltage U_N
TERMITRAB complete , with Push-in connection technology	24 V DC

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-3-2X1-24DC-PT	2907326	1

End cover

Accessories

TTC-3-LCP	2908843	50
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Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential

PLUGTRAB PT-IQ

- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 28 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- PT-IQ... base element with Push-in or screw connection technology
- Base element remains an integral part of the installation
- Corresponding replacement plugs can be found on our website



Supply and remote signaling module

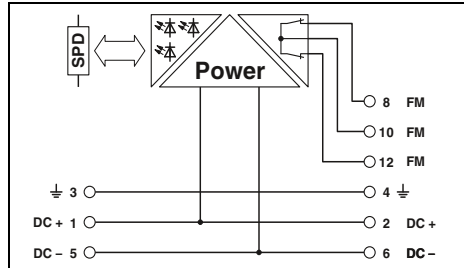


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2-conductor with common reference potential, connection 9/10 grounded directly, e.g., for binary signals

®. EPC



Technical data

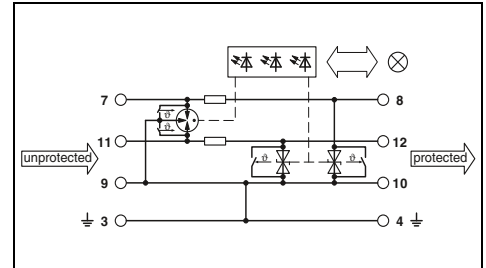
Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_C	-
Rated current	-
Pulse discharge current I_{imp} (10/350) μ s	-
Nominal discharge current I_n (8/20) μ s	-
	Core-Core
	Core-Ground
Total discharge current I_{total} (8/20) μ s	-
Protection level U_p	-
	Core-Ground
Resistance per path	-
General data	
Dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm
Dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm
- for Push-in connection technology	17.7 mm / 91.1 mm / 77.5 mm
- for screw connection technology	17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 70°C
Test standards	EN 61000-6-2 / EN 61000-6-3 / EN 60950-1
Remote indication contact	2x N/C contacts
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Max. operating voltage	30 V AC (50/60 Hz) / 50 V DC
Max. operating current	1 A (up to 50°C)

Ordering data

Description	Voltage U_N
PLUGTRAB , supply and remote signaling module	
Push-in connection technology	
Screw connection technology	
PLUGTRAB , with Push-in connection technology	24 V DC 48 V DC
PLUGTRAB , with screw connection technology	24 V DC 48 V DC

Type	Order No.	Pcs./Pkt.
PT-IQ-PTB-PT	2801296	1
PT-IQ-PTB-UT	2800768	1

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Technical data

... 24DC	
C1 / C2 / C3 / D1	
30 V DC / 21 V AC	
1000 mA (40°C)	
2.5 kA	
	-
	10 kA
	20 kA
	-
	≤ 55 V (C3 - 25 A)
	1.2 Ω
Dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm
Dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm
- for Push-in connection technology	17.7 mm / 91.1 mm / 77.5 mm
- for screw connection technology	17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 70°C
Test standards	IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2
Remote indication contact	via DIN rail connector
Connection data rigid / flexible / AWG	- mm ² / - mm ² / -
Max. operating voltage	-
Max. operating current	-

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X1-24DC-PT	2801247	1
PT-IQ-2X1-24DC-UT	2800787	1



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2-conductor with common reference potential, connection 9/10 grounded via gas-filled surge arrester, e.g., for binary signals



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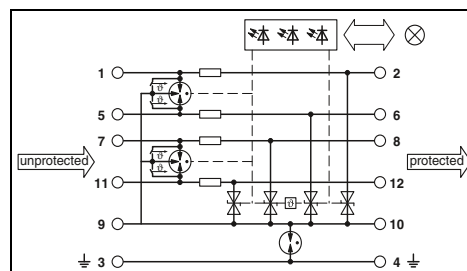
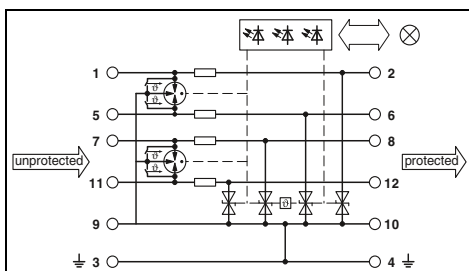
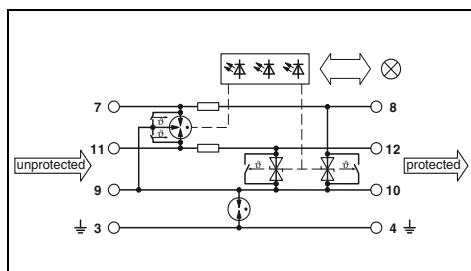
4-conductor with common reference potential, connection 9/10 grounded directly, e.g., for binary signals



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4-conductor with common reference potential, connection 9/10 grounded via gas-filled surge arrester, e.g., for binary signals



Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
1000 mA (40°C)	300 mA
2.5 kA	300 mA
-	-
10 kA	10 kA
20 kA	20 kA
≤ 780 V (C3 - 25 A)	≤ 850 V (C3 - 25 A)
1.2 Ω	1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 91.1 mm / 77.5 mm

0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12

-40°C ... 70°C

IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2

via DIN rail connector

- mm² / - mm² / -

Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
700 mA (50°C)	300 mA
2.5 kA	300 mA
-	-
10 kA	10 kA
20 kA	20 kA
≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
1.2 Ω	1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 91.1 mm / 77.5 mm

0.5 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12

-40°C ... 70°C

IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2

via DIN rail connector

- mm² / - mm² / -

Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
700 mA (50°C)	300 mA
2.5 kA	300 mA
-	-
10 kA	10 kA
20 kA	20 kA
≤ 780 V (C3 - 25 A)	≤ 850 V (C3 - 25 A)
1.2 Ω	1.2 Ω

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 109.3 mm / 77.5 mm

17.7 mm / 91.1 mm / 77.5 mm

0.5 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12

-40°C ... 70°C

IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2

via DIN rail connector

- mm² / - mm² / -

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X1+F-24DC-PT	2801248	1
PT-IQ-2X1+F-48DC-PT	2801250	1
PT-IQ-2X1+F-24DC-UT	2800788	1
PT-IQ-2X1+F-48DC-UT	2800790	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-4X1-24DC-PT	2801271	1
PT-IQ-4X1-24DC-UT	2800982	1
PT-IQ-4X1-48DC-UT	2801219	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-4X1+F-24DC-PT	2801272	1
PT-IQ-4X1+F-48DC-PT	2801274	1
PT-IQ-4X1+F-24DC-UT	2800983	1
PT-IQ-4X1+F-48DC-UT	2801220	1

Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential PLUGTRAB PT

- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2

Note:

Base elements are grounded differently. For **PT .x.-BE**, connections 9/10 (GND) are connected directly to the mounting foot.

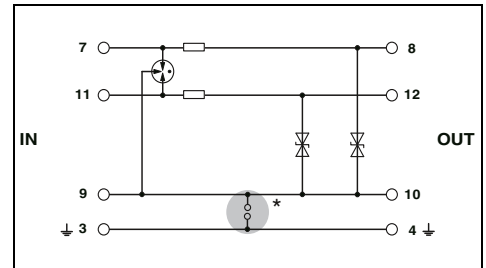
For **PT .x.+F-BE**, connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.

Notes:

For approvals and dimensional drawing, visit phoenixcontact.net/products



2-conductor, with common reference potential, e.g., for binary signals



Electrical data		... 5DC	... 12DC	... 24DC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c		6 V DC / 4 V AC	13 V DC / 9 V AC	28 V DC / 20 V AC
Rated current		300 mA (45°C)	300 mA (45°C)	300 mA (45°C)
Pulse discharge current I_{imp} (10/350) μ s		2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) μ s				
		Core-Core	-	-
		Core-Ground	10 kA	10 kA
Total discharge current I_{total} (8/20) μ s			20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s			10 kA	10 kA
Output voltage limitation at 1 kV/ μ s				
		Core-Ground	≤ 10 V	≤ 18 V
Cut-off frequency f_g (3 dB)				≤ 40 V
		Symmetrical/asymmetrical in the 50 Ω system		
Resistance per path		- / typ. 1 MHz	- / typ. 3 MHz	- / typ. 4.5 MHz
General data		4.7 Ω	4.7 Ω	4.7 Ω
Dimensions W/H/D		17.5 mm / 44.8 mm / 51.7 mm		
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
Temperature range		-40°C ... 85°C		
Test standards		IEC 61643-21		

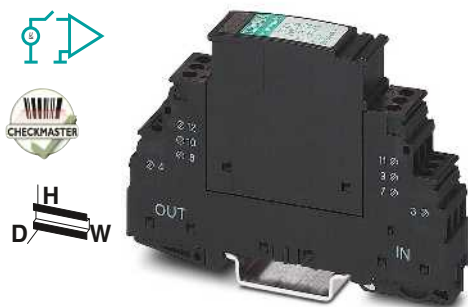
Technical data			
... 5DC	... 12DC	... 24DC	
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	
6 V DC / 4 V AC	13 V DC / 9 V AC	28 V DC / 20 V AC	
300 mA (45°C)	300 mA (45°C)	300 mA (45°C)	
2.5 kA	2.5 kA	2.5 kA	
	Core-Core	-	-
	Core-Ground	10 kA	10 kA
		20 kA	20 kA
		10 kA	10 kA
	Core-Ground	≤ 10 V	≤ 18 V
			≤ 40 V
		Symmetrical/asymmetrical in the 50 Ω system	
		- / typ. 1 MHz	- / typ. 3 MHz
		4.7 Ω	4.7 Ω
		17.5 mm / 44.8 mm / 51.7 mm	
		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
		-40°C ... 85°C	
		IEC 61643-21	

Description	Voltage U_N
PLUGTRAB plug , with protective circuit for plugging into base element PT	5 V DC
	12 V DC
	24 V DC
	48 V DC
	24 V AC
	48 V AC
PLUGTRAB base element , for mounting on NS 35	
	with bridge between connections 3/4 (\downarrow) and 9/10
	with gas-filled surge arrester between connections 3/4 (\downarrow) and 9/10

Shield fast connection
For \varnothing 3-6 mm
For \varnothing 5-10 mm

Ordering data			
Type	Order No.	Pcs./Pkt.	
PT 2X1-5DC-ST	2856061	10	
PT 2X1-12DC-ST	2856074	10	
PT 2X1-24DC-ST	2856087	10	
PT 2X1-BE	2856139	10	
PT 2X1+F-BE	2856142	10	

Accessories			
SSA 3-6	2839295	10	
SSA 5-10	2839512	10	



2-conductor, with common reference potential, e.g., for binary signals



4-conductor with common reference potential, connection 9/10 grounded directly, e.g., for binary signals

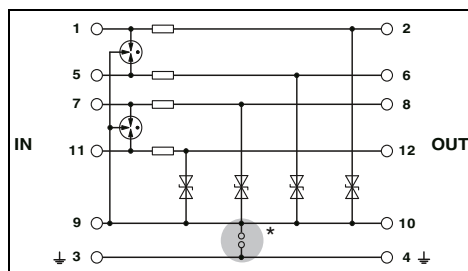
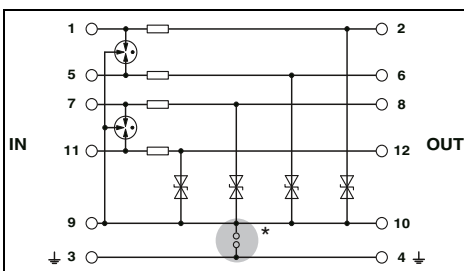
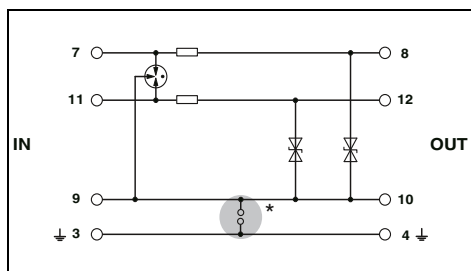


4-conductor with common reference potential, connection 9/10 grounded via gas-filled surge arrester, e.g., for binary signals

ERC
Ex:

ERC
Ex:

ERC
Ex:



Technical data

... 24AC
C1 / C2 / C3 /
D1
40 V DC /
28 V AC
300 mA (45°C)
2.5 kA

-
10 kA
20 kA
10 kA

≤ 55 V (with PT 2x1-BE)

- / typ. 8 MHz
4.7 Ω

17.5 mm / 44.8 mm / 51.7 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Technical data

... 5DC	... 12DC	... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
6 V DC / 4 V AC	13 V DC / 9 V AC	28 V DC / 20 V AC	53 V DC / 37 V AC
300 mA (45°C)	300 mA (45°C)	300 mA (45°C)	300 mA (45°C)
2.5 kA	2.5 kA	2.5 kA	2.5 kA

-	-	-	-
10 kA	10 kA	10 kA	10 kA
20 kA	20 kA	20 kA	20 kA
10 kA	10 kA	10 kA	10 kA

≤ 10 V ≤ 18 V ≤ 40 V ≤ 70 V

- / typ. 1 MHz - / typ. 3 MHz - / typ. 6 MHz - / typ. 9 MHz
4.7 Ω 4.7 Ω 4.7 Ω 4.7 Ω

17.7 mm / 45 mm / 52 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21

Technical data

... 24AC	... 48AC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
40 V DC / 28 V AC	77 V DC / 55 V AC
300 mA (45°C)	300 mA (45°C)
2.5 kA	2.5 kA

-	-
10 kA	10 kA
20 kA	20 kA
10 kA	10 kA (per path)

≤ 55 V ≤ 50 V (with PT 4X1+F-BE)

- / typ. 8 MHz - / typ. 10 MHz
4.7 Ω 4.7 Ω

17.7 mm / 45 mm / 52 mm
- mm² / - mm² / -
-40°C ... 85°C
IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2X1-24AC-ST	2856100	10
PT 2X1-BE	2856139	10
PT 2X1+F-BE	2856142	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT 4X1-5DC-ST	2838306	10
PT 4X1-12DC-ST	2838319	10
PT 4X1-24DC-ST	2838322	10
PT 4X1-48DC-ST	2858014	10
PT 4X1-BE	2839363	10
PT 4X1+F-BE	2839376	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT 4X1-24AC-ST	2838351	10
PT 4X1-48AC-ST	2804856	10
PT 4X1-BE	2839363	10
PT 4X1+F-BE	2839376	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Surge protection and interference filters

Surge protection for measurement and control technology

Isolated signal circuits TERMITRAB complete

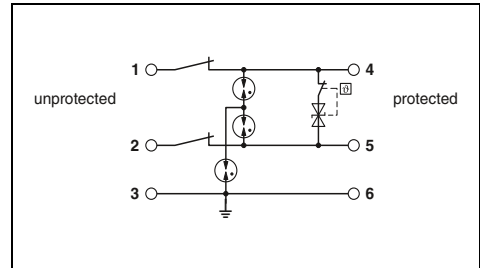
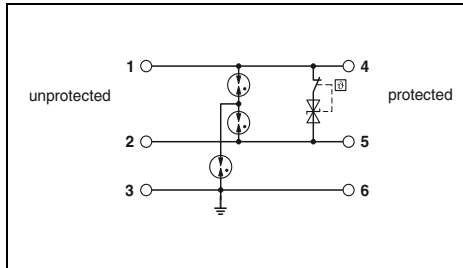
- For use with high rated current
- One-piece or pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With knife disconnection as an option
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2



2-conductor, floating, pluggable,
e.g., for actuator circuits



2-conductor, floating, pluggable,
with knife disconnection,
e.g., for actuator circuits



Technical data

Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	6 A (55°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 0.5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	5 kA
Protection level U_p	
	Core-Core ≤ 45 V (C3 - 25 A)
	Core-Ground ≤ 850 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	
	typ. 1 MHz
Resistance per path	100 m Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	6 A (55°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	0.5 kA
	5 kA
	5 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	
	≤ 45 V (C3 - 25 A)
	≤ 850 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	
	typ. 1 MHz
Resistance per path	100 m Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Ordering data

Description	Voltage U_N
TERMITRAB complete	
Push-in connection technology	24 V DC
Screw connection technology	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6P-2-HC-24DC-PT-I	2906817	1
TTC-6P-2-HC-24DC-UT-I	2906811	1

Type	Order No.	Pcs./Pkt.
TTC-6P-2-HC-M-24DC-PT-I	2906755	1
TTC-6P-2-HC-M-24DC-UT-I	2906743	1

Accessories

Accessories

Replacement plug	
Remote signaling set	
Push-in connection technology	
Screw connection technology	
Fuse carrier	

TTC-6P-2-HC-24DC-I-P	2907845	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

TTC-6P-2-HC-24DC-I-P	2907845	1
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50



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IEC 61508



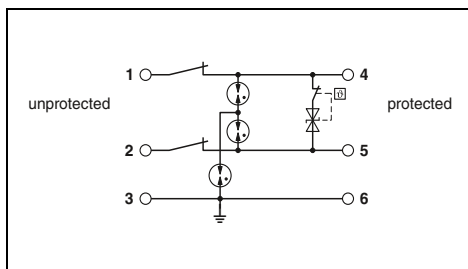
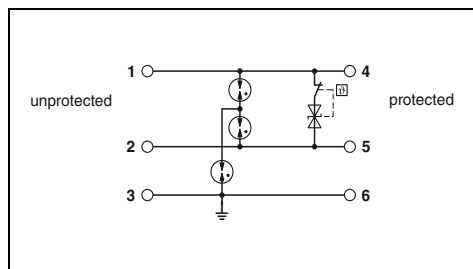
2-conductor, floating, one-piece,
e.g., for actuator circuits



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evaluated
IEC 61508



2-conductor, floating, one-piece,
with knife disconnection,
e.g., for actuator circuits



Technical data

... 24DC
C1 / C2 / C3 / D1
30 V DC / 21 V AC
6 A (55°C)
0.5 kA

0.5 kA
5 kA
5 kA

≤ 45 V
(C3 - 25 A)
≤ 850 V
(C3 - 25 A)

typ. 1 MHz
100 mΩ

6.2 mm / 105.8 mm / 83.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Technical data

... 24DC
C1 / C2 / C3 / D1
30 V DC / 21 V AC
6 A (55°C)
0.5 kA

0.5 kA
5 kA
5 kA

≤ 45 V
(C3 - 25 A)
≤ 850 V
(C3 - 25 A)

typ. 1 MHz
100 mΩ

6.2 mm / 105.8 mm / 83.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-2-HC-24DC-PT-I	2908439	1
TTC-6-2-HC-24DC-UT-I	2908438	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-2-HC-M-24DC-PT-I	2906731	1
TTC-6-2-HC-M-24DC-UT-I	2906719	1

Accessories

TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Accessories

TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FC-UT	1054762	50

Surge protection and interference filters

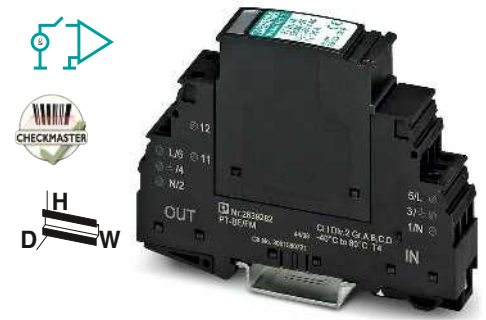
Surge protection for measurement and control technology

Signal circuits with high rated current PLUGTRAB PT

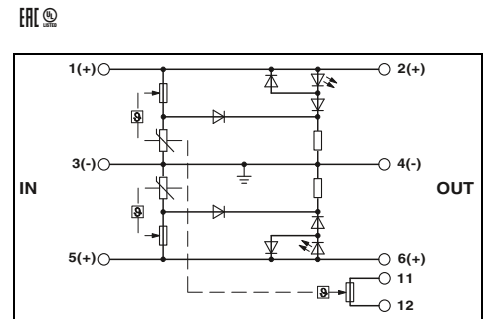
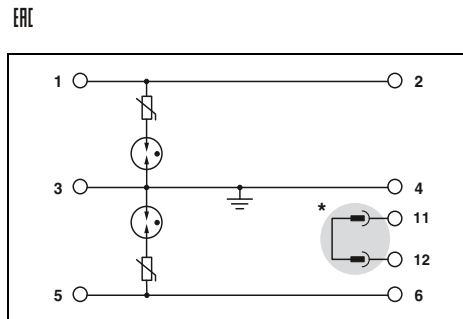
- Protective devices for higher nominal power
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2
- FM types with permanent and independent monitoring by a diagnostics unit
- * **Note:** If no protective plug is inserted, there is no electrical connection.



2-conductor, floating, free of leakage current, e.g., for actuator circuits



2-conductor, with common reference potential, remote signaling, e.g., for actuator circuits



	Technical data		Technical data		
	... 120AC	... 230AC	... 60AC	... 120AC	... 230AC
Electrical data	... 120AC	... 230AC	... 60AC	... 120AC	... 230AC
IEC test classification/EN type	C1 / C2 / C3	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	- / 175 V AC	- / 250 V AC	100 V DC / 75 V AC (50/60 Hz)	150 V DC / 150 V AC (50/60 Hz)	275 V DC / 275 V AC (50/60 Hz)
Rated current	6 A	6 A	26 A AC (30°C)	26 A AC (30°C)	26 A AC (30°C)
Pulse discharge current I_{imp} (10/350) μ s	300 A	500 A	500 A	500 A	500 A
Nominal discharge current I_n (8/20) μ s					
Total discharge current I_{total} (8/20) μ s	Core-Ground 3 kA 8 kA	Core-Ground 3 kA 8 kA	2 kA 4 kA	2.5 kA 5 kA	2.5 kA 5 kA
Output voltage limitation at 1 kV/ μ s	Core-Ground \leq 950 V (C2 - 1 kA)	Core-Ground \leq 1.5 kV (C2 - 4 kV / 2 kA)	\leq 300 V (C2 - 4 kV / 2 kA)	\leq 550 V (C2 - 5 kV / 2.5 kA)	\leq 900 V (C2 - 5 kV / 2.5 kA)
General data					
Dimensions W/H/D	17.5 mm / 44.8 mm / 51.7 mm		17.5 mm / 44.8 mm / 51.7 mm		
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
Temperature range	-40°C ... 80°C		-40°C ... 85°C		
Test standards	EN 61643-21		IEC 61643 / EN 61643-21		

Description	Voltage U_N	Ordering data			Ordering data		
		Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
MAINS-PLUGTRAB , consisting of a plug and a base element	120 V AC	PT 2X1-VF-120AC	2859327	10			
	230 V AC	PT 2X1-VF-230AC	2805460	10			
PLUGTRAB plug , with protective circuit for plugging into base element PT	60 V AC				PT 2X1VA- 60AC-ST	2839172	10
	120 V AC	PT 2X1-VF-120AC-ST	2856799	10	PT 2X1VA-120AC-ST	2839185	10
	230 V AC	PT 2X1-VF-230AC-ST	2921365	10	PT 2X1VA-230AC-ST	2839198	10
PLUGTRAB base element , for mounting on NS 35		PT-BE/FM	2839282	10	PT-BE/FM	2839282	10

Accessories				Accessories			
Shield fast connection For \varnothing 3-6 mm For \varnothing 5-10 mm	SSA 3-6	2839295	10	SSA 3-6	2839295	10	
	SSA 5-10	2839512	10	SSA 5-10	2839512	10	

**Isolated signal circuits
PLUGTRAB PT**

- For use with high rated current
- For systems with high dielectric strength or fine protection installed
- Installation location is directly where the MCR cable enters the building
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2

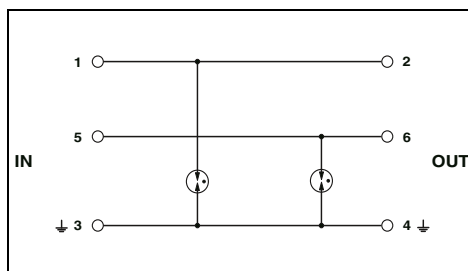


**2-conductor, coarse protection,
e.g., for actuator circuits**

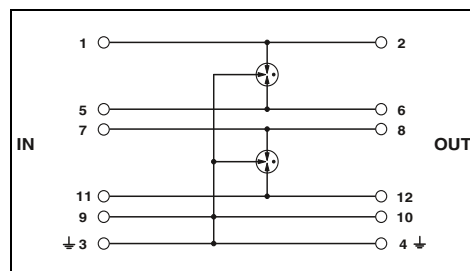


**4-conductor, coarse protection,
e.g., for actuator circuits**

ERC



ERC



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	60 V DC / 48 V AC
Rated current	2 A AC (80°C)
Pulse discharge current I_{imp} (10/350) μ s	5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core -
	Core-Ground 20 kA
Total discharge current I_{total} (8/20) μ s	20 kA
Protection level U_p	
	Core-Ground ≤ 600 V
	(C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/ μ s	
	Core-Ground ≤ 600 V
General data	
Dimensions W/H/D	17.7 mm / 45 mm / 52 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Technical data	
C1 / C2 / C3 / D1	
60 V DC / 120 V AC	
2 A AC (80°C)	
2.5 kA	
10 kA	
10 kA	
20 kA	
≤ 450 V	
(C2 - 10 kV / 5 kA with PT 4-BE)	
≤ 450 V (with PT 4-BE)	
General data	
Dimensions W/H/D	
17.7 mm / 45 mm / 52 mm	
Connection data rigid / flexible / AWG	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
Temperature range	
-40°C ... 85°C	
Test standards	
IEC 61643-21 / EN 61643-21	

Ordering data

Description	Voltage U_N
PLUGTRAB plug , with protective circuit for plugging into base element PT	48 V AC 110 V AC
PLUGTRAB base element , for mounting on NS 35	
Bridge between 3/4 ($\frac{1}{2}$) and 9/10	

Type	Order No.	Pcs./Pkt.
PT 2-F-ST	2859000	10
PT-BE/FM	2839282	10

Type	Order No.	Pcs./Pkt.
PT 4-F-ST	2858441	10
PT 4-BE	2839402	10

Accessories

Shield fast connection
For \varnothing 3-6 mm
For \varnothing 5-10 mm

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential LINETRAB LIT

- Protection of up to four signal wires with an overall width of 6.2 mm
- Can be used in binary, analog, and intrinsically safe circuits

Notes:

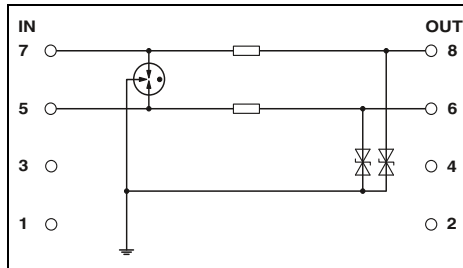
For approvals and dimensional drawing, visit phoenixcontact.net/products



Protection for two conductors with a common reference potential

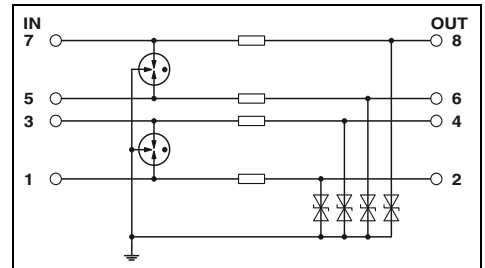


Protection for four conductors with a common reference potential



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	36 V DC / 25 V AC
Rated current	350 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	500 A
Nominal discharge current I_n (8/20) μ s	
	Core-Core -
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	20 kA (in total)
Protection level U_p	
	Core-Core -
	Core-Ground ≤ 60 V
	(C1 - 500 V / 250 A)
Cut-off frequency f_g (3 dB)	
	Asymmetrical in the 50 Ω system
Resistance per path	typ. 6 MHz
General data	3.3 Ω
Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm
Connection data rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-21 / EN 61643-21



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	36 V DC / 25 V AC
Rated current	350 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	500 A
Nominal discharge current I_n (8/20) μ s	
	Core-Core -
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core -
	Core-Ground ≤ 60 V
	(C1 - 500 V / 250 A)
Cut-off frequency f_g (3 dB)	
	Asymmetrical in the 50 Ω system
Resistance per path	typ. 6 MHz
General data	3.3 Ω
Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm
Connection data rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14
Temperature range	-40°C ... 80°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
LINETRAB LIT surge protection	24 V DC	LIT 2X1-24	2804636	10

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
LINETRAB LIT surge protection	24 V DC	LIT 4X1-24	2804649	10

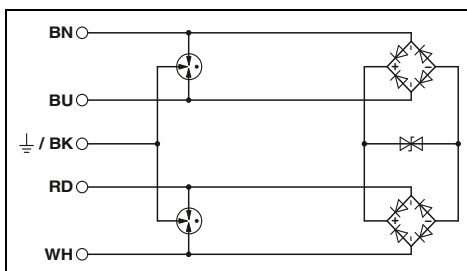
Signals with common reference potential
SURGETRAB S-PT

- Easy assembly, directly on the field device
- Arresters in hexagonal tube with various outer threads
- **S-PT-4-EX** installation in a separate cable gland parallel to the signal cables



4-conductor with common reference potential, intrinsically safe, encapsulated, without decoupling resistance

ERC
Ex: IEC 60079



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		36 V DC / 25 V AC
Pulse discharge current I_{imp} (10/350) μ s		1 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	260 A
	Core-Ground	10 kA
Maximum permitted short-circuit current at installation location		1 A (non-Ex)
Total discharge current I_{total} (8/20) μ s		20 kA
Protection level U_p		
	Core-Core	≤ 65 V (C3 - 10 A)
	Core-Ground	≤ 1.1 kV (C3 - 100 A)
Output voltage limitation at 1 kV/ μ s		
	Core-Core	≤ 60 V
	Core-Ground	-
General data		
Dimensions W/H/D		28 mm / 28 mm / 79 mm
Temperature range		-40°C ... 80°C (non-Ex)
Test standards		EN 61643-21 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-31 / IEC 60079-0
Safety data		
EC-type examination certificate in accordance with ATEX		KEMA 09ATEX0028 X
Maximum inner capacity C_i		1.65 nF
Maximum inner inductance L_i		1 μ H
Maximum input current I_i		500 mA ($T_4 / \leq 75^\circ\text{C}$)
Maximum input voltage U_i		36 V DC
Maximum input power P_i		3 W

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SURGETRAB protective adapter for installation on measuring sensors for Ex protection zones				
Outer thread: M20 x 1.5	24 V DC	S-PT-4-EX-24DC	2800036	1
Outer thread: 1/2" 14 NPT	24 V DC	S-PT-4-EX-24DC-1/2"	2800037	1

Surge protection and interference filters

Surge protection for measurement and control technology

Signals with common reference potential

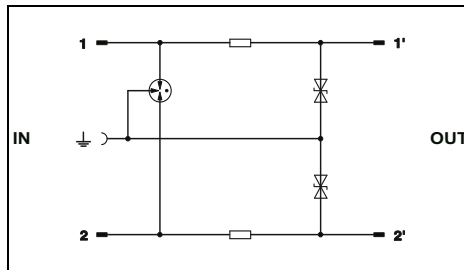
COMTRAB CTM

- Space-saving LSA-PLUS connection technology
- Can be used in LSA-PLUS disconnect and control strips or CT-TERMIBLOCK
- The CTM 10-MAG surge protection magazine can be fitted with ten different protective plugs



2-conductor,
with common reference potential

ERC



Technical data

Electrical data	... 12DC	... 24DC	... 60DC
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	± 15 V DC / 10 V AC	± 30 V DC / 21 V AC	60 V DC / 50 V AC
Rated current	380 mA AC (25°C)	380 mA AC (25°C)	380 mA AC (25°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA	1 kA	1 kA
Nominal discharge current I_n (8/20) μ s	-	-	-
Total discharge current I_{total} (8/20) μ s	Core-Core	-	-
	Core-Ground	5 kA	5 kA
Output voltage limitation at 1 kV/ μ s	Core-Core	-	-
	Core-Ground	≤ 22 V	≤ 45 V
Cut-off frequency f_g (3 dB)	-	-	-
Resistance per path	3.3 Ω	3.3 Ω	3.3 Ω
General data	9.5 mm / 21 mm / 53.5 mm		
Dimensions W/H/D	-25°C ... 75°C		
Temperature range	IEC 61643-21		
Test standards			

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
COMTRAB modular , surge protection for a double wire with coarse and fine protection and ohmic decoupling, DSL-compatible	12 V DC	CTM 2X1- 12DC	2838584	10
	24 V DC	CTM 2X1- 24DC	2838500	10
	60 V DC	CTM 2X1- 60DC	2838542	10

Accessories

Magazine , with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	CTM 10-MAG	2838610	5
Grounding plug	CTM EST	2838649	10
Screw terminal block , with disconnect contacts for accommodating the CT and CTM protective plugs, design: 10 double wires	CT-TERMIBLOCK 10 DA	0441711	10

new

Resistance-dependent measurements TERMITRAB complete

- Overall width of just 6.2 mm
- With Push-in or screw connection technology



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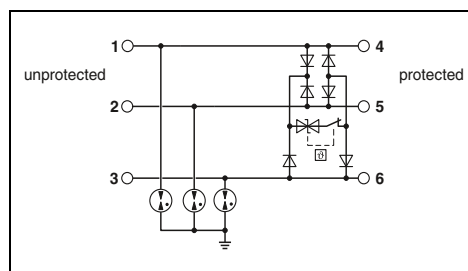
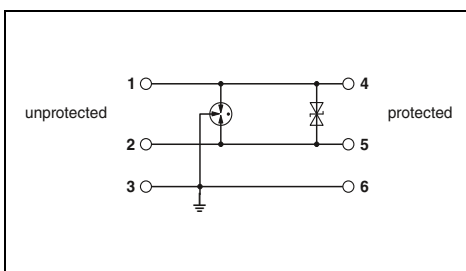
2-conductor, floating, impedance-free,
e.g., for temperature measurement



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IEC 61508



3-conductor, floating, impedance-free,
e.g., for temperature measurement



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	450 mA (80°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 0.5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core ≤ 45 V (C3 - 25 A)
	Core-Ground ≤ 600 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 965 kHz
Resistance per path	100 m Ω
Symmetrical in the 150 Ω system	
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N
TERMITRAB complete, with Push-in connection technology	
	5 V DC
	24 V DC
TERMITRAB complete, with screw connection technology	
	24 V DC

Accessories

Replacement plug	5 V DC
	24 V DC
Fuse carrier	

Type	Order No.	Pcs./Pkt.
TTC-6-2-24DC-PT	2906806	1
TTC-6-2-24DC-UT	2906800	1

TTC-6-FC-UT	1054762	50
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Technical data

... 5DC		... 24DC	
C1 / C2 / C3	5 V DC / 3 V AC	C1 / C2 / C3 / D1	30 V DC / 21 V AC
5 A (55°C)	-	5 A (55°C)	0.5 kA
	0.5 kA		0.5 kA
	5 kA		5 kA
	10 kA		10 kA
	≤ 100 V (C1 - 1 kV/500 A)		≤ 68 V (C1 - 1 kV/500 A)
	≤ 700 V (C1 - 1 kV/500 A)		≤ 700 V (C1 - 1 kV/500 A)
typ. 33 MHz		typ. 60 MHz	
0.1 Ω		0.1 Ω	
6.2 mm / 105.8 mm / 100 mm		6.2 mm / 105.8 mm / 100 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C		-40°C ... 85°C	
IEC 61643-21 / EN 61643-21			

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-5DC-PT-I	1061385	1
TTC-6P-3-24DC-PT-I	1061383	1

Accessories

TTC-6P-3-5DC-I-P	1061386	1
TTC-6P-3-24DC-I-P	1061384	1
TTC-6-FC-UT	1054762	50

Surge protection and interference filters

Surge protection for measurement and control technology

Resistance-dependent measurements PLUGTRAB PT

- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2



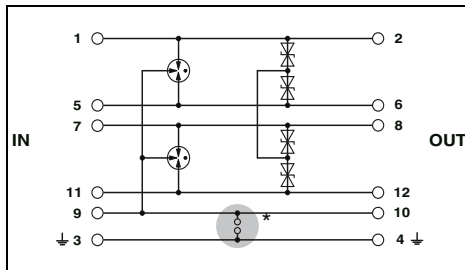
4-conductor, floating, impedance-free, e.g., for temperature measurement

Note:

Base elements are grounded differently. For **PT .x.-BE**, connections 9/10 (GND) are connected directly to the mounting foot.

For **PT .x.+F-BE**, connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.

ERC



Technical data

Electrical data		... 5DC	... 12DC	... 24DC	... 24AC
		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
IEC test classification/EN type					
Maximum continuous operating voltage U_c		6 V DC / 4 V AC	12.8 V DC / 9 V AC	27 V DC / 19 V AC	40 V DC / 28 V AC
Rated current		2 A (80°C)	2 A (80°C)	2 A (80°C)	2 A AC (80°C)
Pulse discharge current I_{imp} (10/350) μ s		2.5 kA	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) μ s	Core-Core	720 A	690 A	365 A	187 A
	Core-Ground	10 kA	10 kA	10 kA	10 kA
Total discharge current I_{total} (8/20) μ s		20 kA	20 kA	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s		10 kA	10 kA	10 kA	10 kA
Protection level U_p	Core-Core	≤ 30 V (C1 - 1 kV / 500 A)	≤ 40 V (C1 - 1 kV / 500 A)	≤ 50 V (C1 - 500 V / 250 A)	≤ 85 V (C1 - 500 V / 250 A)
	Core-Ground	≤ 450 V	≤ 450 V	≤ 500 V (C2 - 10 kV / 5 kA with PT 4-BE)	≤ 450 V (C2 - 10 kV / 5 kA with PT 4-BE)
Output voltage limitation at 1 kV/ μ s	Core-Core	≤ 10 V	≤ 18 V	≤ 40 V	≤ 75 V
	Core-Ground	≤ 450 V	≤ 450 V	≤ 450 V (with PT 4-BE)	≤ 450 V (with PT 4-BE)
General data		17.7 mm / 45 mm / 52 mm			
Dimensions W/H/D		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12			
Connection data rigid / flexible / AWG		-40°C ... 85°C			
Temperature range		IEC 61643-21			
Test standards					

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug , with protective circuit for plugging into base element PT	5 V DC	PT 4-5DC-ST	2839211	10
	12 V DC	PT 4-12DC-ST	2839237	10
	24 V DC	PT 4-24DC-ST	2839240	10
	24 V AC	PT 4-24AC-ST	2800078	1
PLUGTRAB base element , for mounting on NS 35	Bridge between 3/4 (\downarrow) and 9/10	PT 4-BE	2839402	10
	Gas-filled surge arrester between 3/4 (\downarrow) and 9/10	PT 4+F-BE	2839415	10

Accessories

Shield fast connection			
For \varnothing 3-6 mm		SSA 3-6	2839295 10
For \varnothing 5-10 mm		SSA 5-10	2839512 10

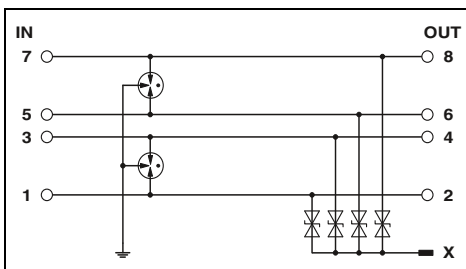
**Resistance-dependent measurements
LINETRAB LIT**

- Protection of up to four signal wires with an overall width of 6.2 mm
- Can be used in binary, analog, and intrinsically safe circuits



**4-conductor, floating, impedance-free,
e.g., for temperature measurement**

Notes:
For approvals and dimensional drawing, visit phoenixcontact.net/products
For additional safety data, visit phoenixcontact.net/products



Technical data

	... 12DC	... 24DC	
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	
Maximum continuous operating voltage U_C	18 V DC / 13 V AC	36 V DC / 25 V AC	
Rated current	500 mA (40°C)	500 mA (40°C)	
Pulse discharge current I_{imp} (10/350) μ s	500 A	500 A	
Nominal discharge current I_n (8/20) μ s			
	Core-Core	350 A	250 A
	Core-Ground	5 kA	5 kA
Total discharge current I_{total} (8/20) μ s	20 kA	20 kA	
Max. discharge current I_{max} (8/20) μ s	10 kA	10 kA	
Protection level U_p			
	Core-Core	≤ 35 V	≤ 55 V
		(C3 - 10 A)	(C3 - 10 A)
	Core-Ground	≤ 650 V	≤ 650 V
		(C2 - 10 kV / 5 kA)	(C2 - 10 kV / 5 kA)
Cut-off frequency f_g (3 dB)			
	Symmetrical in the 50 Ω system	typ. 5 MHz	typ. 7.7 MHz
Resistance per path	0 Ω	0 Ω	
General data			
Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm		
Connection data rigid / flexible / AWG	0.2 ... 2.5 mm ² / 0.2 ... 2.5 mm ² / 24 ... 14		
Temperature range	-40°C ... 80°C		
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11		
Safety data			
EC-type examination certificate in accordance with ATEX	KEMA 09ATEX0051 X	KEMA 09ATEX0051 X	
Maximum inner capacity C_i	typ. 6 nF	typ. 2.5 nF	
Maximum inner inductance L_i	< 1 μ H	< 1 μ H	
Maximum input current I_i	500 mA (T4 / $\leq 80^\circ$ C)	500 mA (T4 / $\leq 80^\circ$ C)	
Maximum input voltage U_i	18 V DC	36 V DC	
Maximum input power P_i	550 mW	550 mW	

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
LINETRAB	12 V DC	LIT 4-12	2804704	10
	24 V DC	LIT 4-24	2804678	10

Accessories

DIN rail connector	Accessories	Order No.	Pcs.
ME 6,2 TBUS-2 1,5/5-ST-3,81KMGY		2969401	10

Surge protection and interference filters

Surge protection for measurement and control technology

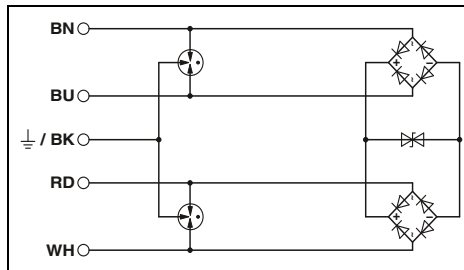
Resistance-dependent measurements SURGETRAB S-PT

- Easy assembly, directly on the field device
- Arresters in hexagonal tube with various outer threads
- **S-PT-4-EX** installation in a separate cable gland parallel to the signal cables



**4-conductor with common reference potential,
intrinsically safe, encapsulated,
without decoupling resistance**

ERC
Ex:



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	36 V DC / 25 V AC
Pulse discharge current I_{imp} (10/350) μ s	1 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 260 A
	Core-Ground 10 kA
Maximum permitted short-circuit current at installation location	1 A (non-Ex)
Total discharge current I_{total} (8/20) μ s	20 kA
Max. discharge current I_{max} (8/20) μ s	-
Protection level U_p	
	Core-Core ≤ 65 V (C3 - 10 A)
	Core-Ground ≤ 1.1 kV (C3 - 100 A)
Output voltage limitation at 1 kV/ μ s	
	Core-Core ≤ 60 V
	Core-Ground -
General data	
Dimensions W/H/D	28 mm / 28 mm / 79 mm
Temperature range	-40°C ... 80°C (non-Ex)
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-31 / IEC 60079-0
Safety data	
EC-type examination certificate in accordance with ATEX	KEMA 09ATEX0028 X
Maximum inner capacity C_i	1.65 nF
Maximum inner inductance L_i	1 μ H
Maximum input current I_i	500 mA ($T_4 \leq 75^\circ\text{C}$)
Maximum input voltage U_i	36 V DC
Maximum input power P_i	3 W

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SURGETRAB protective adapter for installation on measuring sensors for Ex protection zones				
Outer thread: M20 x 1.5	24 V DC	S-PT-4-EX-24DC	2800036	1
Outer thread: 1/2" 14 NPT	24 V DC	S-PT-4-EX-24DC-1/2"	2800037	1

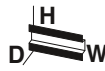
Surge protection and interference filters

Surge protection for measurement and control technology

Single-stage protective devices

TERMITRAB complete

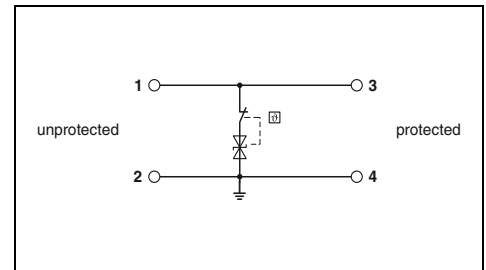
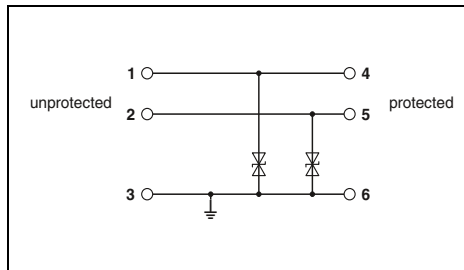
- Fine surge protection for signal circuits on electronic controllers
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Optional remote signaling module monitors up to 40 items, without additional wiring



**2-conductor
with common reference potential,
e.g., for binary signals**



**1-conductor
with grounded reference potential**



Technical data

Electrical data	... 24DC	... 12DC
IEC test classification/EN type	C1 / C2 / C3	C1 / C3
Maximum continuous operating voltage U_C	15 V DC / 10 V AC	30 V DC / 21 V AC
Rated current	6 A (55°C)	6 A (55°C)
Nominal discharge current I_n (8/20) μ s		
Protection level U_p	Core-Core	-
	Core-Ground	0.5 kA
Cut-off frequency f_g (3 dB)	Core-Core	-
	Core-Ground	≤ 25 V (C3 - 25 A)
Resistance per path	Symmetrical in the 150 Ω system	-
	Asymmetrical in the 150 Ω system	typ. 420 kHz 100 m Ω
General data		
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
Temperature range	-40°C ... 85°C	
Test standards	IEC 61643-21 / EN 61643-21	

Technical data

... 12DC	... 24DC	... 48DC	... 60DC
C1 / C3	C3	C3	C3
15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 37 V AC	75 V DC / 53 V AC
10 A (60°C)	10 A (60°C)	10 A (60°C)	10 A (60°C)
300 A	150 A	90 A	60 A
≤ 22 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)	≤ 80 V (C3 - 18 A)	≤ 110 V (C3 - 12 A)
typ. 1.1 MHz 100 m Ω	typ. 1.7 MHz 100 m Ω	typ. 3.5 MHz 100 m Ω	typ. 4 MHz 100 m Ω
6.2 mm / 92 mm / 69.5 mm			
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12			
-40°C ... 85°C			
IEC 61643-21 / EN 61643-21			

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with Push-in connection technology	12 V DC	TTC-6-2XTVSD-12DC-PT	2906807	1
	24 V DC	TTC-6-2XTVSD-24DC-PT	2906808	1
TERMITRAB complete, with Push-in connection technology	12 V DC			
	24 V DC			
	48 V DC			
	60 V DC			
TERMITRAB complete, with screw connection technology	12 V DC			
	24 V DC			
	48 V DC			
	60 V DC			

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-TVSD-C-12DC-PT-I	2906847	1
TTC-6-TVSD-C-24DC-PT-I	2906848	1
TTC-6-TVSD-C-48DC-PT-I	2906849	1
TTC-6-TVSD-C-60DC-PT-I	2906850	1
TTC-6-TVSD-C-12DC-UT-I	2906829	1
TTC-6-TVSD-C-24DC-UT-I	2906831	1
TTC-6-TVSD-C-48DC-UT-I	2906832	1
TTC-6-TVSD-C-60DC-UT-I	2906833	1

Accessories

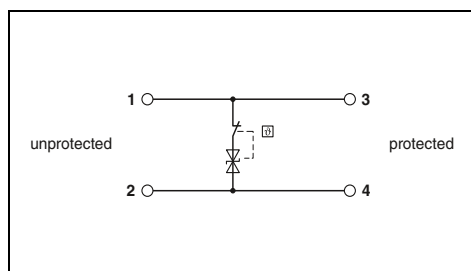
End cover		
Remote signaling set		
Push-in connection technology		
Screw connection technology		

Accessories

TTC-6-LCP	2908729	50
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1



**2-conductor,
floating**



Technical data

... 24DC	... 48DC	... 60DC
C3	C3	C3
30 V DC / 21 V AC	53 V DC / 37 V AC	75 V DC / 53 V AC
10 A (60°C)	10 A (60°C)	10 A (60°C)
150 A	90 A	60 A
-	-	-
≤ 50 V (C3 - 25 A)	≤ 80 V (C3 - 18 A)	≤ 110 V (C3 - 12 A)
-	-	-
typ. 1.7 MHz	typ. 3.5 MHz	typ. 4 MHz
-	-	-
100 mΩ	100 mΩ	100 mΩ

6.2 mm / 92 mm / 69.5 mm
 0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
 -40°C ... 85°C
 IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-TVSD-D-24DC-PT-I	2906851	1
TTC-6-TVSD-D-48DC-PT-I	2906852	1
TTC-6-TVSD-D-60DC-PT-I	2906853	1
TTC-6-TVSD-D-24DC-UT-I	2906834	1
TTC-6-TVSD-D-48DC-UT-I	2906835	1
TTC-6-TVSD-D-60DC-UT-I	2906836	1

Accessories

TTC-6-LCP	2908729	50
TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1

Surge protection and interference filters

Surge protection for measurement and control technology

Single-stage protective devices TERMITRAB complete

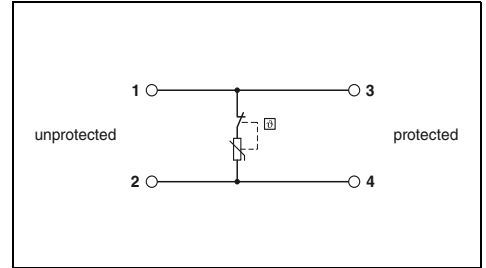
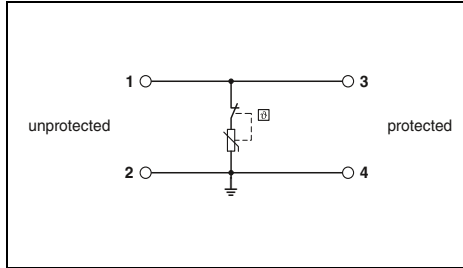
- Medium surge protection for signal circuits on electronic controllers
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Optional remote signaling module monitors up to 40 items, without additional wiring



**1-conductor
with grounded reference potential**



**2-conductor,
floating**



Technical data

Electrical data	... 24DC				... 48DC				... 60DC				... 120AC			
	C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3			
IEC test classification/EN type	30 V DC / 21 V AC															
Maximum continuous operating voltage U_C	10 A (60°C)															
Rated current	10 A (60°C)															
Nominal discharge current I_n (8/20) μ s	10 A (60°C)															
Protection level U_p	Core-Core	-														
	Core-Ground	2 kA		2 kA		2 kA		2.5 kA		-		-		-		2 kA
Cut-off frequency f_g (3 dB)	Core-Core	-														
	Core-Ground	≤ 80 V (C3 - 25 A)		≤ 150 V (C3 - 25 A)		≤ 190 V (C3 - 25 A)		≤ 380 V (C3 - 25 A)		-		-		-		≤ 80 V (C3 - 25 A)
Resistance per path	Symmetrical in the 150 Ω system															
	Asymmetrical in the 150 Ω system															
General data	typ. 200 kHz															
Dimensions W/H/D	100 m Ω															
Connection data rigid / flexible / AWG	6.2 mm / 92 mm / 69.5 mm															
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12															
Test standards	-40°C ... 85°C															
	IEC 61643-21 / EN 61643-21															

Technical data

Electrical data	... 24DC				... 48DC				... 60DC				... 120AC			
	C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3		C1 / C2 / C3			
IEC test classification/EN type	30 V DC / 21 V AC															
Maximum continuous operating voltage U_C	10 A (60°C)															
Rated current	10 A (60°C)															
Nominal discharge current I_n (8/20) μ s	10 A (60°C)															
Protection level U_p	Core-Core	-														
	Core-Ground	2 kA		2 kA		2 kA		2.5 kA		-		-		-		2 kA
Cut-off frequency f_g (3 dB)	Core-Core	-														
	Core-Ground	≤ 80 V (C3 - 25 A)		≤ 150 V (C3 - 25 A)		≤ 190 V (C3 - 25 A)		≤ 380 V (C3 - 25 A)		-		-		-		≤ 80 V (C3 - 25 A)
Resistance per path	Symmetrical in the 150 Ω system															
	Asymmetrical in the 150 Ω system															
General data	typ. 200 kHz															
Dimensions W/H/D	100 m Ω															
Connection data rigid / flexible / AWG	6.2 mm / 92 mm / 69.5 mm															
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12															
Test standards	-40°C ... 85°C															
	IEC 61643-21 / EN 61643-21															

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
		TERMITRAB complete, with Push-in connection technology		
	24 V DC	TTC-6-MOV-C-24DC-PT-I	2906854	1
	48 V DC	TTC-6-MOV-C-48DC-PT-I	2906855	1
	60 V DC	TTC-6-MOV-C-60DC-PT-I	2906857	1
	120 V AC	TTC-6-MOV-C-120AC-PT-I	2906858	1
TERMITRAB complete, with screw connection technology				
	24 V DC	TTC-6-MOV-C-24DC-UT-I	2906837	1
	48 V DC	TTC-6-MOV-C-48DC-UT-I	2906838	1
	60 V DC	TTC-6-MOV-C-60DC-UT-I	2906839	1
	120 V AC	TTC-6-MOV-C-120AC-UT-I	2906840	1

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
		TERMITRAB complete, with Push-in connection technology		
	24 V DC	TTC-6-MOV-D-24DC-PT-I	2906859	1
TERMITRAB complete, with screw connection technology				
	24 V DC	TTC-6-MOV-D-24DC-UT-I	2906841	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
	End cover		
	TTC-6-LCP	2908729	50
Remote signaling set			
Push-in connection technology	TTC-6-FMRS-PT	2907811	1
Screw connection technology	TTC-6-FMRS-UT	2907810	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
	End cover		
	TTC-6-LCP	2908729	50
Remote signaling set			
Push-in connection technology	TTC-6-FMRS-PT	2907811	1
Screw connection technology	TTC-6-FMRS-UT	2907810	1

Single-stage protective devices TERMITRAB complete

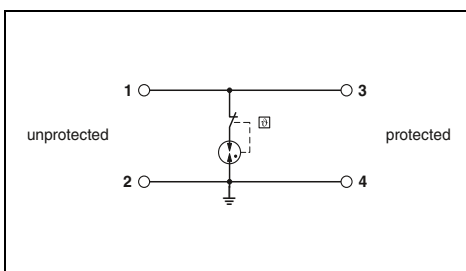
- Coarse surge protection, right at the building entrance, with an MCR cable
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Optional remote signaling module monitors up to 40 items, without additional wiring



**1-conductor
with grounded reference potential**



**2-conductor,
floating**



Technical data

Electrical data	... 24AC	... 110AC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	28 V DC / 36 V AC	- / 130 V AC
Rated current	1 A DC (60°C)	2 A (60°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) μ s	-	-
Protection level U_p	Core-Core Core-Ground	Core-Core Core-Ground
Core-Core	-	-
Core-Ground	5 kA	5 kA
Cut-off frequency f_g (3 dB)	Core-Core Core-Ground	Core-Core Core-Ground
Core-Core	-	-
Core-Ground	≤ 900 V (C3 - 100 A)	≤ 900 V (C3 - 100 A)
Resistance per path	Symmetrical in the 150 Ω system	Asymmetrical in the 150 Ω system
General data	typ. 25 MHz	typ. 25 MHz
Dimensions W/H/D	100 m Ω	100 m Ω
Connection data rigid / flexible / AWG	6.2 mm / 92 mm / 69.5 mm	6.2 mm / 92 mm / 69.5 mm
Temperature range	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Test standards	-40°C ... 85°C	-40°C ... 85°C
	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21

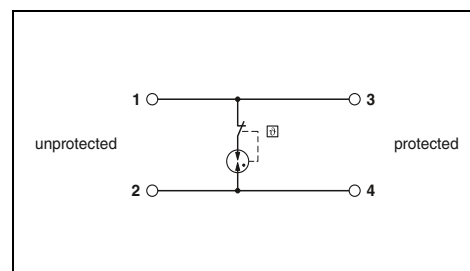
Ordering data

Description	Voltage U_N
TERMITRAB complete , with Push-in connection technology	24 V AC 60 V AC 110 V AC
TERMITRAB complete , with screw connection technology	24 V AC 60 V AC 110 V AC

Type	Order No.	Pcs./Pkt.
TTC-6-GDT-C-24AC-PT-I	2906860	1
TTC-6-GDT-C-110AC-PT-I	2906861	1
TTC-6-GDT-C-24AC-UT-I	2906842	1
TTC-6-GDT-C-110AC-UT-I	2906844	1

Accessories

End cover	TTC-6-LCP	2908729	50
Remote signaling set	TTC-6-FMRS-PT	2907811	1
Push-in connection technology	TTC-6-FMRS-UT	2907810	1
Screw connection technology			



Technical data

Electrical data	... 24AC	... 60AC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	28 V DC / 30 V AC	- / 75 V AC
Rated current	1 A DC (60°C)	2 A (60°C)
Pulse discharge current I_{imp} (10/350) μ s	-	-
Nominal discharge current I_n (8/20) μ s	5 kA	5 kA
Protection level U_p	Core-Core Core-Ground	Core-Core Core-Ground
Core-Core	-	-
Core-Ground	≤ 800 V (C3 - 25 A)	≤ 800 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 25 MHz	typ. 25 MHz
Resistance per path	100 m Ω	100 m Ω
General data	6.2 mm / 92 mm / 69.5 mm	6.2 mm / 92 mm / 69.5 mm
Dimensions W/H/D	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Connection data rigid / flexible / AWG	-40°C ... 85°C	-40°C ... 85°C
Temperature range	IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21
Test standards		

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-GDT-D-24AC-PT-I	2906862	1
TTC-6-GDT-D-60AC-PT-I	2906863	1
TTC-6-GDT-D-24AC-UT-I	2906845	1
TTC-6-GDT-D-60AC-UT-I	2906846	1

Accessories

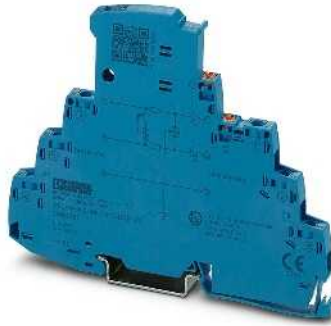
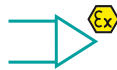
End cover	TTC-6-LCP	2908729	50
Remote signaling set	TTC-6-FMRS-PT	2907811	1
Push-in connection technology	TTC-6-FMRS-UT	2907810	1
Screw connection technology			

Surge protection and interference filters

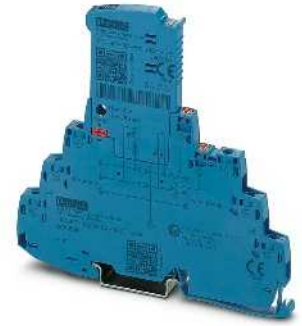
Surge protection for measurement and control technology

Potentially explosive applications TERMITRAB complete

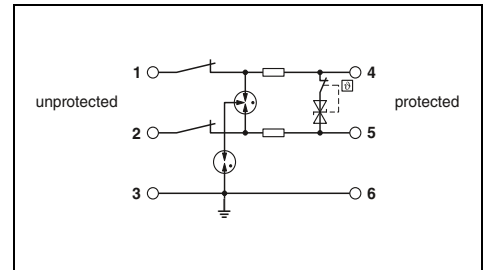
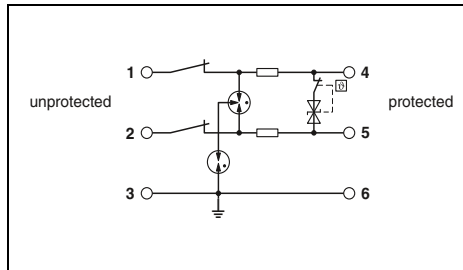
- One-piece or pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- With screw connection technology
- Integrated mechanical status indicator
- With knife disconnection
- Impedance-neutral insertion and removal
- Coded plug versions
- Plugs can be tested with CHECKMASTER 2



Double wire (loop), floating, intrinsically safe, one-piece, e.g., for 4 ... 20 mA current loop



Double wire (loop), floating, intrinsically safe, pluggable, e.g., for 4 ... 20 mA current loop



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core ≤ 55 V (C3 - 100 A)
	Core-Ground ≤ 1.4 kV (C3 - 100 A)
Cut-off frequency f_g (3 dB)	typ. 940 kHz
	Symmetrical in the 150 Ω system 1.65 Ω
Resistance per path	
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21
Safety data	
EC-type examination certificate in accordance with ATEX	BVS 16 ATEX E 125 X
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	negligible
Maximum input current I_i	400 mA (T4 / $\leq 50^\circ$ C)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	-

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	5 kA
	5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	≤ 55 V (C3 - 100 A)
	≤ 1.4 kV (C3 - 100 A)
Cut-off frequency f_g (3 dB)	typ. 940 kHz
	1.65 Ω
Resistance per path	
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21
Safety data	
EC-type examination certificate in accordance with ATEX	BVS 16 ATEX E 125 X
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	negligible
Maximum input current I_i	400 mA (T4 / $\leq 50^\circ$ C)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	-

Ordering data

Description	Voltage U_N
TERMITRAB complete , with screw connection technology	
With knife disconnection	24 V DC
Without knife disconnection	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6-1X2-M-EX-24DC-UT-I	2906820	1

Ordering data

Description	Voltage U_N
TERMITRAB complete , with screw connection technology	
With knife disconnection	24 V DC
Without knife disconnection	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-M-EX-24DC-UT-I	2906824	1
TTC-6P-1X2-EX-24DC-UT-I	1065312	1

Accessories

Replacement plug	
Remote signaling set	
Screw connection technology	
Separating plate	

Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-UT	2907810	1
TTC-EX-PP	1011977	10

Accessories

Replacement plug	
Remote signaling set	
Screw connection technology	
Separating plate	

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-EX-24DC-I-P	2907831	1
TTC-6-FMRS-UT	2907810	1
TTC-EX-PP	1011977	10

Potentially explosive applications PLUGTRAB PT-IQ

- Tailored to the special requirements of intrinsically safe circuits
- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 10 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- Base element remains an integral part of the installation
- Corresponding replacement plugs can be found on our website



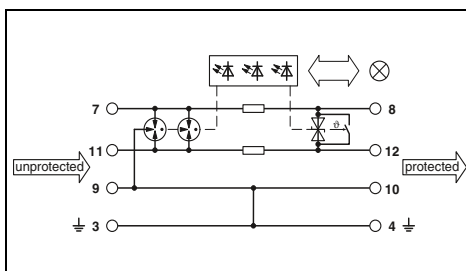
Double wire (loop), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

Ex: Ex IEC Ex



2 double wires (loops), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

Ex: Ex IEC Ex



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	350 mA
Pulse discharge current I_{imp} (10/350) μ s	2 kA
Nominal discharge current I_n (8/20) μ s	

Core-Core	10 kA
Core-Ground	10 kA
	20 kA

Total discharge current I_{total} (8/20) μ s	
Protection level U_p	
	Core-Core
	Core-Ground

Cut-off frequency f_g (3 dB)	typ. 1.1 MHz
	1.2 Ω
Resistance per path	
General data	

Dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 70°C
Test standards	EN 61643-21/A2 / IEC 61643-21/A2 / EN 61000-6-2 / EN 61000-6-3/A1

Safety data	BVS 14 ATEX E 020 X
EC-type examination certificate in accordance with ATEX	negligible
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	350 mA
Maximum input current I_i	30 V DC
Maximum input voltage U_i	1.2 W
Maximum input power P_i	

Ordering data

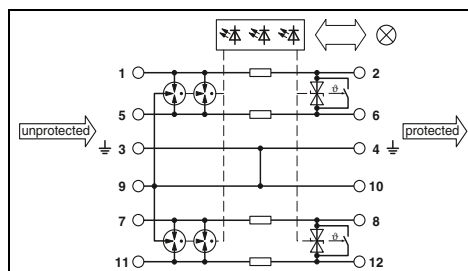
Description	Voltage U_N
MCR-PLUGTRAB, with screw connection technology	24 V DC

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2-EX-24DC-UT	2801512	1

Accessories

Replacement plug	24 V DC
PLUGTRAB, supply and remote signaling module	
Screw connection technology	

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2-EX-24DC-P	2801514	1
PT-IQ-PTB-UT	2800768	1



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	350 mA
Pulse discharge current I_{imp} (10/350) μ s	2 kA
Nominal discharge current I_n (8/20) μ s	

Core-Core	10 kA
Core-Ground	10 kA
	20 kA

Total discharge current I_{total} (8/20) μ s	
Protection level U_p	
	Core-Core
	Core-Ground

Cut-off frequency f_g (3 dB)	typ. 1.1 MHz
	1.2 Ω
Resistance per path	
General data	

Dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 70°C
Test standards	EN 61643-21 / IEC 61643-21 / EN 61000-6-2 / EN 61000-6-3/A1

Safety data	BVS 14 ATEX E 020 X
EC-type examination certificate in accordance with ATEX	negligible
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	350 mA
Maximum input current I_i	30 V DC
Maximum input voltage U_i	1.2 W
Maximum input power P_i	

Ordering data

Description	Voltage U_N
MCR-PLUGTRAB, with screw connection technology	24 V DC

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2-EX-24DC-UT	2801513	1

Accessories

Replacement plug	24 V DC
PLUGTRAB, supply and remote signaling module	
Screw connection technology	

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2-EX-24DC-P	2801515	1
PT-IQ-PTB-UT	2800768	1

Surge protection and interference filters

Surge protection for measurement and control technology

Potentially explosive applications SURGETRAB S-PT

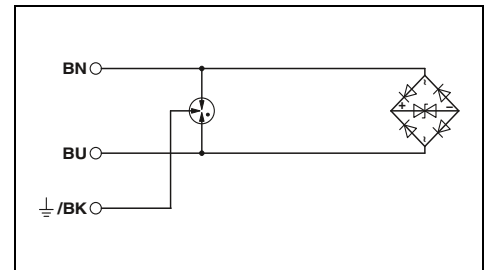
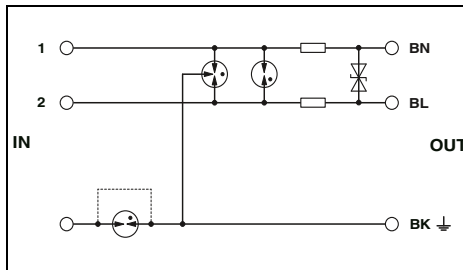
- Arresters in hexagonal tube with various outer threads
- **S-PT-EX(I)...** installation in the signal path feed-through
- **S-PT-EX, S-PT-2xEX...** installation in a separate cable gland parallel to the signal lines



Double wire (loop), intrinsically safe, e.g., for 4 ... 20 mA current loops



Double wire (loop), floating, intrinsically safe, encapsulated, without decoupling resistance



Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC
Rated current	350 mA (50°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA
Nominal discharge current I_n (8/20) μ s	10 kA
	Core-Core
	10 kA (per path)
Maximum permitted short-circuit current at installation location	350 mA
Total discharge current I_{total} (8/20) μ s	-
Max. discharge current I_{max} (8/20) μ s	10 kA (per path)
Protection level U_p	Core-Core
	≤ 50 V
	(C3 - 25 A)
	Core-Ground
	≤ 1.4 kV
	(C3 - 100 A)
Output voltage limitation at 1 kV/ μ s	Core-Core
	≤ 50 V
	Core-Ground
	≤ 1.4 kV (Direct grounding)
	2.2 Ω
Resistance per path	
General data	
Dimensions W/H/D	33.5 mm / 33.5 mm / 137 mm
Temperature range	-40°C ... 50°C
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11
Safety data	
EC-type examination certificate in accordance with ATEX	KEMA 06ATEX0002
Maximum inner capacity C_i	2 nF
Maximum inner inductance L_i	1 μ H
Maximum input current I_i	350 mA ($T_4 / \leq 50^\circ\text{C}$)
Maximum input voltage U_i	30 V
Maximum input power P_i	3 W

Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
36 V DC / 25 V AC	53 V DC / 37 V AC
-	-
1 kA	1 kA
260 A	170 A
10 kA	10 kA
1 A (non-Ex)	1 A (non-Ex)
20 kA	20 kA
20 kA	-
≤ 65 V	≤ 90 V
(C3 - 10 A)	(C3 - 10 A)
≤ 1.1 kV	≤ 1.1 kV
(C3 - 100 A)	(C3 - 100 A)
≤ 60 V	≤ 80 V
-	-
-	-
	28 mm / 28 mm / 79 mm
	-40°C ... 80°C (non-Ex)
	EN 61643-21 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-31 / IEC 60079-0
KEMA 09ATEX0028 X	KEMA 09ATEX0028 X
1.65 nF	1.14 nF
1 μ H	1 μ H
500 mA ($T_4 / \leq 75^\circ\text{C}$)	500 mA ($T_4 / \leq 75^\circ\text{C}$)
36 V DC	53 V DC
3 W	3 W

Ordering data

Description	Voltage U_N
SURGETRAB protective adapter for installation on measuring sensors for Ex protection zones	
Outer thread: M20 x 1.5	24 V DC
Outer thread: 1/2" 14 NPT	24 V DC
Outer thread: 3/4" 14 NPT	24 V DC
Outer thread: M20 x 1.5	48 V DC
Outer thread: 1/2" 14 NPT	48 V DC

Type	Order No.	Pcs./Pkt.
S-PT-EX(I)-24DC	2880671	1
S-PT-EX(I)-24DC-1/2"	2882572	1
S-PT-EX(I)-24DC-3/4"	2882585	1

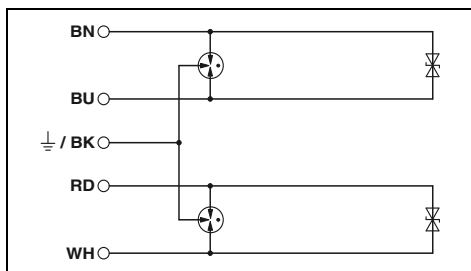
Ordering data

Type	Order No.	Pcs./Pkt.
S-PT-EX-24DC	2800034	1
S-PT-EX-24DC-1/2"	2800035	1
S-PT-EX-48DC	2800053	1
S-PT-EX-48DC-1/2"	2800054	1



2 double wires (loops), floating, intrinsically safe, encapsulated, without decoupling resistance

ERC
Ex:



Technical data

... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
36 V DC / 25 V AC	53 V DC / 37 V AC
-	-
1 kA	1 kA
260 A	170 A
10 kA	10 kA
1 A (non-Ex)	1 A (non-Ex)
20 kA	20 kA
-	-
≤ 50 V (C3 - 10 A)	≤ 80 V (C3 - 10 A)
≤ 1.1 kV (C3 - 100 A)	≤ 1.1 kV (C3 - 100 A)
≤ 50 V	≤ 80 V
-	-
-	-

28 mm / 28 mm / 79 mm
-40°C ... 80°C (non-Ex)

EN 61643-21 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-31 / IEC 60079-0

KEMA 09ATEX0028 X	KEMA 09ATEX0028 X
1.65 nF	1.14 nF
1 μH	1 μH
500 mA (T4 / ≤ 75°C)	500 mA (T4 / ≤ 75°C)
36 V DC	53 V DC
3 W	3 W

Ordering data

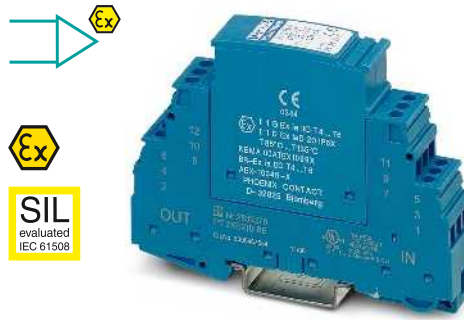
Type	Order No.	Pcs./Pkt.
S-PT-2XEX-24DC	2800040	1
S-PT-2XEX-24DC-1/2"	2800041	1
S-PT-2XEX-48DC	2800038	1
S-PT-2XEX-48DC-1/2"	2800039	1

Surge protection and interference filters

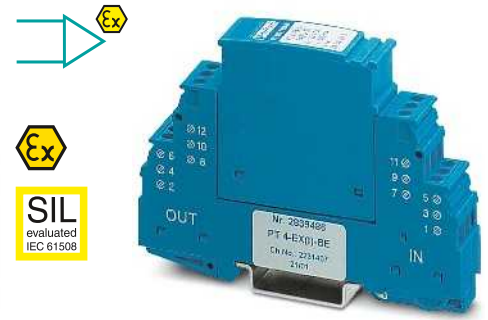
Surge protection for measurement and control technology

Potentially explosive applications PLUGTRAB PT

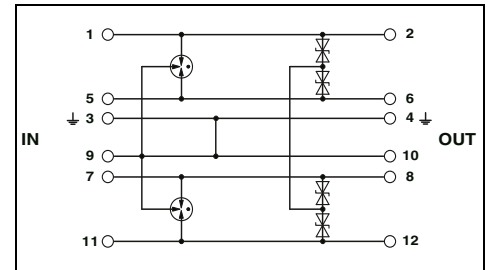
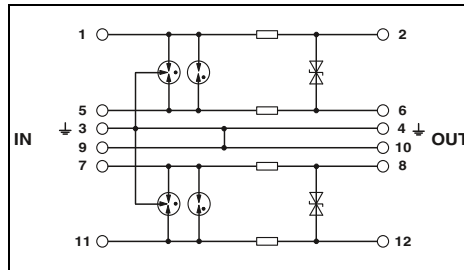
- Tailored to the special requirements of intrinsically safe circuits
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2



2 double wires (loops), intrinsically safe, e.g., for 4 ... 20 mA current loops



4-conductor, intrinsically safe, impedance-free, e.g., for temperature measurements



Technical data

Technical data

Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_C	
Rated current	
Pulse discharge current I_{imp} (10/350) μ s	
Nominal discharge current I_n (8/20) μ s	
Total discharge current I_{total} (8/20) μ s	
Max. discharge current I_{max} (8/20) μ s	
Protection level U_p	
Output voltage limitation at 1 kV/ μ s	
Cut-off frequency f_g (3 dB)	
Resistance per path	
General data	
Dimensions W/H/D	
Connection data rigid / flexible / AWG	
Temperature range	
Test standards	
Safety data	
EC-type examination certificate in accordance with ATEX	
Maximum inner capacity C_i	
Maximum inner inductance L_i	
Maximum input current I_i	
Maximum input voltage U_i	
Maximum input power P_i	

C1 / C2 / C3 / D1	10 kA
30 V DC / 21 V AC	10 kA
325 mA (40°C)	20 kA
2 kA	20 kA (in total)
Core-Core	≤ 50 V
Core-Ground	(C3 - 25 A)
	≤ 1 kV
	(C2 - 10 kV / 5 kA)
Core-Core	≤ 45 V
Core-Ground	≤ 1 kV
Symmetrical in the 50 Ω system	typ. 4.5 MHz
	2.2 Ω
Dimensions W/H/D	17.5 mm / 44.8 mm / 51.7 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 61643-21 / IEC 60079-0
EC-type examination certificate in accordance with ATEX	KEMA 00ATEX1099 X
Maximum inner capacity C_i	1.3 nF
Maximum inner inductance L_i	1 μ H
Maximum input current I_i	325 mA (T4 / ≤ 80°C)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	3 W

C1 / C2 / C3 / D1	308 A
30 V DC / 21 V AC	10 kA
500 mA (40°C)	20 kA
1 kA	20 kA (in total)
Core-Core	≤ 50 V
Core-Ground	(C3 - 25 A)
	≤ 1 kV
	(C2 - 10 kV / 5 kA)
Core-Core	≤ 45 V
Core-Ground	≤ 1 kV
Symmetrical in the 50 Ω system	typ. 7 MHz
	0 Ω
Dimensions W/H/D	17.7 mm / 45 mm / 52 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 61643-21 / IEC 60079-0
EC-type examination certificate in accordance with ATEX	KEMA 00ATEX1099 X
Maximum inner capacity C_i	1.1 nF
Maximum inner inductance L_i	1 μ H
Maximum input current I_i	500 mA (T4 / ≤ 80°C)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	850 mW (T4 / ≤ 80°C)

Ordering data

Ordering data

Description	Voltage U_N
PLUGTRAB plug, with protective circuit for plugging into base element PT	24 V DC
PLUGTRAB base element, for mounting on NS 35	24 V DC

Type	Order No.	Pcs./Pkt.
PT 2XEX(I)-24DC-ST	2838225	10
PT 2XEX(I)-BE	2839279	10

Type	Order No.	Pcs./Pkt.
PT 4-EX(I)-24DC-ST	2839253	10
PT 4-EX(I)-BE	2839486	10

Accessories

Accessories

Shield fast connection	
For \varnothing 3-6 mm	
For \varnothing 5-10 mm	

SSA 3-6	2839295	10
SSA 5-10	2839512	10

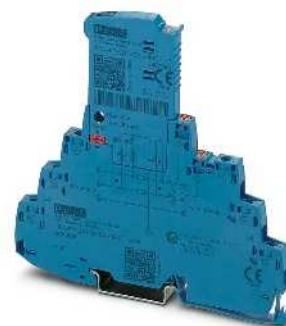
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Potentially explosive applications TERMITRAB complete

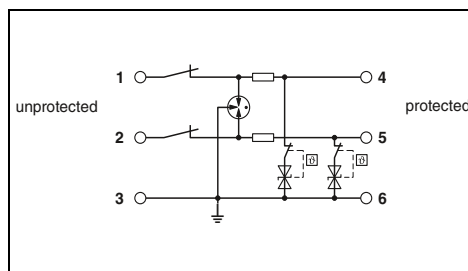
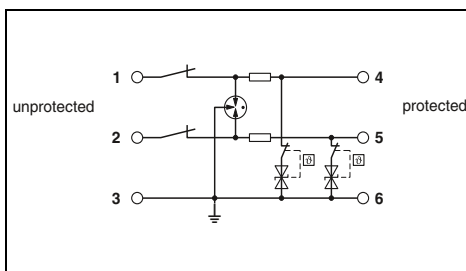
- One-piece or pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- With screw connection technology
- Integrated mechanical status indicator
- With knife disconnection
- Impedance-neutral insertion and removal
- Coded plug versions
- Plugs can be tested with CHECKMASTER 2



2-conductor with common reference potential, intrinsically safe, one-piece



2-conductor with common reference potential, intrinsically safe, pluggable



Technical data

Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	

Core-Core	-
Core-Ground	5 kA
	10 kA

Total discharge current I_{total} (8/20) μ s	
Protection level U_p	

Core-Core	-
Core-Ground	≤ 50 V (C3 - 100 A)

Cut-off frequency f_g (3 dB)	
Resistance per path	1.65 Ω

Symmetrical in the 150 Ω system

General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21

Safety data	
EC-type examination certificate in accordance with ATEX	BVS 16 ATEX E 125 X
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	negligible
Maximum input current I_i	400 mA ($T_4 / \leq 50^\circ\text{C}$)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	-

Core-Core	-
Core-Ground	5 kA
	10 kA

Total discharge current I_{total} (8/20) μ s	
Protection level U_p	

Core-Core	-
Core-Ground	≤ 50 V (C3 - 100 A)

Cut-off frequency f_g (3 dB)	
Resistance per path	1.65 Ω

General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21

Safety data	
EC-type examination certificate in accordance with ATEX	BVS 16 ATEX E 125 X
Maximum inner capacity C_i	negligible
Maximum inner inductance L_i	negligible
Maximum input current I_i	400 mA ($T_4 / \leq 50^\circ\text{C}$)
Maximum input voltage U_i	30 V DC
Maximum input power P_i	-

Ordering data

Ordering data

Description	Voltage U_N
TERMITRAB complete, with screw connection technology	24 V DC

Type	Order No.	Pcs./Pkt.
TTC-6-2X1-M-EX-24DC-UT-I	2906821	1

Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-M-EX-24DC-UT-I	2906825	1

Accessories

Accessories

Replacement plug	
Remote signaling set	
Screw connection technology	
Separating plate	

TTC-6-FMRS-UT	2907810	1
TTC-EX-PP	1011977	10

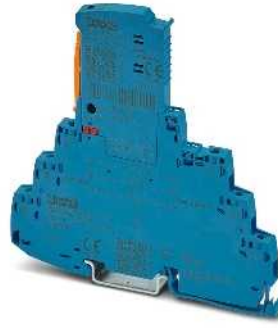
TTC-6P-2X1-EX-24DC-I-P	2907832	1
TTC-6-FMRS-UT	2907810	1
TTC-EX-PP	1011977	10

Surge protection and interference filters

Surge protection for measurement and control technology

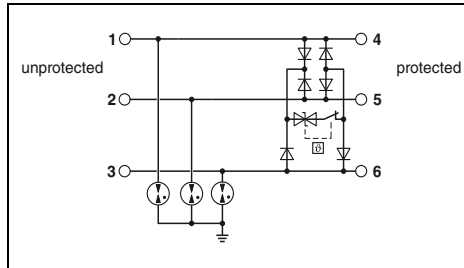
Potentially explosive applications TERMITRAB complete

- Pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- Impedance-neutral insertion and removal
- Coded plug versions
- Plugs can be tested with CHECKMASTER 2



3-conductor, intrinsically safe, impedance-free, e.g., for temperature measurements

Ex:



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		30 V DC
Rated current		5 A (55°C)
Pulse discharge current I_{imp} (10/350) μ s		0.5 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	0.5 kA
	Core-Ground	5 kA
		10 kA
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
	Core-Core	≤ 68 V
		(C1 - 1 kV/500 A)
	Core-Ground	≤ 700 V
		(C1 - 1 kV/500 A)
Cut-off frequency f_g (3 dB)		typ. 60 MHz
	Symmetrical in the 150 Ω system	0.1 Ω
Resistance per path		
General data		
Dimensions W/H/D		6.2 mm / 105.8 mm / 100 mm
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 85°C
Test standards		EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21
Safety data		
EC-type examination certificate in accordance with ATEX		BVS 16 ATEX E 125 X
Maximum inner capacity C_i		negligible
Maximum inner inductance L_i		negligible
Maximum input current I_i		400 mA ($T_4 / \leq 50^\circ\text{C}$)
Maximum input voltage U_i		30 V DC
Maximum input power P_i		-

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology	24 V DC	TTC-6P-3-EX-24DC-UT-I	1064665	1

Accessories

Replacement plug	TTC-6P-3-EX-24DC-I-P	1064663	1
Remote signaling set	TTC-6-FMRS-UT	2907810	1
Separating plate	TTC-EX-PP	1011977	10

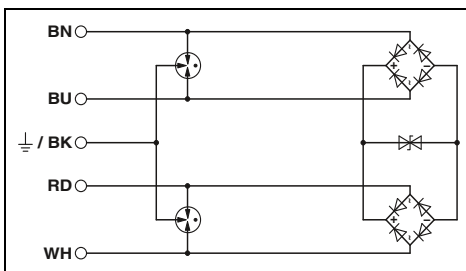
Potentially explosive applications
SURGETRAB S-PT

- Arresters in hexagonal tube with various outer threads
- **S-PT-4-EX** installation in a separate cable gland parallel to the signal cables
- **S-PT-EX...** devices are approved for Ex i and Ex d measuring probes



4-conductor with common reference potential, intrinsically safe, encapsulated, without decoupling resistance

ERC
Ex: IEC



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		36 V DC / 25 V AC
Pulse discharge current I_{imp} (10/350) μ s		1 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	260 A
	Core-Ground	10 kA
Maximum permitted short-circuit current at installation location		1 A (non-Ex)
Total discharge current I_{total} (8/20) μ s		20 kA
Max. discharge current I_{max} (8/20) μ s		-
Protection level U_p		
	Core-Core	≤ 65 V (C3 - 10 A)
	Core-Ground	≤ 1.1 kV (C3 - 100 A)
Output voltage limitation at 1 kV/ μ s		
	Core-Core	≤ 60 V
	Core-Ground	-
General data		
Dimensions W/H/D		28 mm / 28 mm / 79 mm
Temperature range		-40°C ... 80°C (non-Ex)
Test standards		EN 61643-21 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-31 / IEC 60079-0
Safety data		
EC-type examination certificate in accordance with ATEX		KEMA 09ATEX0028 X
Maximum inner capacity C_i		1.65 nF
Maximum inner inductance L_i		1 μ H
Maximum input current I_i		500 mA ($T_4 \leq 75^\circ\text{C}$)
Maximum input voltage U_i		36 V DC
Maximum input power P_i		3 W

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SURGETRAB protective adapter for installation on measuring sensors for Ex protection zones				
Outer thread: M20 x 1.5	24 V DC	S-PT-4-EX-24DC	2800036	1
Outer thread: 1/2" 14 NPT	24 V DC	S-PT-4-EX-24DC-1/2"	2800037	1



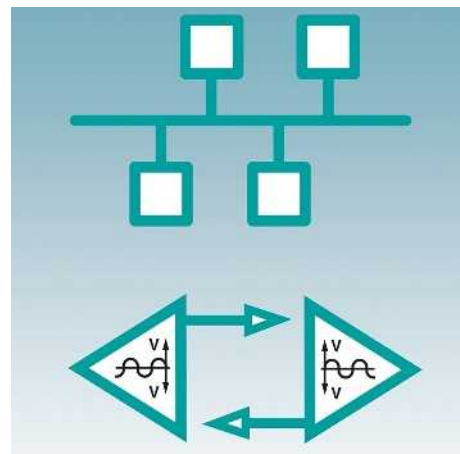
Low signal levels at high frequencies require special protective circuits in data processing and telecommunications. The arresters must guarantee short response times to quickly limit the surge voltages to safe values, without impairing signal quality. In addition, the protective devices support system-specific connections, such as RJ45 or D-SUB connectors, and all types of network topology.

DATATRAB DT – The all-round solution for protecting data interfaces

DATATRAB DT reliably protects high-speed networks against damage caused by surge voltages. DT-LAN-CAT.6+ supports various data protocols at very high transmission speeds, such as Ethernet, Power over Ethernet (PoE), ISDN, token ring, and DS1, in a single device.

The housing has a ground connection snap-on foot into which the ground connection cover with equipotential bonding cable is inserted. DATATRAB can be therefore used either as an adapter or a DIN rail module after removing the ground connection cover.

i Your web code: [#0145](#)



Versatile

The DATATRAB product range can offer a suitable protective device for many and varied applications. The protective devices are simply installed between the signal paths with interfaces for RJ11/12, RJ45, D-SUB, or screw connection.

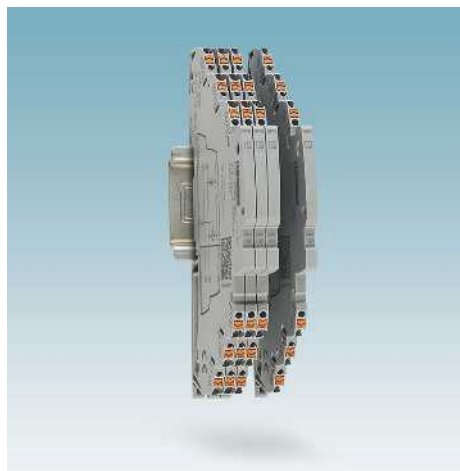
Speed

Used in EDP systems with a transmission speed of up to 10 Gbps (CAT6/CLASS E₂) and in telecommunications networks with 50 Mbps (VDSL).

Use

Protective devices suitable for all common applications including Ethernet, token ring, ISDN, DS1, DSL, analog telecommunications, RS-485, V.24, V.11, etc. are available.

The circuit breakers also support Power over Ethernet (PoE+) in Mode A and B versions.



The narrowest surge protection

Starting from a width of 3.5 mm, TERMITRAB complete is the world's narrowest surge protection solution for MCR and fieldbus applications.

COMTRAB modular

For protecting telecommunications systems

- Direct insertion in LSA-PLUS marshaling panels
- Coarse protection magazines with gas-filled surge arrester
- Modular miniature connectors with combined coarse and fine protection elements for optimum protection

Other designs

Other application-specific protective devices include:

- Two-piece pluggable protective devices in the PLUGTRAB product range
- Combined adapters for the power supply and MAINTRAB interfaces

Surge protection and interference filters

Surge protection for information technology and telecommunications










Selection guide

Explanation of the IEC categories		
LPZ zone	Test category for SPD in acc. with IEC 61643-21	Test class for SPD in acc. with IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

Interface-based product selection for surge protection

The STOP-IT (Selection of Protection for Information Technology) selection guide provides support in choosing your surge protection solution for a variety of additional interfaces in information and MCR technology.

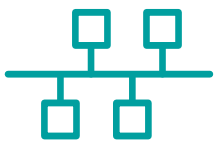




























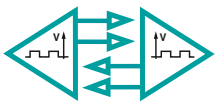














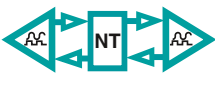



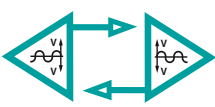






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	DIN rail mounting
	Push-in connection
	Screw connection
	Schuko plug-in connection
	RJ45 plug-in connection
	RJ12 plug-in connection
	TAE plug-in connection
	Coaxial plug-in connection
	D-SUB plug-in connection
1)	Also available with screw connection technology



Note

Products bearing this stamp (plug elements) can be tested with CHECKMASTER 2.

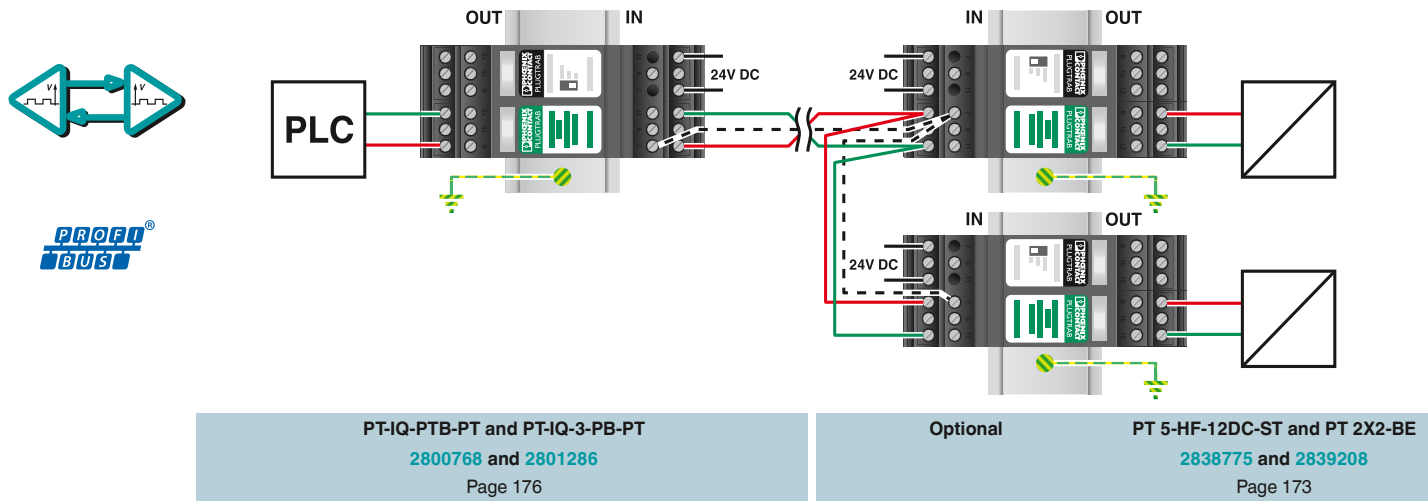
Technology	Interface	Mounting type/ connection method		
	CAN bus/CANopen®	 		
	DeviceNet™	 		
	Ethernet	 		
	Gigabit Ethernet (1/10 GBase-T)	 		
	FOUNDATION Fieldbus H1	 		
	FOUNDATION Fieldbus Ex (i)	 		
	INTERBUS Inline (analog I/Os)	  1)		
	INTERBUS Inline (digital I/Os)	  1)		
	INTERBUS remote bus	 		
	LON (Works)	  1)		
	PROFIBUS DP (FMS)	  1)		
	PROFIBUS PA (FMS)	 		
	PROFINET	 		
	RS-422A, V.11, X.27, RS-423A	  1)		
	RS-485	  1)		
	RS-232-C/V.24	   1)		
	TTY, 0(4) - 20 mA	 1)		
		ADSL 2+, T-DSL- HDSL, VDSL, analog phone	  1) LSA	
		DSL broadband (coax)	 	
		ISDN (S ₀ and S _{2M} bus)	 LSA  	
		ISDN (U _{k0})	  / 	
			SHDSL	LSA   / 
				  / 

IEC category	Protected wires	Surge protective device (SPD)	Order No.	Page
D1/C2/C1	3	PT-IQ-3-HF-12DC-UT	2800786	176
T3	2	PLT-SEC-T3-24-FM-UT	2905223	82
D1/C2/C1	3	PT-IQ-3-HF-12DC-UT	2800786	176
T3	2	PLT-SEC-T3-24-FM-UT	2905223	82
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	166
C2/C1	24 x 8	D-LAN-19"-24	2838791	167
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	166
D1/C2/C1	4	PT 2X2-FF-ST + PT 4-BE	2800755 + 2839402	185
D1/C2/C1	2	TTC-6P-1X2-M-EX-24DC-UT-I	2906824	152
T3	2	PLT-SEC-T3-24-FM-UT	2905223	82
D1/C2/C1	4	PT-IQ-2X2-24DC-PT	2801263	121
D1/C2/C1	5	PT-IQ-4X1-24DC-PT	2801271	133
D1/C2/C1	5	DT-UFB-IB-RBI	2800055	183
	5	DT-UFB-IB-RB0	2800056	183
D1/C2/C1	2	PT-IQ-1X2-48DC-PT	2801257	120
D1/C2/C1	3	TTC-6P-3-HF-M-12DC-PT-I	2906756	171
		PT-IQ-3-PB-PT	2801286	172
C1	2	D-UFB-PB	2880642	179
D1/C2/C1	2	TTC-6P-3-HF-F-M-EX-24DC-UT-I	2906828	181
	4	PT 4-EX(I)-24DC-ST + PT 4-EX(I)-BE	2839253 + 2839486	156
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	166
D1/C2/C1	5	PT-IQ-5-HF+F-12DC-PT	2801295	173
D1/C2/C1	3	TTC-6P-3-HF-F-M-12DC-PT-I	2906796	169
	5	PT-IQ-5-HF+F-12DC-PT	2801295	173
D1/C2/C1	5	DT-UFB-485/BS	2920612	173
C2/C1	9	DT-UFB-V24/S-9-SB	2803069	168
D1/C2/C1	3	TTC-6P-3-HF-F-M-12DC-PT-I	2906796	169
D1/C2/C1	4	PT-IQ-2X2-24DC-PT	2801263	121
D1/C2/C1	4	DT-TELE-RJ45	2882925	186
D1/C2/C1	2	PT-IQ-1X2-TELE-PT	2801290	187
D1/C2/C1	2	CTM 1X2-110AC + CTM 10-MAG	2838539 + 2838610	190
D1/C2/C1	4	TAE-TRAB FM-NFN-AP	2749628	189
D1/C2/C1 & T3	2	MNT-TEL... / MNT-TAE	2882404 / 2882394	89
D1/C2/C1	2	C-TV-SAT	2856993	205
D1/C2/C1 & T3	2	MNT-TV-SAT D/WH	2882297	89
D1/C2/C1	2 x 2	CTM ISDN (2x) + CTM 10-MAG	2838555 + 2838610	191
D1/C2/C1	4	DT-LAN-CAT.6+	2881007	166
D1/C2/C1	4	DT-TELE-RJ45	2882925	186
D1/C2/C1	2	PT 2-TELE	2882828	188
D1/C2/C1	2	CTM 1X2-110AC + CTM 10-MAG	2838539 + 2838610	190
D1/C2/C1 & T3	2	MNT-TEL... / MNT-TAE	2882404 / 2882394	89
D1/C2/C1	4	DT-TELE-SHDSL	2801593	186

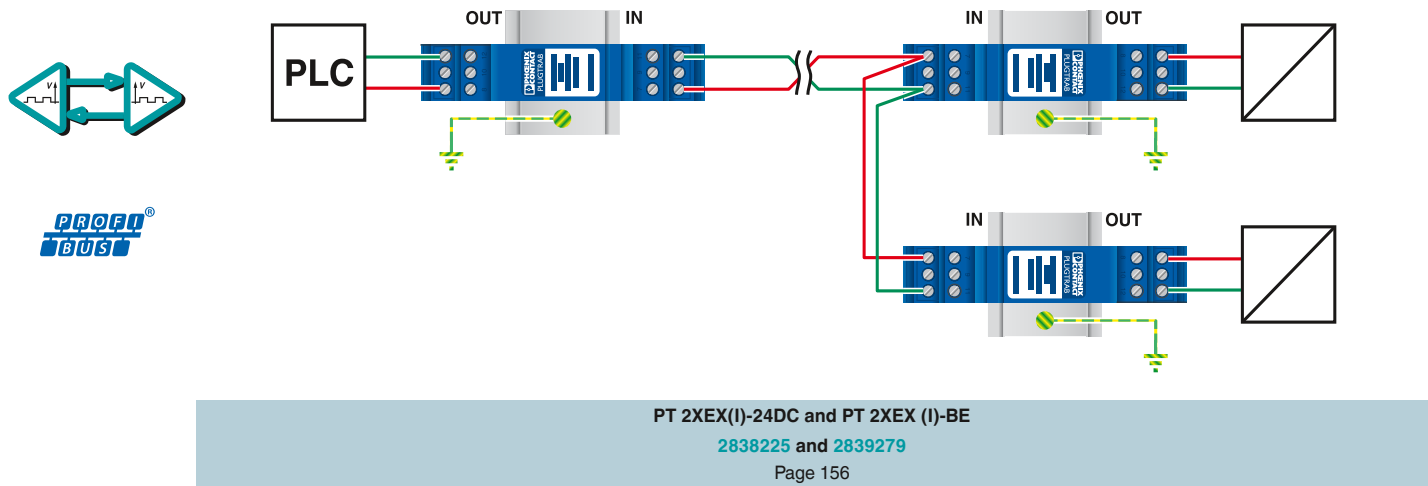
Surge protection and interference filters

Surge protection for information technology and telecommunications

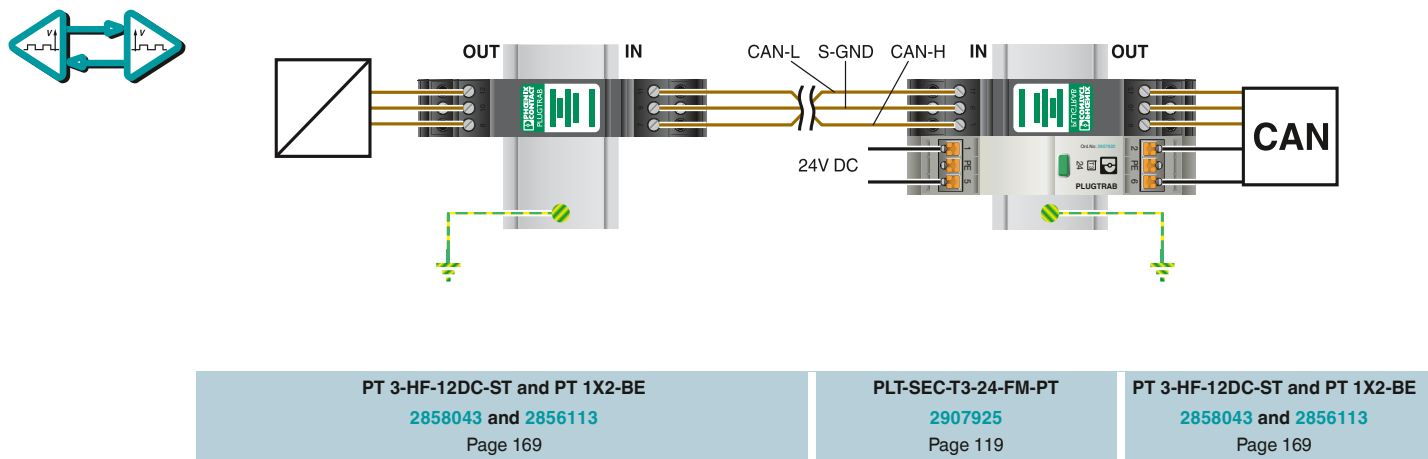
Protection of PROFIBUS DP



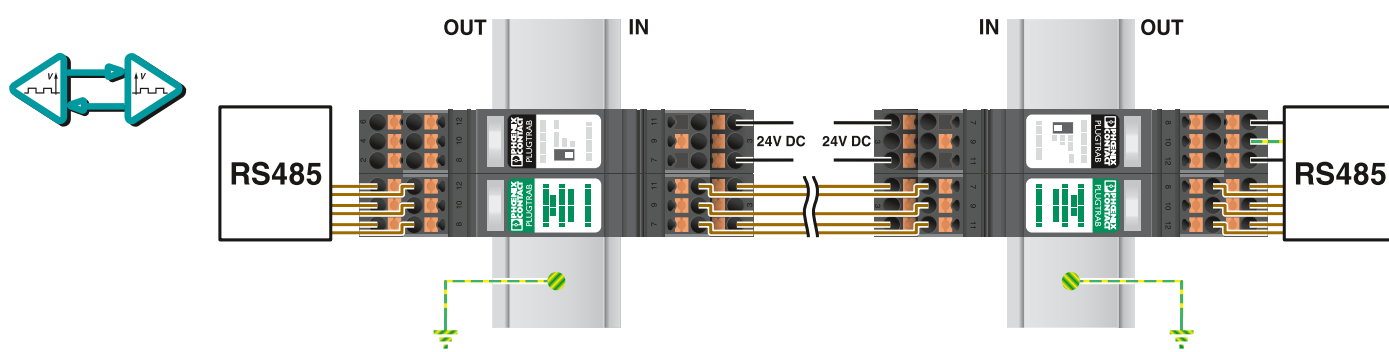
Protection of PROFIBUS PA



Protection of CANopen®/DeviceNet™



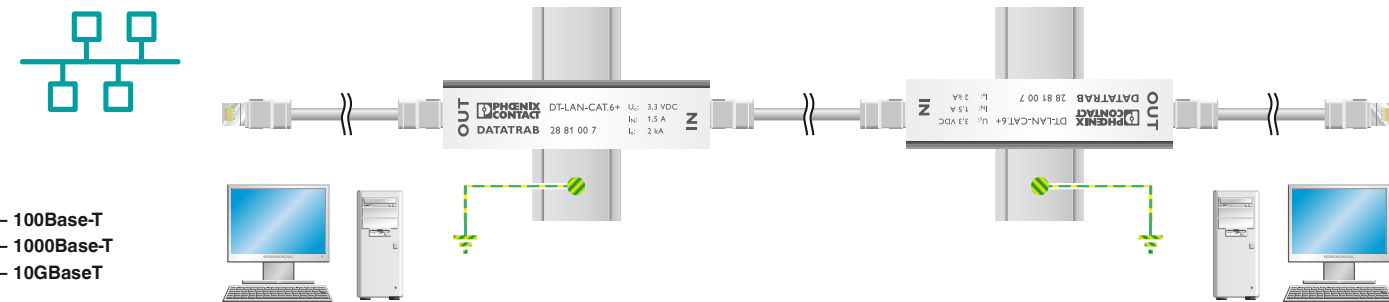
Protection of an RS-485 interface



PT-IQ-PTB-PT and PT-IQ-5-HF+F-12DC-PT
 2801296 and 2801295
 Page 173

Optional PT 5-HF-12DC-ST and PT 2X2+F-BE
 2838775 and 2839224
 Page 173

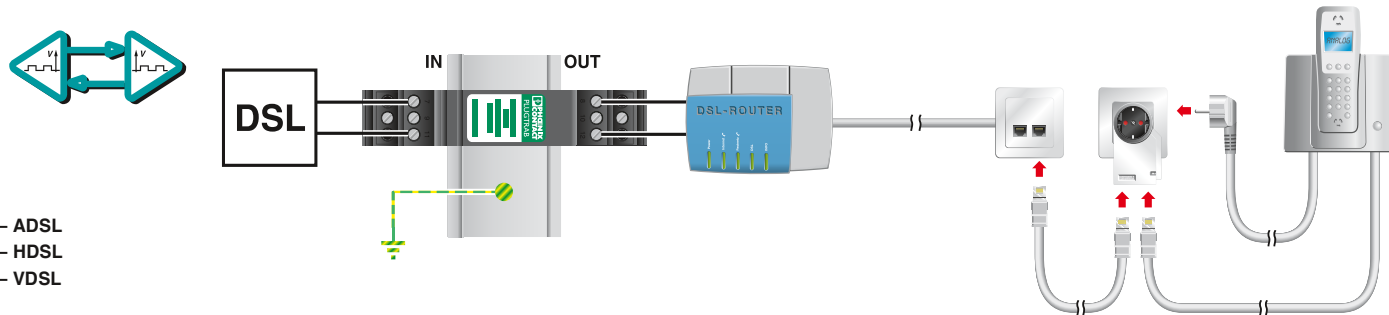
Protection of an Ethernet interface (including PoE)



- 100Base-T
- 1000Base-T
- 10GBase-T

DT-LAN-CAT.6+
 2881007
 Page 166

Protection of a DSL interface



- ADSL
- HDSL
- VDSL

PT 2-TELE
 2882828
 Page 188

MNT-TAE D/WH
 2882394
 Page 88

Surge protection and interference filters

Surge protection for information technology and telecommunications

Ethernet/PROFINET networks with twisted pair cabling

DT-LAN-CAT.6+

- Suitable for category 6 high-speed data networks
- Secure data transmission up to 10 Gbps
- Protective adapter for eight signal paths via RJ45 connector
- Can be installed in a control cabinet by removing a ground connection adapter

D-LAN-CAT.5-FP

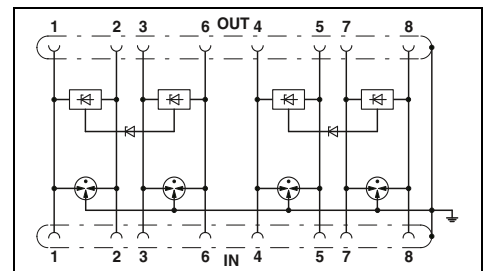
- Suitable for category 5 data networks
- Secure data transmission up to 1 Gbps
- Protective adapter for eight signal paths via RJ45 connector

D-LAN-19"

- 19" rack for installation in storey distributors
- Up to 24 ports with RJ45 connection
- Secure data transmission up to 1 Gbps
- Protection of all eight signal wires of the data cable
- Indirect grounding via a gas-filled surge arrester in the housing
- Direct grounding via a connection on the housing



For LAN interfaces (Class E_A/CAT 6) including PoE+ and ISDN S₀ protection



Electrical data	
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U _c	≤ 1.5 A (25°C)
Rated current	
Nominal discharge current I _n (8/20) μs	Core-Core 100 A
	Core-Ground 2 kA (per signal pair)
	10 kA
Total discharge current I _{total} (8/20) μs	Core-Core ≤ 9 V (B2 - 1 kV / 25 A)
Protection level U _p	Core-Ground ≤ 900 V (B2 - 4 kV / 100 A)
	Core-Core ≤ 9 V
Output voltage limitation at 1 kV/μs	Core-Ground ≤ 700 V
	≤ 1 dB (up to 100 MHz/direct measuring)
Input attenuation aE (typical)	Symmetrical -
Cut-off frequency f _g (3 dB)	
In a 100 Ω system	
General data	
Temperature range	-40°C ... 70°C
Connection method	RJ45
Test standards	
	IEC 61643-21 / EN 50173-1 / ISO/IEC 11801-Am.1

Technical data		
B2 / C1 / C2 / C3 / D1		
≤ 1.5 A (25°C)		
Core-Core	100 A	
Core-Ground	2 kA (per signal pair)	
	10 kA	
Core-Core	≤ 9 V (B2 - 1 kV / 25 A)	
Core-Ground	≤ 900 V (B2 - 4 kV / 100 A)	
Core-Core	≤ 9 V	
Core-Ground	≤ 700 V	
	≤ 1 dB (up to 100 MHz/direct measuring)	
Symmetrical	-	
	-40°C ... 70°C	
	RJ45	
	IEC 61643-21 / EN 50173-1 / ISO/IEC 11801-Am.1	

Description	
DATATRAB adapter, protective adapter to be inserted into the data line	
DATATRAB, for use in Ethernet, token ring, FDDI/CDDI in acc. with Cat.D/CAT5 EN 50173 (1000Base-T)	
	24 ports
	20 ports
	16 ports
	12 ports
	8 ports
	4 ports
Surge protection PCB as replacement or for retrofitting in D-LAN-19" ... products, incl. RJ45 female connector	
	4 ports

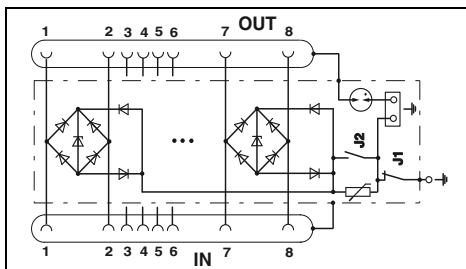
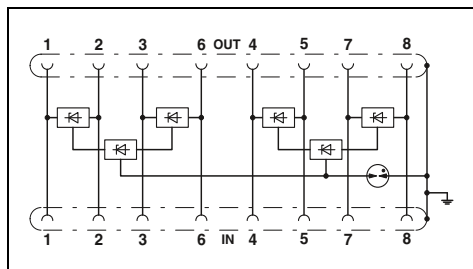
Ordering data		
Type	Order No.	Pcs./Pkt.
DT-LAN-CAT.6+	2881007	1



For LAN interfaces (Class D/CAT 5) including PoE+ and ISDN S₀ protection



For data interfaces, with RJ45 connection Class D/CAT5e



Technical data

B2 / C1
± 5 V DC
-
350 A
350 A
-
≤ 35 V (C1 - 700 V/350 A)
≤ 700 V (C1 - 700 V/350 A)
≤ 25 V
≤ 750 V
≤ 1 dB (100 MHz/100 Ω)
> 100 MHz
-40°C ... 85°C
RJ45
IEC 61643-21/A1 / GB/T 18802.21 / EN 61643-21/A1

Technical data

C1 / C2 / C3 / B3
6 V DC
1.5 A (25°C)
350 A
350 A
10 kA
≤ 50 V (C1 - 500 V / 250 A)
≤ 40 V (C1 - 500 V / 250 A (J2 ON))
≤ 20 V
≤ 30 V (J2 plugged)
typ. 1 dB (≤ 100 MHz)
> 100 MHz
-40°C ... 80°C
RJ45
IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
D-LAN-CAT.5-FP	2800723	1

Ordering data

Type	Order No.	Pcs./Pkt.
D-LAN-19"-24	2838791	1
D-LAN-19"-20	2880134	1
D-LAN-19"-16	2880147	1
D-LAN-19"-12	2880150	1
D-LAN-19"-8	2880163	1
D-LAN-19"-4	2880176	1
D-LAN-19"-D-P	2880192	1

Surge protection and interference filters

Surge protection for information technology and telecommunications

V.24/RS-232 interfaces

DT-UFB-V24/S

- Connection: D-SUB 9
- For data and handshake cables

Pin assignment DT-UFB-V24/S-9-SB

- 1, 2, 3, 4, 6, 7, 8, 9 Data lines
- 5 Signal ground (Ground)

PLUGTRAB PT 3-HF-12DC

- Connection: Screw terminal blocks
- For high transmission speeds
- High discharge capacity
- Plugs can be tested with CHECKMASTER 2

Pin assignment PT 3-HF-12DC:

- 7.11 Data lines
- 9 Signal ground (Ground)
- 3 \perp

Note:

PT .x.+F-BE: connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.

PLUGTRAB PT-IQ 3-HF-12DC

- Connection: Push-in or screw connection technology
- For high transmission speeds
- High discharge capacity
- Multi-stage, floating remote signaling
- Group message via supply and remote signaling module

Pin assignment PT-IQ 3-HF-12DC

- 7.11 Data lines
- 9 Signal ground (Ground)
- 3 \perp

TERMITRAB complete TTC-6P-3-HF..

- Pluggable surge protection
- Overall width of just 6.2 mm
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With knife disconnection
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2

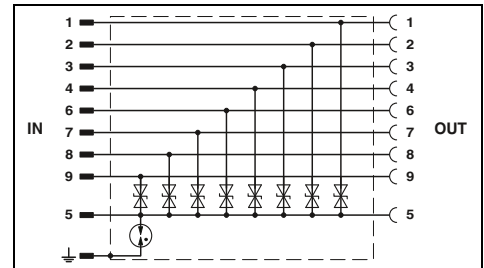
Pin assignment of TTC-6P-3-HF..

- 1,2 Data cables
- 3 Signal ground (Ground)



Protective adapter with 9-pos. D-SUB

Total width 25 mm



Technical data

Electrical data		
IEC test classification/EN type		B2 / C1 / C2 / C3
Maximum continuous operating voltage U_c		15 V DC / 10 V AC
Rated current		≤ 1 A (25°C)
Nominal discharge current I_n (8/20) μ s		
	Core-Ground	≤ 250 A
	Core-GND	≤ 250 A
		5 kA
		-
	Core-Core	≤ 55 V (C1 - 250 A)
	Core-Ground	≤ 450 V (C1 - 250 A)
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
Cut-off frequency f_g (3 dB)		
In a 100 Ω system	Symm. / asymm. (PE)	typ. 2.5 MHz / -
In a 100 Ω system	Symm. / asymm. (GND)	typ. 2.5 MHz / typ. 1.3 MHz
In a 150 Ω system	Symm. / asymm. (PE)	typ. 2.5 MHz / -
In a 150 Ω system	Symm. / asymm. (GND)	typ. 2.5 MHz / typ. 1.3 MHz
General data		
Dimensions W/H/D		25 mm / 102 mm / 63.5 mm
Temperature range		-40°C ... 85°C
Connection method		D-SUB-9
Test standards		
		DIN EN 61643-21 / IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-V24/S-9-SB	2803069	1

Accessories

PLUGTRAB, supply and remote signaling module		
	Push-in connection technology	
	Screw connection technology	
Marking material		



Pluggable arrester with screw connection, for three conductors, with common reference potential

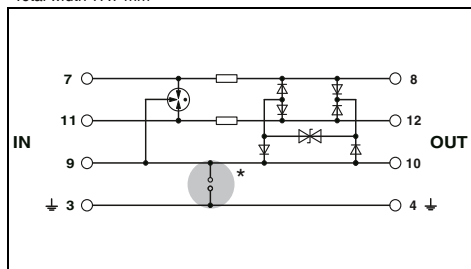


3-conductor protection for fieldbus and serial interface, connection 9/10 grounded via gas-filled surge arrester



3-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, pluggable

Total width 17.7 mm



Technical data

C1 / C2 / C3 / D1
14 V DC / 9.8 V AC
450 mA (45°C)

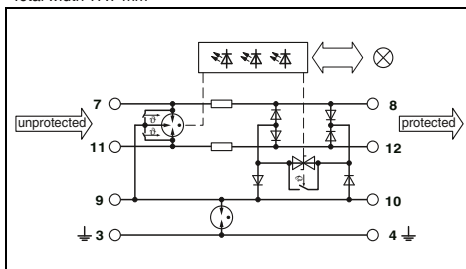
10 kA
10 kA
20 kA

≤ 50 V (C3 - 25 A)
≤ 50 V (C3 - 25 A)

typ. 60 MHz / -
typ. 60 MHz / -
- / -
- / -

17.7 mm / 45 mm / 52 mm
-40°C ... 85°C
Screw connection
(in connection with the base element)
EN 61643-21/A1 / IEC 61643-21/A1

Total width 17.7 mm



Technical data

C1 / C2 / C3 / D1
15 V DC / 10 V AC
600 mA (40°C)

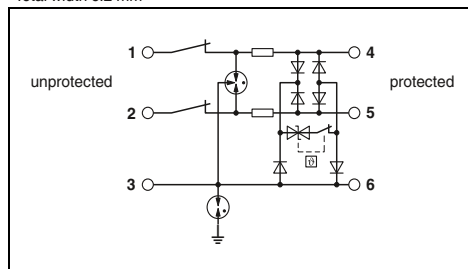
10 kA
-
20 kA

≤ 40 V (C3 - 25 A)
≤ 900 V (C3 - 25 A)

- / -
- / -
typ. 60 MHz / -
typ. 60 MHz / typ. 60 MHz

17.7 mm / 91.1 mm / 77.5 mm
-40°C ... 70°C
Screw connection
IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3

Total width 6.2 mm



Technical data

C1 / C2 / C3 / D1
15 V DC / 10 V AC
600 mA (56°C)

5 kA
5 kA
10 kA

≤ 145 V (C1 - 1 kV/500 A)
≤ 750 V (C1 - 1 kV/500 A)

- / -
- / -
typ. 60 MHz / -
typ. 60 MHz / typ. 60 MHz

6.2 mm / 105.8 mm / 100 mm
-40°C ... 85°C
Push-in connection

IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 3-HF-12DC-ST	2858043	10
PT 1X2+F-BE	2856126	10

Accessories

PT-IQ-PTB-PT	2801296	1
PT-IQ-PTB-UT	2800768	1
ZBF ..., see page 223		

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-3-HF-F-12DC-PT	2801289	1
PT-IQ-3-HF-F-12DC-UT	2800995	1

Accessories

PT-IQ-PTB-PT	2801296	1
PT-IQ-PTB-UT	2800768	1
ZBF ..., see page 223		

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-F-M-12DC-PT-I	2906796	1

Accessories

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Surge protection and interference filters

Surge protection for information technology and telecommunications

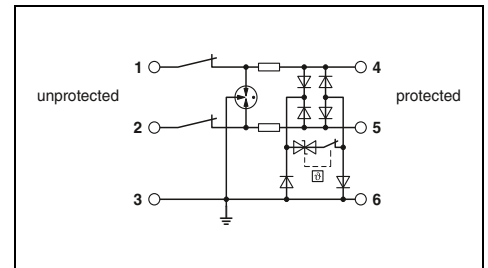
RS-485 interfaces

TERMITRAB complete

- One-piece or pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With and without knife disconnection
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2



3-conductor with common reference potential, 3/6 connection grounded directly, one-piece



Technical data

Electrical data	
IEC test classification/EN type	... 12DC
Maximum continuous operating voltage U_c	C1 / C2 / C3 / D1
Rated current	15 V DC / 10 V AC
Pulse discharge current I_{mp} (10/350) μ s	600 mA (40°C)
Nominal discharge current I_n (8/20) μ s	0.5 kA
	Core-Core 5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core ≤ 25 V (C3 - 25 A)
	Core-Ground ≤ 25 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 60 MHz
	Symmetrical in the 150 Ω system 1.65 Ω
Resistance per path	
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data				
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
	12 V DC	TTC-6-3-HF-M-12DC-PT-I	2906732	1
	24 V DC			
TERMITRAB complete, with screw connection technology and knife disconnection	12 V DC	TTC-6-3-HF-M-12DC-UT-I	2906721	1
	24 V DC			
TERMITRAB complete, with Push-in connection technology, without knife disconnection	12 V DC	TTC-6-3-HF-12DC-PT	1065316	1

Accessories

Replacement plug	
	12 V DC
	24 V DC

Accessories		

SIL
evaluated
IEC 61508



3-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, one-piece

SIL
evaluated
IEC 61508

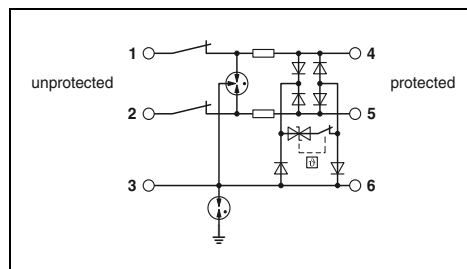
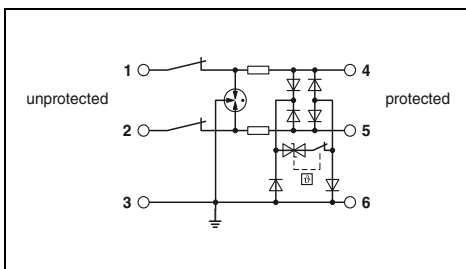
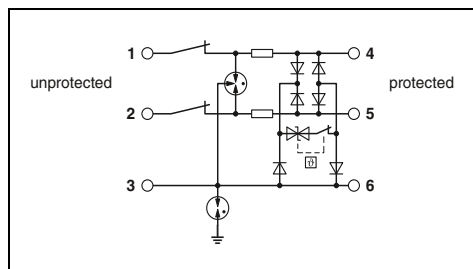


3-conductor with common reference potential, 3/6 connection grounded directly, pluggable

SIL
evaluated
IEC 61508



3-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, pluggable



Technical data

... 12DC	... 24DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
15 V DC / 10 V AC	30 V DC / 21 V AC
600 mA (40°C)	600 mA (40°C)
0.5 kA	0.5 kA
5 kA	5 kA
5 kA	5 kA
10 kA	10 kA
≤ 25 V (C3 - 25 A)	≤ 45 V (C3 - 25 A)
≤ 1.1 kV (C3 - 25 A)	≤ 1.1 kV (C3 - 25 A)
typ. 60 MHz	typ. 60 MHz
1.65 Ω	1.65 Ω

6.2 mm / 105.8 mm / 83.5 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Technical data

... 12DC	
C1 / C2 / C3 / D1	
15 V DC / 10 V AC	
600 mA (56°C)	
0.5 kA	
5 kA	
5 kA	
10 kA	
≤ 25 V (C3 - 25 A)	-
≤ 25 V (C3 - 25 A)	
typ. 60 MHz	
1.65 Ω	

6.2 mm / 105.8 mm / 100 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Technical data

... 12DC	... 24DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
15 V DC / 10 V AC	30 V DC / 21 V AC
600 mA (56°C)	600 mA (56°C)
0.5 kA	0.5 kA
5 kA	5 kA
5 kA	5 kA
10 kA	10 kA
≤ 25 V (C3 - 25 A)	≤ 45 V (C3 - 25 A)
≤ 1.1 kV (C3 - 25 A)	≤ 1.1 kV (C3 - 25 A)
typ. 60 MHz	typ. 60 MHz
1.65 Ω	1.65 Ω

6.2 mm / 105.8 mm / 100 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-3-HF-F-M-12DC-PT-I	2906778	1
TTC-6-3-HF-F-M-24DC-PT-I	2906779	1
TTC-6-3-HF-F-M-12DC-UT-I	2906769	1
TTC-6-3-HF-F-M-24DC-UT-I	2906770	1
TTC-6P-3-HF-F-12DC-PT-I	1065314	1

Accessories

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Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-M-12DC-PT-I	2906756	1
TTC-6P-3-HF-M-12DC-UT-I	2906744	1
TTC-6P-3-HF-12DC-PT-I	1065313	1

Accessories

TTC-6P-3-HF-12DC-I-P	2907846	1
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Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-F-M-12DC-PT-I	2906796	1
TTC-6P-3-HF-F-M-24DC-PT-I	2906797	1
TTC-6P-3-HF-F-M-12DC-UT-I	2906786	1
TTC-6P-3-HF-F-M-24DC-UT-I	2906787	1

Accessories

TTC-6P-3-HF-12DC-I-P	2907846	1
TTC-6P-3-HF-24DC-I-P	2907847	1

Surge protection and interference filters

Surge protection for information technology and telecommunications

RS-485 interfaces

Notes:
Attenuation characteristics at phoenixcontact.net/products



5-conductor with common reference potential, 9/10 connection grounded directly

PLUGTRAB PT-IQ 5-HF

- Connection: Push-in or screw connection technology
- For high transmission speeds
- High discharge capacity
- Multi-stage, floating remote signaling
- Group message via supply and remote signaling module

Pin assignment PT-IQ-5-HF-12DC

- 1,5 Data line pair 1 T(A)/T(B)
- 7,11 Data line pair 2 R(A)/R(B)
- 9 Signal ground (Ground)
- 3 \perp

PLUGTRAB PT 5-HF

- High transmission speed
- Fast response time
- High discharge capacity
- Plugs can be tested with CHECKMASTER 2

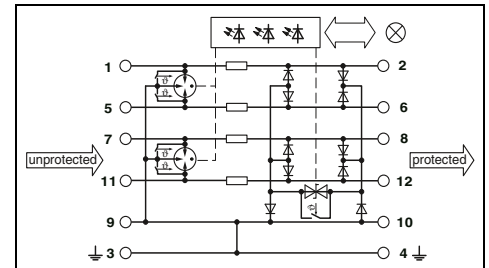
Pin assignment PT 5-HF...

- 1,5 Data line pair 1 T(A)/T(B)
- 7,11 Data line pair 2 R(A)/R(B)
- 9 Signal ground (Ground)
- 3 \perp

Note:

Base elements are grounded differently. For **PT .x.-BE**, connections 9/10 (GND) are connected directly to the mounting foot.

For **PT .x.+F-BE**, connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.



Technical data

Electrical data	... 5DC	... 12DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	6 V DC / 4 V AC	15 V DC / 10 V AC
Rated current	600 mA (40°C)	600 mA (40°C)
Nominal discharge current I_n (8/20) μ s		
	Core-Core 10 kA	10 kA
	Core-Ground 10 kA	10 kA
		20 kA
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
	Core-Core ≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
	Core-Ground ≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
Cut-off frequency fg (3 dB)		
In a 100 Ω system	Symmetrical -	-
In a 150 Ω system	Symmetrical typ. 60 MHz	typ. 60 MHz
General data		
Temperature range		-40°C ... 70°C
Connection method	Screw connection	Push-in connection
Test standards	IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3	

DATATRAB DT-UFB-485

- Adapter type
- 9-pos. D-SUB connection
- DIN rail mounting possible by removing the cap

Pin assignment DT-UFB-485:

- 3,8 Data line pair 1 T(A)/T(B)
- 4,9 Data line pair 2 R(A)/R(B)
- 2,7 Signal ground (Ground)
- \perp

Ordering data

Description	Nominal voltage U_N	Type	Order No.	Pcs./Pkt.
MCR-PLUGTRAB , consisting of a plug, base element, and DIN rail bus, with screw connection technology	5 V DC 12 V DC	PT-IQ-5-HF-5DC-UT PT-IQ-5-HF-12DC-UT	2800797 2800799	1 1
PLUGTRAB , with Push-in connection technology	5 V DC 12 V DC	PT-IQ-5-HF-5DC-PT PT-IQ-5-HF-12DC-PT	2801291 2801293	1 1
PLUGTRAB plug , with protective circuit for plugging into base element PT	5 V DC 12 V DC			
PLUGTRAB base element , for mounting on NS 35				
	Bridge between 3/4 (\perp) and 9/10 Gas-filled surge arrester between 3/4 (\perp) and 9/10			
DATATRAB adapter , protective adapter for inserting into the data line				

Accessories

PLUGTRAB , supply and remote signaling module			
	Screw connection technology	PT-IQ-PTB-UT	2800768
	Push-in connection technology	PT-IQ-PTB-PT	2801296



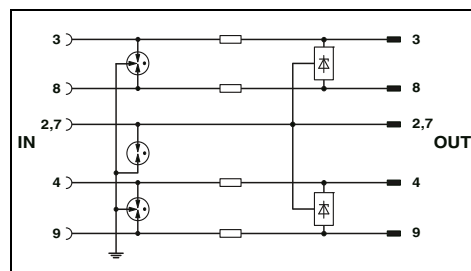
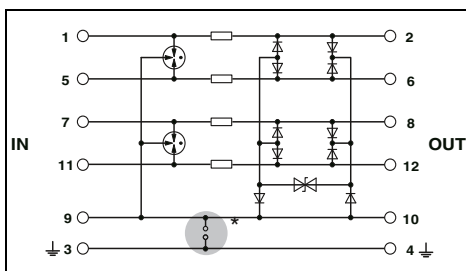
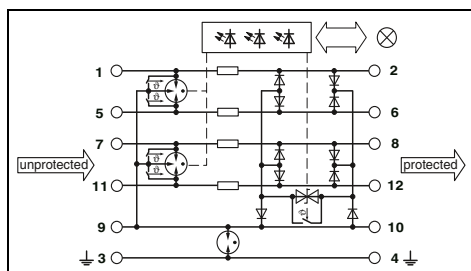
5-conductor with common reference potential, 9/10 connection grounded via gas-filled surge arrester



Pluggable arrester with screw connection, for five conductors, with common reference potential



Protective adapter with 9-pos. D-SUB



Technical data	
... 5DC	... 12DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
6 V DC / 4 V AC	15 V DC / 10 V AC
600 mA (40°C)	600 mA (40°C)
10 kA	10 kA
10 kA	10 kA
20 kA	20 kA
≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
≤ 900 V (C3 - 25 A)	≤ 900 V (C3 - 25 A)
-	-
typ. 60 MHz	typ. 60 MHz
-40°C ... 70°C	
Screw connection	Push-in connection
IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3	

Technical data	
... 5DC	... 12DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
5.2 V DC / 3.6 V AC	14 V DC / 9.8 V AC
450 mA (45°C)	450 mA (45°C)
10 kA	10 kA
10 kA	20 kA (in total)
20 kA	20 kA
≤ 45 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)
≤ 45 V (C3 - 25 A)	≤ 50 V (C3 - 25 A with PT 2X2-BE)
typ. 60 MHz	typ. 60 MHz
-	-
-40°C ... 85°C	
Screw connection (in connection with the base element)	Screw connection (in connection with the base element)
EN 61643-21/A1 / IEC 61643-21/A1	

Technical data	
B2 / C1 / C2 / C3 / D1	
12 V DC	
≤ 380 mA (25°C)	
≤ 5 kA	
≤ 5 kA	
10 kA	
≤ 30 V (C1 - 500 A)	
≤ 700 V (C1 - 500 A)	
typ. 50 MHz	
-	
-40°C ... 85°C	
D-SUB-9	
DIN EN 61643-21	

Ordering data		
Type	Order No.	Pcs./Pkt.
PT-IQ-5-HF+F-5DC-UT	2800798	1
PT-IQ-5-HF+F-12DC-UT	2800801	1
PT-IQ-5-HF+F-5DC-PT	2801292	1
PT-IQ-5-HF+F-12DC-PT	2801295	1

Ordering data		
Type	Order No.	Pcs./Pkt.
PT 5-HF- 5 DC-ST	2838762	10
PT 5-HF-12 DC-ST	2838775	10
PT 2X2-BE	2839208	10
PT 2X2+F-BE	2839224	10

Ordering data		
Type	Order No.	Pcs./Pkt.
DT-UFB-485/BS	2920612	1

Accessories		
Type	Order No.	Pcs./Pkt.
PT-IQ-PTB-UT	2800768	1
PT-IQ-PTB-PT	2801296	1

Accessories		
Type	Order No.	Pcs./Pkt.

Accessories		
Type	Order No.	Pcs./Pkt.

Surge protection and interference filters

Surge protection for information technology and telecommunications

V.11/RS-422 interfaces

PLUGTRAB PT 5-HF-12DC

- For high data transmission rates
- Plugs can be tested with CHECKMASTER 2
- 9/10 connections (GND) are connected to the mounting foot via a gas-filled surge arrester

PLUGTRAB PT-IQ-5-HF-12DC

- Connection: Push-in or screw connection technology
- For high transmission speeds
- Multi-stage, floating remote signaling
- Group message via supply and remote signaling module

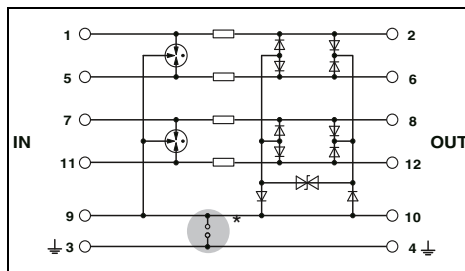


Pluggable arrester with screw connection, for five conductors, with common reference potential



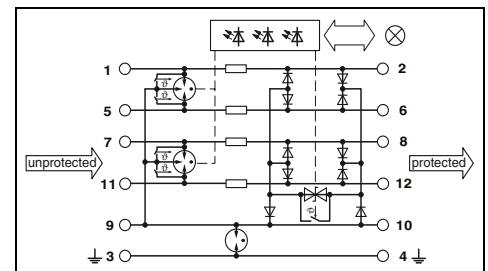
5-conductor with common reference potential, 9/10 connection grounded via gas-filled surge arrester

Notes:
Attenuation characteristics at phoenixcontact.net/products



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	
Rated current	450 mA (45°C)
Nominal discharge current I_n (8/20) μ s	Core-Core: 10 kA Core-Ground: 20 kA (in total) 20 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	Core-Core: ≤ 50 V (C3 - 25 A) Core-Ground: ≤ 50 V (C3 - 25 A with PT 2X2-BE)
Cut-off frequency f_g (3 dB)	
In a 100 Ω system	Symmetrical: typ. 60 MHz
In a 150 Ω system	Symm. / asymm. (GND): - / -
General data	
Temperature range	-40°C ... 85°C
Test standards	EN 61643-21 / IEC 61643-21



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	
Rated current	600 mA (40°C)
Nominal discharge current I_n (8/20) μ s	10 kA 10 kA 20 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	≤ 40 V (C3 - 25 A) ≤ 900 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	
In a 100 Ω system	-
In a 150 Ω system	typ. 60 MHz / typ. 60 MHz
General data	
Temperature range	-40°C ... 70°C
Test standards	IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3

Ordering data

Description	Nominal voltage U_N
PLUGTRAB plug, with protective circuit for inserting in PT base element	12 V DC
PLUGTRAB base element, for mounting on NS 35	
Gas-filled surge arrester between 3/4 ($\frac{1}{2}$) and 9/10	
PLUGTRAB, consisting of plug, base element, and DIN rail bus with screw connection technology	
PLUGTRAB, consisting of plug, base element, and DIN rail bus with Push-in connection technology	

Type	Order No.	Pcs./Pkt.
PT 5-HF-12 DC-ST	2838775	10
PT 2X2+F-BE	2839224	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-5-HF+F-12DC-UT	2800801	1
PT-IQ-5-HF+F-12DC-PT	2801295	1

Accessories

PLUGTRAB, supply and remote signaling module	
Screw connection technology	
Push-in connection technology	

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Accessories

PT-IQ-PTB-UT	2800768	1
PT-IQ-PTB-PT	2801296	1

Marking material

ZBF ..., see page 223

TTY interfaces

PLUGTRAB PT 2X2-24DC

- Plugs can be tested with CHECKMASTER 2
- 9/10 connections (GND) are directly connected to the mounting foot

PLUGTRAB PT-IQ-2X2-24DC

- Connection: Push-in or screw connection technology
- Multi-stage, floating remote signaling
- Group message via supply and remote signaling module



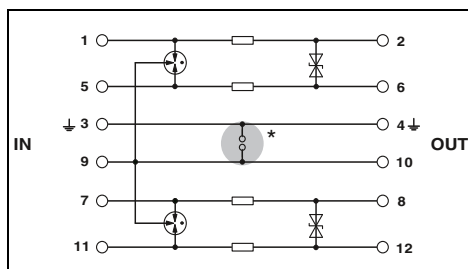
Two double wires (loops), floating, for 20 mA current loops



2 double wires (loops), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

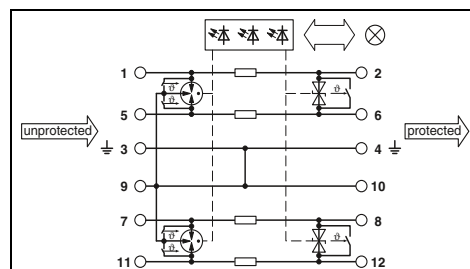
Notes:

Attenuation characteristics at phoenixcontact.net/products



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		450 mA (45°C)
Rated current		10 kA
Nominal discharge current I_n (8/20) μ s	Core-Core	10 kA
	Core-Ground	10 kA
		20 kA
Total discharge current I_{total} (8/20) μ s	Core-Core	≤ 50 V (C3 - 25 A)
Protection level U_p	Core-Ground	≤ 450 V (C1 - 1 kV / 500 A with PT 2X2-BE)
Cut-off frequency f_g (3 dB)		
In a 50 Ω system	Symmetrical	typ. 4.5 MHz
General data		
Temperature range		-40°C ... 85°C
Test standards		IEC 61643-21 / EN 61643-21



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		700 mA (50°C)
Rated current		10 kA
Nominal discharge current I_n (8/20) μ s	Core-Core	10 kA
	Core-Ground	10 kA
		20 kA
Total discharge current I_{total} (8/20) μ s	Core-Core	≤ 55 V (C3 - 25 A)
Protection level U_p	Core-Ground	≤ 700 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)		-
In a 50 Ω system		
General data		
Temperature range		-40°C ... 70°C
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2

Ordering data

Description	Nominal voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for inserting in PT base element	24 V DC	PT 2X2-24DC-ST	2838228	10
PLUGTRAB base element, for mounting on NS 35		PT 2X2-BE	2839208	10
PLUGTRAB, with screw connection technology	Bridge between 3/4 (\downarrow) and 9/10			
PLUGTRAB, with Push-in connection technology				

Ordering data

Description	Nominal voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for inserting in PT base element	24 V DC	PT 2X2-24DC-ST	2838228	10
PLUGTRAB base element, for mounting on NS 35		PT 2X2-BE	2839208	10
PLUGTRAB, with screw connection technology	Bridge between 3/4 (\downarrow) and 9/10			
PLUGTRAB, with Push-in connection technology				
PLUGTRAB, with screw connection technology		PT-IQ-2X2-24DC-UT	2800980	1
PLUGTRAB, with Push-in connection technology		PT-IQ-2X2-24DC-PT	2801263	1

Accessories

Description	Accessories	Order No.	Pcs./Pkt.
Shield fast connection	For \varnothing 3-6 mm	SSA 3-6	2839295
	For \varnothing 5-10 mm	SSA 5-10	2839512
PLUGTRAB, supply and remote signaling module			
	Screw connection technology		
	Push-in connection technology		

Accessories

Description	Accessories	Order No.	Pcs./Pkt.
Shield fast connection	For \varnothing 3-6 mm	SSA 3-6	2839295
	For \varnothing 5-10 mm	SSA 5-10	2839512
PLUGTRAB, supply and remote signaling module			
	Screw connection technology		
	Push-in connection technology		
PLUGTRAB, with screw connection technology		PT-IQ-PTB-UT	2800768
PLUGTRAB, with Push-in connection technology		PT-IQ-PTB-PT	2801296

Surge protection and interference filters

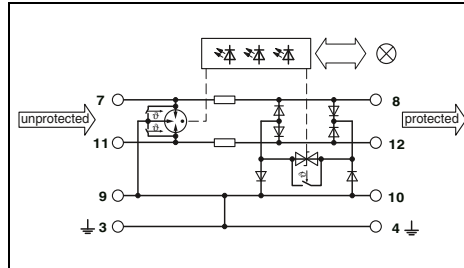
Surge protection for information technology and telecommunications

PROFIBUS DP fieldbus system PLUGTRAB PT-IQ

- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 28 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- PT-IQ...-UT base element with screw connection technology
- PT-IQ...-PT base element with Push-in connection technology
- Base element remains an integral part of the installation
- Corresponding replacement plugs can be found on our website



3-conductor protection for fieldbus and serial interface, connection 9/10 grounded directly



Technical data

Electrical data	... 5DC	... 12DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	6 V DC / 4 V AC	15 V DC / 10 V AC
Rated current	600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	10 kA
	Core-Ground	10 kA
Total discharge current I_{total} (8/20) μ s		20 kA
Max. discharge current I_{max} (8/20) μ s		-
Protection level U_p		
	Core-Core	≤ 30 V (C3 - 25 A)
	Core-Ground	≤ 40 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)		
	Symmetrical in the 150 Ω system	typ. 60 MHz
Resistance per path		1.2 Ω
General data		
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 70°C
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3

Ordering data

Description	Voltage U_N
PLUGTRAB, with Push-in connection technology	5 V DC 12 V DC
PLUGTRAB, with screw connection technology	5 V DC 12 V DC

Type	Order No.	Pcs./Pkt.
PT-IQ-3-PB-PT	2801286	1
PT-IQ-3-HF-12DC-PT	2801288	1
PT-IQ-3-PB-UT	2800785	1
PT-IQ-3-HF-12DC-UT	2800786	1

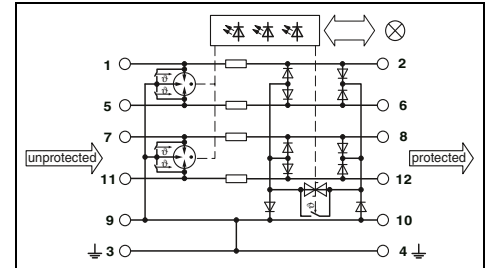
Accessories

PLUGTRAB, supply and remote signaling module	
Push-in connection technology	PT-IQ-PTB-PT
Screw connection technology	PT-IQ-PTB-UT

Type	Order No.	Pcs./Pkt.
PT-IQ-PTB-PT	2801296	1
PT-IQ-PTB-UT	2800768	1



5-conductor with common reference potential, 9/10 connection grounded directly



Technical data

Electrical data	... 5DC	... 12DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	6 V DC / 4 V AC	15 V DC / 10 V AC
Rated current	600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	10 kA
	Core-Ground	10 kA
Total discharge current I_{total} (8/20) μ s		20 kA
Max. discharge current I_{max} (8/20) μ s		-
Protection level U_p		
	Core-Core	≤ 30 V (C3 - 25 A)
	Core-Ground	≤ 40 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)		
	Symmetrical in the 150 Ω system	typ. 60 MHz
Resistance per path		1.2 Ω
General data		
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 70°C
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-5-HF-5DC-PT	2801291	1
PT-IQ-5-HF-12DC-PT	2801293	1
PT-IQ-5-HF-5DC-UT	2800797	1
PT-IQ-5-HF-12DC-UT	2800799	1

Accessories

PLUGTRAB, supply and remote signaling module	
Push-in connection technology	PT-IQ-PTB-PT
Screw connection technology	PT-IQ-PTB-UT

Type	Order No.	Pcs./Pkt.
PT-IQ-PTB-PT	2801296	1
PT-IQ-PTB-UT	2800768	1

**PROFIBUS DP fieldbus system
TERMITRAB complete**

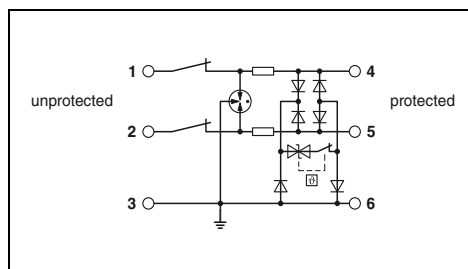
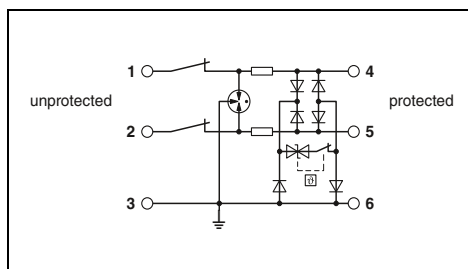
- One-piece or pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With and without knife disconnection
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2



3-conductor with common reference potential, 3/6 connection grounded directly, one-piece



3-conductor with common reference potential, 3/6 connection grounded directly, pluggable



Technical data

Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	15 V DC / 10 V AC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	-
Protection level U_p	
	Core-Core ≤ 25 V (C3 - 25 A)
	Core-Ground ≤ 25 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 60 MHz
	Symmetrical in the 150 Ω system 1.65 Ω
Resistance per path	
General data	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	15 V DC / 10 V AC
Rated current	600 mA (56°C)
Pulse discharge current I_{imp} (10/350) μ s	0.5 kA
Nominal discharge current I_n (8/20) μ s	
	5 kA
	5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Max. discharge current I_{max} (8/20) μ s	-
Protection level U_p	
	≤ 25 V (C3 - 25 A)
	≤ 25 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)	typ. 60 MHz
	1.65 Ω
Resistance per path	
General data	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range	-40°C ... 85°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Ordering data

Description	Voltage U_N
TERMITRAB complete , with screw connection technology and knife disconnection	12 V DC
TERMITRAB complete , with Push-in connection technology, without knife disconnection	12 V DC
	12 V DC

Type	Order No.	Pcs./Pkt.
TTC-6-3-HF-M-12DC-PT-I	2906732	1
TTC-6-3-HF-M-12DC-UT-I	2906721	1
TTC-6-3-HF-12DC-PT	1065316	1

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-M-12DC-PT-I	2906756	1
TTC-6P-3-HF-M-12DC-UT-I	2906744	1
TTC-6P-3-HF-12DC-PT-I	1065313	1

Accessories

Accessories

Remote signaling set	Push-in connection technology	
	Screw connection technology	

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TTC-6-FMRS-PT	2907811	1
TTC-6-FMRS-UT	2907810	1

Surge protection and interference filters

Surge protection for information technology and telecommunications

PROFIBUS DP fieldbus system PLUGTRAB PT

Notes:
Attenuation characteristics at phoenixcontact.net/products

PLUGTRAB PT 3-PB(HF)... / PT 5-HF...

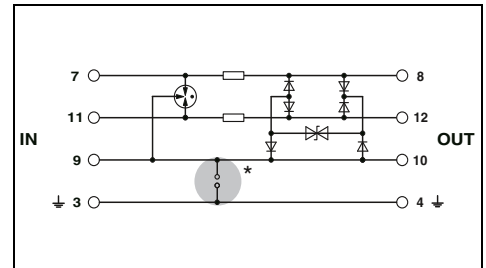
- Protection for PROFIBUS (up to 12 Mbps), in three- to five-conductor technology
- Cable shield connection with SSA... shield fast connection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes

DATATRAB D-UFB-PB

- Direct use at the PROFIBUS interface
- Data transmission rate up to 12 Mbps
- Integrated termination resistor



Pluggable arrester with screw connection, for five conductors, with common reference potential



Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	
Rated current	450 mA (45°C)
Nominal discharge current I_n (8/20) μ s	
	Core-Core 10 kA
	Core-Ground 10 kA
Total discharge current I_{total} (8/20) μ s	20 kA
Protection level U_p	
	Core-Core ≤ 45 V (C3 - 25 A)
	Core-Ground ≤ 45 V (C3 - 25 A)
Output voltage limitation at 1 kV/ μ s	
	Core-Core ≤ 15 V
	Core-Ground ≤ 15 V
Cut-off frequency f_g (3 dB) in a 100 Ω system	Symmetrical
	typ. 60 MHz

Technical data

General data	
Temperature range	-40°C ... 85°C
Connection method	Screw connection (in connection with the base element)
Test standards	EN 61643-21/A1 / IEC 61643-21/A1

Ordering data

Description	Nominal voltage U_N
PLUGTRAB plug , with protective circuit for inserting in PT base element	5 V DC 12 V DC
PLUGTRAB base element , for mounting on NS 35	
	Bridge between 3/4 (\pm) and 9/10
DATATRAB , protective device for PROFIBUS DP applications with up to 12 Mbps	

Type	Order No.	Pcs./Pkt.
PT 3-PB-ST	2858030	10
PT 3-HF-12DC-ST	2858043	10
PT 1X2-BE	2856113	10

Shield fast connection	
	For \varnothing 3-6 mm For \varnothing 5-10 mm

Accessories

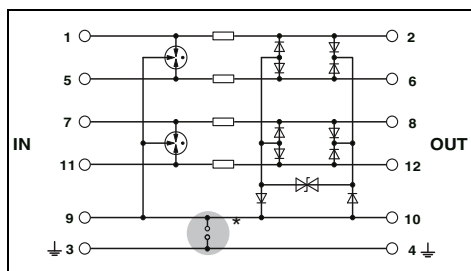
SSA 3-6	2839295	10
SSA 5-10	2839512	10



Pluggable arrester with screw connection, for five conductors, with common reference potential

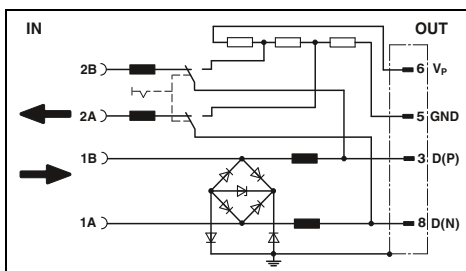


PROFIBUS fine protection with D-SUB 9



Technical data

C1 / C2 / C3 / D1
 450 mA (45°C)
 10 kA
 20 kA (in total)
 20 kA
 ≤ 50 V (C3 - 25 A)
 ≤ 50 V (C3 - 25 A with PT 2X2-BE)
 ≤ 25 V
 ≤ 25 V (with PT 2X2-BE)
 typ. 60 MHz
 -40°C ... 85°C
 Screw connection
 (in connection with the base element)
 EN 61643-21 / IEC 61643-21



Technical data

C1 / C3 / B2
 250 mA (25°C)
 350 A
 350 A
 350 A
 ≤ 25 V (C1 - 500 V / 250 A)
 ≤ 25 V (C1 - 500 V / 250 A)
 ≤ 14 V
 ≤ 14 V
 typ. 70 MHz
 -20°C ... 75°C
 Screw connection & D-SUB-9
 IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 5-HF-12 DC-ST	2838775	10
PT 2X2-BE	2839208	10

Ordering data

Type	Order No.	Pcs./Pkt.
D-UFB-PB	2880642	1

Accessories

Type	Order No.	Pcs./Pkt.
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Accessories

Type	Order No.	Pcs./Pkt.

Surge protection and interference filters

Surge protection for information technology and telecommunications

PROFIBUS PA fieldbus system

Notes:

For corresponding replacement plugs, visit phoenixcontact.net/products

TERMITRAB complete

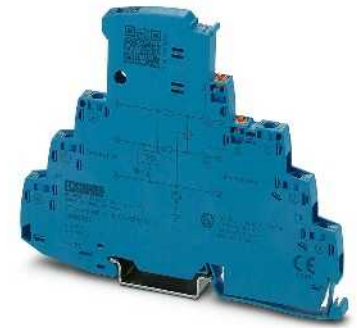
- One-piece or pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded plug versions
- With knife disconnection
- Plugs can be tested with CHECKMASTER 2

PLUGTRAB PT-IQ-EX

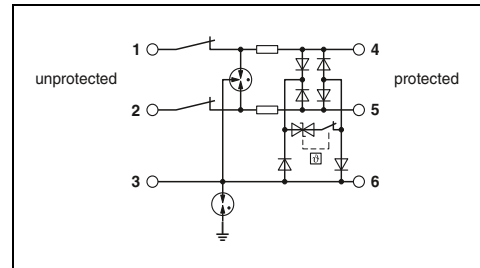
- Tailored to the special requirements of intrinsically safe circuits
- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 10 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- Base element remains an integral part of the installation

PLUGTRAB PT 2XEX(I)

- Tailored to the special requirements of intrinsically safe circuits
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be tested with CHECKMASTER 2



3-conductor with common reference potential, intrinsically safe, one-piece



Technical data

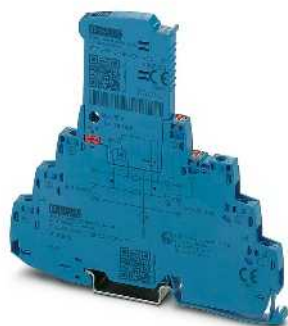
Electrical data	... 12DC	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	15 V DC	30 V DC
Rated current	600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{mp} (10/350) μ s	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	5 kA
	Core-Ground	5 kA
		10 kA
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
	Core-Core	≤ 145 V (C1 - 1 kV/500 A)
	Core-Ground	≤ 750 V (C1 - 1 kV/500 A)
	Core-GND	≤ 80 V (C1 - 1 kV/500 A)
Cut-off frequency f_g (3 dB)		
	Symmetrical in the 150 Ω system	typ. 60 MHz
Resistance per path	1.65 Ω	1.65 Ω
General data		
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
Temperature range	-40°C ... 85°C	
Test standards	EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21	
Safety data		
EC-type examination certificate in accordance with ATEX	BVS 16 ATEX E 125 X	BVS 16 ATEX E 125 X
Maximum inner capacity C_i	negligible	negligible
Maximum inner inductance L_i	negligible	negligible
Maximum input current I_i	400 mA (T4 / $\leq 50^\circ$ C)	400 mA (T4 / $\leq 50^\circ$ C)
Maximum input voltage U_i	15 V DC	30 V DC
Maximum input power P_i	-	-

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology	12 V DC	TTC-6-3-HF-F-M-EX-12DC-UT-I	2906822	1
	24 V DC	TTC-6-3-HF-F-M-EX-24DC-UT-I	2906823	1
MCR-PLUGTRAB, with screw connection technology	24 V DC			
PLUGTRAB plug, with protective circuit for plugging into base element PT	24 V DC			
PLUGTRAB base element, for mounting on NS 35	24 V DC			



SIL
evaluated
IEC 61508



3-conductor with common reference potential, intrinsically safe, pluggable

Ex:



SIL
evaluated
IEC 61508



Double wire (loop), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

Ex:

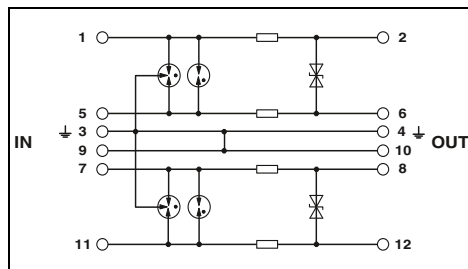
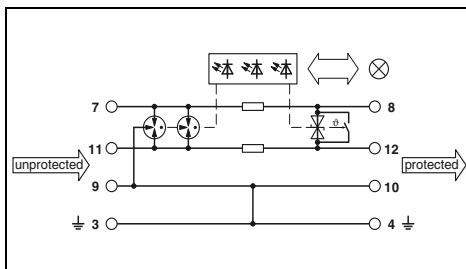
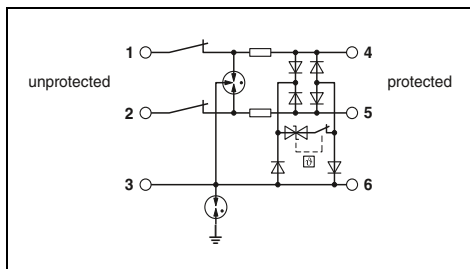


SIL
evaluated
IEC 61508



Double-wire protection for two intrinsically safe circuits

Ex:



Technical data

... 12DC	... 24DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
15 V DC	30 V DC
600 mA (40°C)	600 mA (40°C)
0.5 kA	0.5 kA
5 kA	5 kA
5 kA	5 kA
10 kA	10 kA
≤ 145 V (C1 - 1 kV/500 A)	≤ 150 V (C1 - 1 kV/500 A)
≤ 1.1 kV (C1 - 1 kV/500 A)	≤ 750 V (C1 - 1 kV/500 A)
≤ 95 V (C1 - 1 kV/500 A)	≤ 80 V (C1 - 1 kV/500 A)
typ. 60 MHz	typ. 60 MHz
1.65 Ω	1.65 Ω
6.2 mm / 105.8 mm / 100 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C	
EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21	
BVS 16 ATEX E 125 X	BVS 16 ATEX E 125 X
negligible	negligible
negligible	negligible
400 mA (T4 / ≤ 50°C)	400 mA (T4 / ≤ 50°C)
15 V DC	30 V DC
-	-

Technical data

C1 / C2 / C3 / D1	
30 V DC / 21 V AC	
350 mA	
2 kA	
10 kA	
10 kA	
20 kA	
≤ 60 V (C1 - 1 kV/500 A)	
≤ 1.3 kV (C2 - 10 kV / 5 kA)	
-	
typ. 1.1 MHz	
1.2 Ω	
17.7 mm / 91.1 mm / 77.5 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 70°C	
EN 61643-21/A2 / IEC 61643-21/A2 / EN 61000-6-2 / EN 61000-6-3/A1	
BVS 14 ATEX E 020 X	
negligible	
negligible	
350 mA	
30 V DC	
1.2 W	

Technical data

C1 / C2 / C3 / D1	
30 V DC / 21 V AC	
325 mA (40°C)	
2 kA	
10 kA	
10 kA	
20 kA	
≤ 45 V (C1 - 0.5 kV / 250 A)	
≤ 1 kV (C1 - 1 kV/500 A)	
-	
typ. 1.6 MHz	
2.2 Ω	
17.5 mm / 44.8 mm / 51.7 mm	
0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12	
-40°C ... 85°C	
EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 61643-21 / IEC 60079-0	
KEMA 00ATEX1099 X	
1.3 nF	
1 μH	
325 mA (T4 / ≤ 80°C)	
30 V DC	
3 W	

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-F-M-EX-12DC-UT-I	2906826	1
TTC-6P-3-HF-F-M-EX-24DC-UT-I	2906828	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2-EX-24DC-UT	2801512	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2XEX(I)-24DC-ST	2838225	10
PT 2XEX(I)-BE	2839279	10

Surge protection and interference filters

Surge protection for information technology and telecommunications

INTERBUS remote bus

PLUGTRAB PT-IQ 5-HF

- Surge protection system
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Base element with screw connection technology

PLUGTRAB PT 5-HF

- High transmission speed
- Fast response time
- High discharge capacity
- Plugs can be tested with CHECKMASTER 2

DATATRAB DT-UFB-IB-RBI/ -RBO

- Adapter type
- 9-pos. D-SUB connection
- For remote bus modules
- DIN rail mounting possible by removing the cap
- D-SUB cable included

Note:

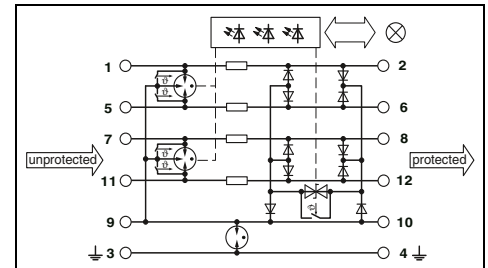
PT .x.+F-BE: connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.

Notes:

For approvals and dimensional drawing, visit phoenixcontact.net/products



Pluggable arrester with screw connection, for five conductors, with common reference potential



Technical data

Electrical data		C1 / C2 / C3 / D1
IEC test classification/EN type		6 V DC / 4 V AC
Maximum continuous operating voltage U_c		600 mA (40°C)
Rated current		
Nominal discharge current I_n (8/20) μ s	Core-Core	10 kA
	Core-Ground	10 kA
Total discharge current I_{total} (8/20) μ s		20 kA
Protection level U_p	Core-Core	≤ 30 V (C3 - 25 A)
	Core-Ground	≤ 900 V (C3 - 25 A)
Cut-off frequency f_g (3 dB)		
In a 100 Ω system	Symmetrical	-
In a 150 Ω system	Symmetrical	typ. 60 MHz
General data		
Temperature range		-40°C ... 70°C
Connection method		Screw connection
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3

Ordering data

Description	Nominal voltage U_N	Type	Order No.	Pcs./Pkt.
MCR-PLUGTRAB , consisting of a plug, base element, and DIN rail bus, with screw connection technology				
	5 V DC	PT-IQ-5-HF+F-5DC-UT	2800798	1
PLUGTRAB plug , with protective circuit for plugging into base element PT				
PLUGTRAB base element , for mounting on NS 35				
Gas-filled surge arrester between 3/4 (\downarrow) and 9/10				
DATATRAB adapter , protective adapter for inserting into the data line				

Accessories

PLUGTRAB , supply and remote signaling module				
	Screw connection technology	PT-IQ-PTB-UT	2800768	1
	Push-in connection technology	PT-IQ-PTB-PT	2801296	1



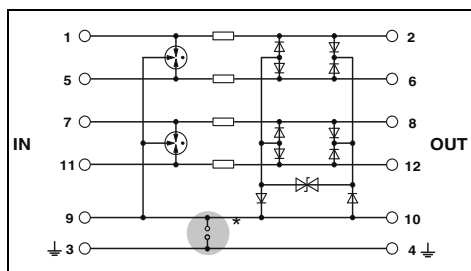
Pluggable arrester with screw connection, for five conductors, with common reference potential



Protective adapter for 5-conductor remote bus input



Protective adapter for 5-conductor remote bus output



Technical data

C1 / C2 / C3 / D1
5.2 V DC / 3.6 V AC
450 mA (45°C)

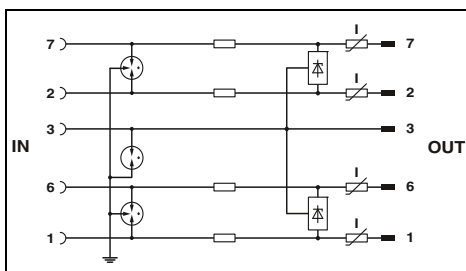
10 kA
10 kA
20 kA

≤ 45 V (C3 - 25 A)
≤ 45 V (C3 - 25 A)

typ. 60 MHz

-40°C ... 85°C
Screw connection (in connection with the base element)

EN 61643-21/A1 / IEC 61643-21/A1



Technical data

B2 / C1 / C2 / C3 / D1
5.8 V DC
≤ 180 mA (25°C)

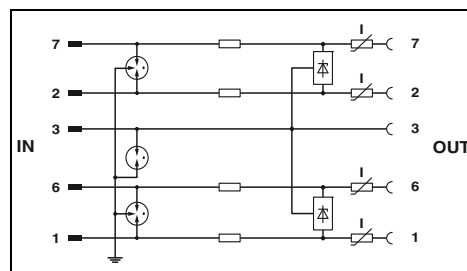
≤ 5 kA
≤ 5 kA
10 kA

≤ 20 V (C1 - 500 A)
≤ 700 V (C1 - 500 A)

≥ 100 MHz
≥ 100 MHz

-40°C ... 85°C
D-SUB-9

DIN EN 61643-21 / IEC 61643-21



Technical data

B2 / C1 / C2 / C3 / D1
5.8 V DC
≤ 180 mA (25°C)

≤ 5 kA
≤ 5 kA
10 kA

≤ 20 V (C1 - 500 A)
≤ 700 V (C1 - 500 A)

≥ 100 MHz
≥ 100 MHz

-40°C ... 85°C
D-SUB-9

DIN EN 61643-21 / IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 5-HF- 5 DC-ST	2838762	10
PT 2X2+F-BE	2839224	10

Accessories

Type	Order No.	Pcs./Pkt.

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-IB-RB0	2800056	1

Accessories

Type	Order No.	Pcs./Pkt.

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-IB-RBI	2800055	1

Accessories

Type	Order No.	Pcs./Pkt.

Surge protection and interference filters

Surge protection for information technology and telecommunications

MCR-PLUGTRAB, for various applications

- Protection for fieldbus systems and signal circuits with three- to five-conductor technology
- Cable shield connection using SSA... shield fast connection
- Maximum ease of maintenance, thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes

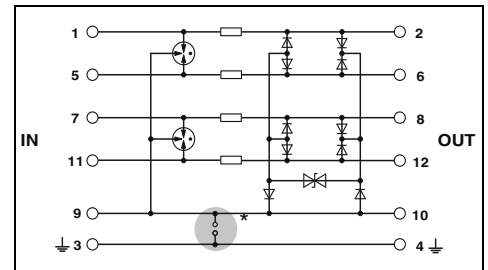
Note:

Base elements are grounded differently. For **PT .x.-BE**, connections 9/10 (GND) are connected directly to the mounting foot. For **PT .x.+F-BE**, connections 9/10 (GND) are connected to the mounting foot via a gas-filled surge arrester.

Notes:
Attenuation characteristics at phoenixcontact.net/products



5-conductor protection for fieldbus and serial interface



Electrical data		... 5DC	... 12DC	... 24DC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c		5.2 V DC / 3.6 V AC	14 V DC / 9.8 V AC	28 V DC
Rated current		450 mA (45°C)	450 mA (45°C)	450 mA (45°C)
Pulse discharge current I_{imp} (10/350) μ s		2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) μ s				
		Core-Core	10 kA	10 kA
		Core-Ground	10 kA	20 kA (in total)
Total discharge current I_{total} (8/20) μ s		20 kA	20 kA	20 kA
Max. discharge current I_{max} (8/20) μ s		10 kA	20 kA (in total)	-
Output voltage limitation at 1 kV/ μ s				
		Core-Core	≤ 15 V	≤ 25 V
		Core-Ground	≤ 15 V	≤ 25 V (with PT 2X2-BE)
Cut-off frequency f_g (3 dB)				
		Symmetrical in the 100 Ω system	typ. 60 MHz	typ. 60 MHz
Resistance per path			2.2 Ω	2.2 Ω

Technical data			
Dimensions W/H/D	17.7 mm / 45 mm / 52 mm		
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12		
Temperature range	-40°C ... 85°C		
Test standards	EN 61643-21/A1 / IEC 61643-21/A1		

Description	Voltage U_N
PLUGTRAB plug , with protective circuit for inserting in PT base element	5 V DC 12 V DC 24 V DC 32 V DC
PLUGTRAB base element , for mounting on NS 35	
	Bridge between 3/4 (\downarrow) and 9/10
	Gas-filled surge arrester between 3/4 (\downarrow) and 9/10
Shield fast connection	
	For \varnothing 3-6 mm
	For \varnothing 5-10 mm

Ordering data			
Type	Order No.	Pcs./Pkt.	
PT 5-HF- 5 DC-ST	2838762	10	
PT 5-HF-12 DC-ST	2838775	10	
PT 5-HF-24DC-ST	2906002	1	
PT 2X2-BE	2839208	10	
PT 2X2+F-BE	2839224	10	

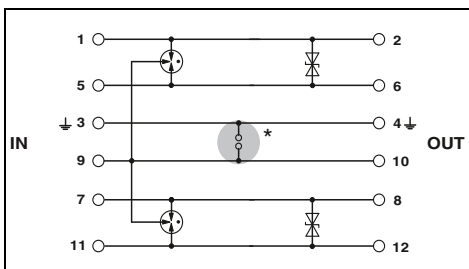
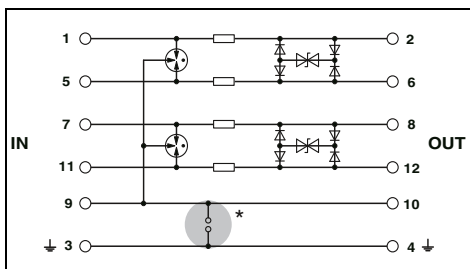
Accessories			
Type	Order No.	Pcs./Pkt.	
SSA 3-6	2839295	10	
SSA 5-10	2839512	10	



2 x 2-conductor protection for 2-wire bus system



2 x 2-conductor protection for FOUNDATION Fieldbus



Technical data		
... 5DC	... 12DC	... 24DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
5.2 V DC / 3.6 V AC	13 V DC / 9 V AC	28 V DC / 19.8 V AC
450 mA (45°C)	450 mA (45°C)	450 mA (45°C)
2.5 kA	2.5 kA	2.5 kA
10 kA	10 kA	10 kA
10 kA	10 kA	10 kA
20 kA	20 kA	20 kA
10 kA	10 kA	10 kA
≤ 15 V	≤ 25 V	≤ 45 V
-	-	-
typ. 70 MHz	typ. 70 MHz	typ. 70 MHz
2.2 Ω	2.2 Ω	2.2 Ω

Technical data
C1 / C2 / C3 / D1
36 V DC
1.6 A
1 kA
100 A
10 kA
-
10 kA
≤ 75 V
-
-
1 Ω

17.7 mm / 45 mm / 52 mm
0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 ... 12
-40°C ... 85°C
IEC 61643-21

17.7 mm / 45 mm / 52 mm
- mm² / - mm² / -
-40°C ... 85°C
EN 61643-21/A1

Ordering data		
Type	Order No.	Pcs./Pkt.
PT 2X2-HF-5 DC-ST	2839567	10
PT 2X2-HF-12 DC-ST	2839570	10
PT 2X2-HF-24 DC-ST	2839729	10
PT 2X2-BE	2839208	10
PT 2X2+F-BE	2839224	10

Ordering data		
Type	Order No.	Pcs./Pkt.
PT 2X2-FF-ST	2800755	10
PT 4-BE	2839402	10
PT 4+F-BE	2839415	10

Accessories		
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Accessories		
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Surge protection and interference filters

Surge protection for information technology and telecommunications

DSL telecommunications DATATRAB DT

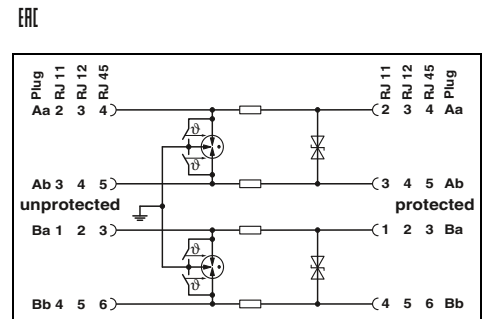
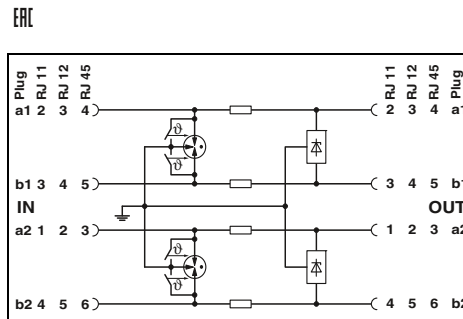
- Protection for two DSL ports
- Connection: RJ45 (RJ12/RJ11) and plug-in screw terminal block (COMBICON)
- Alternatively, can be snapped onto a DIN rail
- Protective circuit:
Coarse/fine protection combination between all cables of signal wire pairs, as well as common mode voltage coarse protection between all signal wires and ground
- Separate ground connection line
- The adapter included enables conversion from RJ45 to RJ11 and RJ12 (for contacting, see circuit diagram)



Attachment plug
for two VDSL interfaces (ports)



Attachment plug
for two SHDSL interfaces (ports)



Technical data

Electrical data	
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	185 V DC / 130 V AC
Rated current	≤ 380 mA (25°C)
Nominal discharge current I_n (8/20) μ s	Core-Core ≤ 5 kA Core-Ground ≤ 5 kA 10 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	Core-Core ≤ 250 V (C1 - 1 kV/500 A) Core-Ground ≤ 250 V (C1 - 1 kV/500 A)
Cut-off frequency f_g (3 dB) In a 100 Ω system	Symmetrical typ. 50 MHz
General data	
Dimensions W/H/D	25 mm / 102 mm / 63.5 mm
Temperature range	-40°C ... 85°C
Connection method	RJ45/COMBICON
Connection data rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Test standards	IEC 61643-21 / EN 61643-21

Electrical data	
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	185 V DC / 130 V AC
Rated current	≤ 380 mA (25°C)
Nominal discharge current I_n (8/20) μ s	≤ 5 kA ≤ 5 kA 10 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	≤ 250 V (C1 - 500 A) ≤ 580 V (C1 - 500 A)
Cut-off frequency f_g (3 dB) In a 100 Ω system	25 MHz
General data	
Dimensions W/H/D	25 mm / 103 mm / 63 mm
Temperature range	-40°C ... 85°C
Connection method	RJ45/COMBICON
Connection data rigid / flexible / AWG	0.14 ... 1.5 mm ² / 0.14 ... 1.5 mm ² / 28 ... 16
Test standards	IEC 61643-21

Ordering data

Description	
DATATRAB , protective adapter for insertion in the data cable	
DT-TELE-RJ45	

Type	Order No.	Pcs./Pkt.
DT-TELE-RJ45	2882925	1

Ordering data

Description	
DATATRAB , protective adapter for insertion in the data cable	
DT-TELE-SHDSL	

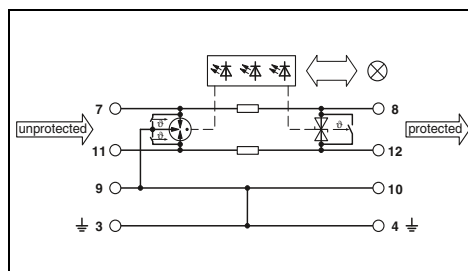
Type	Order No.	Pcs./Pkt.
DT-TELE-SHDSL	2801593	1

DSL telecommunications
PLUGTRAB PT-IQ

- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 28 protection modules per supply module
- Maximum ease of maintenance, thanks to the two-piece design
- Plugs are coded
- Impedance-neutral disconnection of plug for maintenance purposes
- PT-IQ...-UT base element with screw connection technology
- PT-IQ...-PT base element with Push-in connection technology
- Base element remains an integral part of the installation
- Corresponding replacement plugs can be found on our website



Double wire (loop), floating, connection 9/10 grounded directly, e.g., for DSL applications



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1 / B2
Maximum continuous operating voltage U_C		180 V DC
Rated current		150 mA (25°C)
Pulse discharge current I_{imp} (10/350) μ s		2.5 kA
Nominal discharge current I_n (8/20) μ s		
	Core-Core	10 kA
	Core-Ground	10 kA
		20 kA
Total discharge current I_{total} (8/20) μ s		
Protection level U_p		
	Core-Core	\leq 290 V (C3 - 50 A)
	Core-Ground	\leq 700 V (C3 - 50 A)
Cut-off frequency f_g (3 dB)		typ. 25 MHz
	Symmetrical in the 150 Ω system	1.2 Ω
Resistance per path		
General data		
Dimensions W/H/D		17.7 mm / 91.1 mm / 77.5 mm
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 70°C
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-2 / EN 61000-6-3
Remote indication contact		via DIN rail connector

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DATA-PLUGTRAB			
	Screw connection technology	PT-IQ-1X2-TELE-UT	2800769
	Push-in connection technology	PT-IQ-1X2-TELE-PT	2801290

Accessories

Replacement plug			
PLUGTRAB , supply and remote signaling module			
	Screw connection technology	PT-IQ-1X2-TELE-P	2800782
	Push-in connection technology	PT-IQ-PTB-UT	2800768
		PT-IQ-PTB-PT	2801296

Surge protection and interference filters

Surge protection for information technology and telecommunications

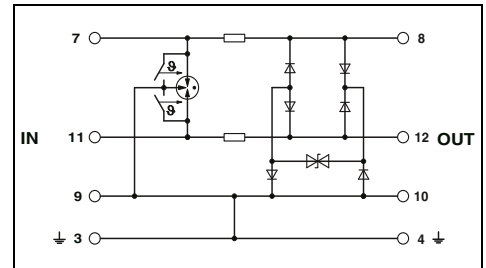
DSL telecommunications PT 2-TELE

- For analog telecommunications
- Two-piece, pluggable
- Universal use
- High discharge capacity
- Plugs can be tested with CHECKMASTER 2

Notes:
Attenuation characteristics at phoenixcontact.net/products



3-conductor protection for DSL (ISDN U_{k0}) applications with common reference potential



Technical data

Electrical data		
IEC test classification/EN type		B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U _c		185 V DC / 130 V AC
Rated current		450 mA AC (45°C)
Pulse discharge current I _{imp} (10/350) μs		1 kA
Nominal discharge current I _n (8/20) μs		
	Core-Core	10 kA
	Core-Ground	10 kA
Total discharge current I _{total} (8/20) μs		18 kA
Max. discharge current I _{max} (8/20) μs		18 kA
Output voltage limitation at 1 kV/μs		
	Core-Core	≤ 300 V
	Core-Ground	≤ 300 V
Cut-off frequency f _g (3 dB)	Symmetrical in the 100 Ω system	typ. 20 MHz
Resistance per path		2.2 Ω
General data		
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 85°C
Test standards		IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2-TELE	2882828	10

Accessories

PT 2-TELE-ST	2838733	10
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Description	DATA-PLUGTRAB, consisting of plug and base element
--------------------	---

Replacement plug	
Shield fast connection	
For Ø 3-6 mm	
For Ø 5-10 mm	

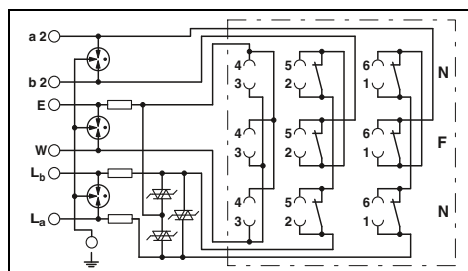
DSL telecommunications

- For surface mounting
- Three TAE6 slots
- For two N-coded and one F-coded end device
- Suitable for ADSL and VDSL
- Main areas of application: phone terminals, answering machines, modems, and fax machines



TAE outlet box (NFN) for VDSL

ERIC



Technical data

Electrical data		
IEC test classification/EN type		B2 / C1 / C2 / C3 / D1
Nominal voltage U_N		60 V DC
Maximum continuous operating voltage U_C		185 V DC
Rated current		450 mA ($\leq 40^\circ\text{C}$)
Nominal discharge current I_n (8/20) μs	Core-Core	5 kA
	Core-Ground	5 kA
Total discharge current I_{total} (8/20) μs		10 kA
Protection level U_p	Core-Core	≤ 250 V (C2 - 10 kV / 5 kA)
	Core-Ground	≤ 500 V (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/ μs	Core-Core	≤ 250 V
	Core-Ground	≤ 450 V
Cut-off frequency f_g (3 dB)	Core-Core	typ. 2 MHz
In a 600 Ω system		
General data		
Dimensions W/H/D		65 mm / 27 mm / 80 mm
Temperature range		$-40^\circ\text{C} \dots 80^\circ\text{C}$
Connection method		Screw connection & TAE 6
Test standards		DIN EN 61643-21 / IEC 61643-21

Ordering data

Description	For country-specific use in	Type	Order No.	Pcs./Pkt.
TAE outlet box (NFN) with surge protection for analog telecommunications interfaces				
Surface-mounted socket	D	TAE-TRAB FM-NFN-AP	2749628	1

Surge protection and interference filters

Surge protection for information technology and telecommunications

For telecommunications and measurement and control interfaces COMTRAB modular

- Space-saving LSA-PLUS connection technology
- Can be used in LSA-PLUS disconnect and control strips or CT-TERMIBLOCK
- The CTM 10-MAG surge protection magazine can be fitted with ten different protective plugs

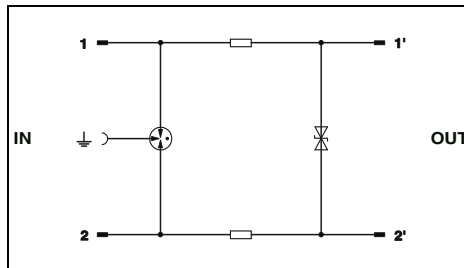


Double wire (loop), floating

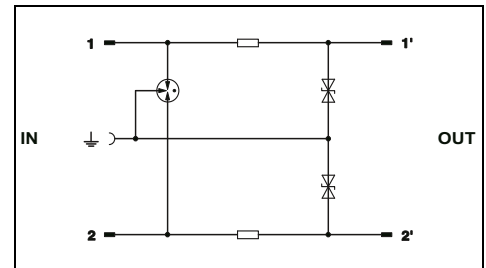


2-conductor, with common reference potential

ERIC



ERIC



Technical data

Electrical data	... 110AC
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	60 V DC / 125 V AC
Rated current	380 mA AC (25°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA
Nominal discharge current I_n (8/20) μ s	
	Core-Core 5 kA
	Core-Ground 5 kA
Total discharge current I_{total} (8/20) μ s	10 kA
Protection level U_p	
	Core-Core ≤ 260 V (C3 - 100 A)
	Core-Ground ≤ 800 V (C3 - 100 A)
Cut-off frequency f_g (3 dB)	
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	9.4 mm / 21 mm / 52.4 mm
Temperature range	-25°C ... 75°C
Test standards	IEC 61643-21 / EN 61643-21

Technical data

Electrical data	... 110AC
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	60 V DC / 125 V AC
Rated current	380 mA AC (25°C)
Pulse discharge current I_{imp} (10/350) μ s	1 kA
Nominal discharge current I_n (8/20) μ s	
	-
Total discharge current I_{total} (8/20) μ s	5 kA
Protection level U_p	10 kA
	-
Cut-off frequency f_g (3 dB)	≤ 260 V (C3 - 100 A)
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	9.4 mm / 21 mm / 52.4 mm
Temperature range	-25°C ... 75°C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N
COMTRAB modular , surge protection for a double wire with coarse and fine protection and ohmic decoupling, DSL-compatible	110 V AC 180 V DC
COMTRAB modular , surge protection for the ISDN S_0 interface	6 V DC

Type	Order No.	Pcs./Pkt.
CTM 1X2-110AC	2838539	10

Ordering data

Type	Order No.	Pcs./Pkt.
CTM 2X1-110AC	2838526	10

Accessories

Magazine , with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	
Grounding plug	

CTM 10-MAG	2838610	5
CTM EST	2838649	10

Accessories

CTM 10-MAG	2838610	5
CTM EST	2838649	10



**2-conductor,
with common reference potential**

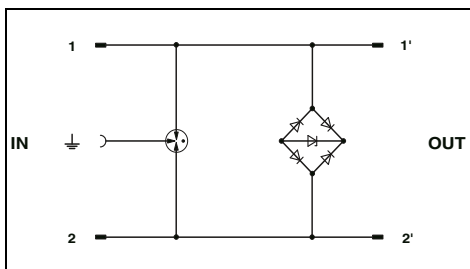


**2-conductor, coarse protection,
with failsafe contact**



**2-conductor, coarse protection,
with failsafe contact and current protection
(Powercross)**

ERIC



Technical data

B2 / C2 / C3 / D1 / C1
 ± 6 V DC
 1.5 A (25°C)
 1 kA
 350 A
 5 kA
 10 kA
 ≤ 18 V (C3 - 7.5 kV/100 A)
 ≤ 700 V (C3 - 7.5 kV / 100 A, spike)

9.5 mm / 21 mm / 53.5 mm
 -25°C ... 75°C
 IEC 61643-21

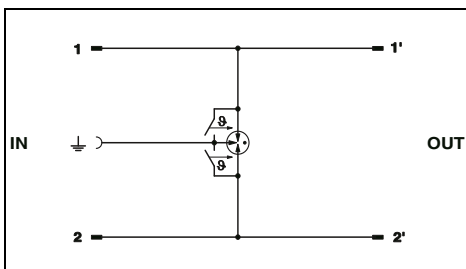
Ordering data

Type	Order No.	Pcs./Pkt.
CTM ISDN	2838555	10

Accessories

CTM 10-MAG	2838610	5
CTM EST	2838649	10

ERIC



Technical data

A2 / B1 / B2 / B3 / C1 / C2 / C3 / D1 / D2
 ± 180 V DC
 1.5 A (25°C)
 1 kA
 -
 5 kA
 10 kA
 -
 ≤ 1 kV (C3 - 7.5 kV / 100 A, spike)

9.5 mm / 21 mm / 53.5 mm
 -40°C ... 85°C
 IEC 61643-21

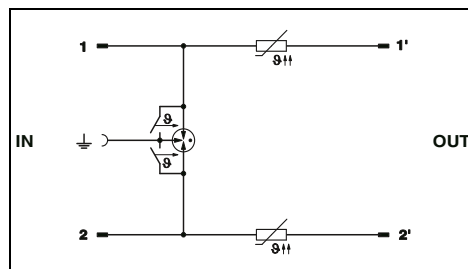
Ordering data

Type	Order No.	Pcs./Pkt.
CTM 2X1-180DC-GS	2838636	10

Accessories

CTM 10-MAG	2838610	5
CTM EST	2838649	10

ERIC



Technical data

A2 / B1 / B2 / B3 / C1 / C2 / C3 / D1 / D2
 ± 180 V DC
 120 mA (25°C)
 1 kA
 -
 5 kA
 10 kA
 -
 ≤ 1 kV (C3 - 7.5 kV / 100 A, spike)

9.5 mm / 21 mm / 53.5 mm
 -40°C ... 85°C
 IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
CTM 2X1-180DC-GS-P	2838623	10

Accessories

CTM 10-MAG	2838610	5
CTM EST	2838649	10

Surge protection and interference filters

Surge protection for information technology and telecommunications

LSA-PLUS coarse protection magazine

- For use in CT-TERMIBLOCK or in LSA-PLUS and LSA-PROFIL disconnect and terminal strips

CT 10-2/2-GS

- For fitting with 20 two-electrode arresters filled with inert gas
- Common mode voltage coarse protection for 20 signal wires

CT ...-2/2-GS/3E

- Fitted with up to 10 three-electrode arresters filled with inert gas
- When the gas-filled arrester is triggered, the potentials of the three connections a-b- \perp are equalized
- Coarse protection both in the normal mode voltage branch and the common mode voltage branch for 10 double wires

Notes:

For dimensional drawings, see phoenixcontact.net/products

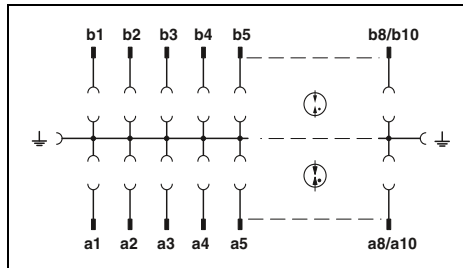


For 10 double wires (loops) and 20 two-electrode GDTs

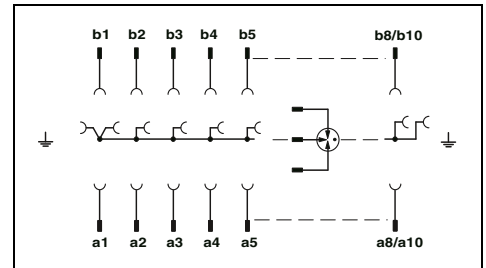


For 10 double wires (loops) and 10 three-electrode GDTs

ERC



ERC



Ordering data

Type	Order No.	Pcs./Pkt.
CT 10-2/2-GS	2765398	5

Ordering data

Type	Order No.	Pcs./Pkt.
CT 10-2/2-GS/3E	2765408	5
CT 10-2/2-GS/3E-110AC	2920829	10

Accessories

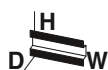
Type	Order No.	Pcs./Pkt.
SVP 2E- 48AC	2788919	10
SVP 2E-110AC	2765534	10

Accessories

Type	Order No.	Pcs./Pkt.
SVP 3E-110AC	2765521	10

Description	Voltage U _N
Coarse protection magazine, to accommodate 20 two-electrode gas-filled surge arresters, type H, unassembled, model: 10 double wires	
Coarse protection magazine, for 10 double wires	
unassembled , for accommodating 10 three-electrode gas-filled surge arresters	
assembled , with 10 three-electrode gas-filled surge arresters	110 V AC
2-electrode gas-filled surge arrester filled with inert gas, type H, for use in CT 10-2/2-GS coarse protection magazine	48 V AC 110 V AC
3-electrode gas-filled surge arrester filled with inert gas, for use in CT 10-2/2-GS/3E coarse protection magazine	110 V AC

CT-TERMIBLOCK



- Screw terminal block
- For COMTRAB protective plugs
- Automatically closing feed-through/disconnect contacts
- Ground terminal blocks on both sides with plug-in connection for the protective plugs used
- Mounting on DIN rails in accordance with EN 60715



For accommodating the CT and CTM protective plugs, with screw connection



Magazine for 10 CTM

General data	
Dimensions W/H/D	
Connection data rigid / flexible / AWG	
Temperature range	
Degree of protection in acc. with IEC 60529/EN 60529	
Flammability rating in accordance with UL 94	

Technical data			
Dimensions W/H/D	118 mm / 43 mm / 40.9 mm		
Connection data rigid / flexible / AWG	0.2...2.5 mm ² / 0.2...2.5 mm ² / 24 ... 12		
Temperature range	-40°C ... 85°C		
Degree of protection in acc. with IEC 60529/EN 60529	IP20		
Flammability rating in accordance with UL 94	V2		

Technical data			
Dimensions W/H/D	112.5 mm / 21.8 mm / 44 mm		
Connection data rigid / flexible / AWG	- mm ² / - mm ² / -		
Temperature range	-25°C ... 75°C		
Degree of protection in acc. with IEC 60529/EN 60529	IP20		
Flammability rating in accordance with UL 94	V-0		

Description	

Ordering data			
Type	Order No.	Pcs./Pkt.	
CT-TERMIBLOCK 10 DA	0441711	10	

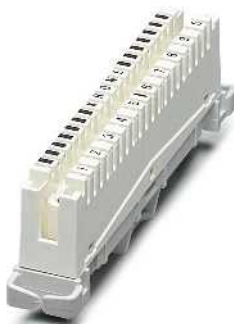
Ordering data			
Type	Order No.	Pcs./Pkt.	
CTM 10-MAG	2838610	5	

Magazine, with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip

COMTRAB disconnect strip

- LSA-PLUS disconnect strip
- For COMTRAB protective plugs
- For up to 10 CTM plugs

Notes:
For dimensional drawings, see phoenixcontact.net/products



For accommodating the CT and CTM protective plugs, with LSA-PLUS connection



Ground rail for CTM protective plug

Description	

LSA-PLUS disconnect strip for accommodating the CTM and CT 10 protection modules, model: 10 double wires

Ground rail for CTM protective plug when used in combination with LSA-PLUS disconnect strip, model: 10 double wires

Ordering data			
Type	Order No.	Pcs./Pkt.	
CT 10-TL	2765356	5	

Ordering data			
Type	Order No.	Pcs./Pkt.	
CT 1-10-ES	2765547	10	



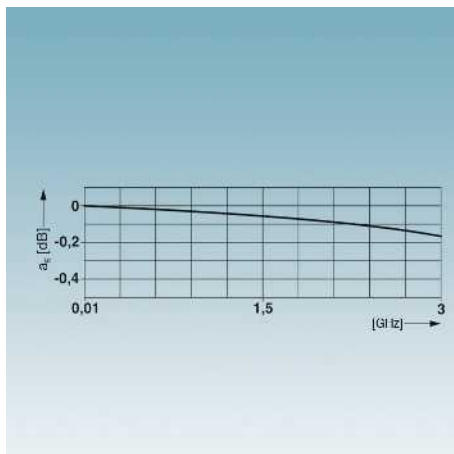
You won't lose reception with COAXTRAB

Transceiver systems are generally considered to be particularly susceptible to surge voltages. Antenna cables which extend beyond a building and are usually very long, plus the antennas themselves, are directly exposed to atmospheric discharge.

Cables with a coaxial structure and therefore favorable EMC properties are primarily used in antenna systems. However, the risk of surge voltage coupling in antenna cables and potential transfer through to the sensitive interfaces of transceiver systems is not eliminated.

Thanks to interface-optimized surge protective devices, the COAXTRAB product range significantly increases safety for transceiver equipment. The aim of such safety measures is to increase the availability and operability of the devices affected.

i Your web code: **#0146**



Shielding

Good shielding properties are vital for a clean transmission. The robust metal housings provide ideal shielding properties and are also suitable for use in harsh industrial environments.

Customized products

Appropriate protective devices are available for all applications including SAT receiver systems, mobile phones, and video monitoring.

The very low attenuation values ensure that data transmission is clean.

Performance classes

The protective devices conform to standards in all performance classes. This applies for coarse protection in accordance with Category D1, 10/350 μ s and for fine protection in accordance with Category C2 and C1, 8/20 μ s.



Connection technology

The right connection technology to suit the application: F connector, TV connector, type N, 7/16, BNC, SMA.

Surge protection and interference filters

Surge protection for transceiver systems

Selection guide

The interface matrix indicates the suitable surge protective device for a specific interface.

1) The PT-IQ-PTB-UT supply module is required in order to operate the PT-IQ series.






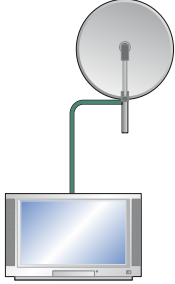





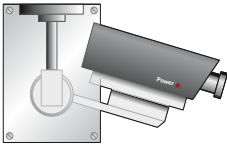


Explanation of the IEC categories




LPZ zone	Test category for SPD in acc. with IEC 61643-21	Test class for SPD in acc. with IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

Interface-based product selection for surge protection

The STOP-IT (Selection of Protection for Information Technology) selection guide provides support in choosing your surge protection solution for a variety of additional interfaces in information and MCR technology.

i Your web code: #2079

Technology	Interface	Connection technology
	GPS, GSM, UMTS, LTE (900, 1800, 1900 MHz)	 Type N
	GSM, UMTS, LTE (without COAX DC supply) (900, 1800, 1900 MHz)	 Type N
	WiMAX, LTE (2.4 ... 6 GHz)	 Type N
	GSM, Industrial Wireless (2.4 GHz)	 Type SMA
	Satellite television (upstream of the antenna distributor)	 Type F
	Satellite television (upstream of the SAT receiver or TV)	 Type F
	Cable/terrestrial TV	  Type F + IEC
		 Type IEC
	Video monitoring (coaxial connection)	 Type BNC
	Video monitoring (2-wire connection)	

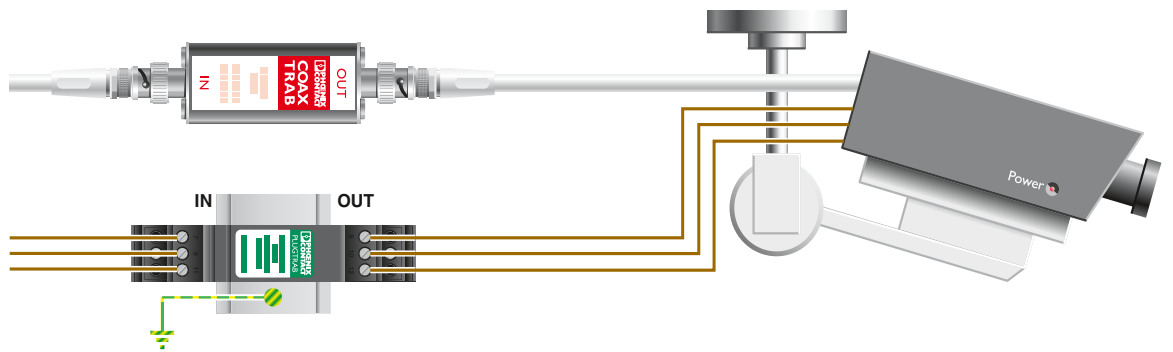
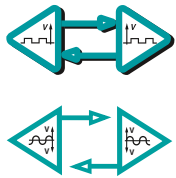
	Screw connection
	Schuko plug-in connection
	Coaxial plug-in connection

IEC category	Protected wires	Surge protective device (SPD)	Order No.	Page
D1/C2/C3	2	CN-UB-280DC-3	2801050 / 2801051	200
D1/C2/C3	2	CN-UB-70-6	2803166 / 2803153	200
D1/C2/C3	2	CN-LAMBDA/4-2.25	2801057 / 2801056	202
D1/C2/C3	2	CN-LAMBDA/4-5.9	2838490 / 2800023	202
D1/C2/C3	2	CSMA-LAMBDA/4-2.0-BS-SET	2800491	202
D1/C2/C1	5 x 2	C-SAT-BOX	2880561	204
D1/C2/C1	2	C-TV-SAT	2856993	204
D1/C2/C3 & T3	2	MNT-TV-SAT	2882297	88
D1/C2/C1	2	C-TV/HIFI	2857002	204
D1/C2/C3 & T3	2	MNT-TV-SAT	2882297	88
D1/C2/C3	2	C-UFB-5DC/E	2782300	200
D1/C2/C3	2	C-UFB-5DC/E 75	2763604	200
D1/C2/C1	2	PT-IQ-5-HF+F-5DC-UT	2800798	173

Surge protection and interference filters

Surge protection for transceiver systems

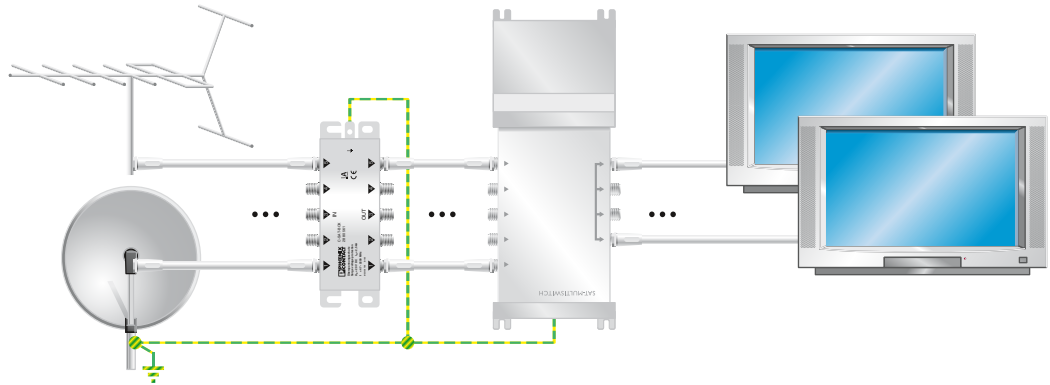
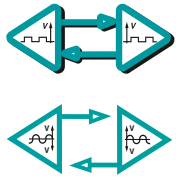
Protection of video signals



C-UBF 5DC
2797858
Page 201

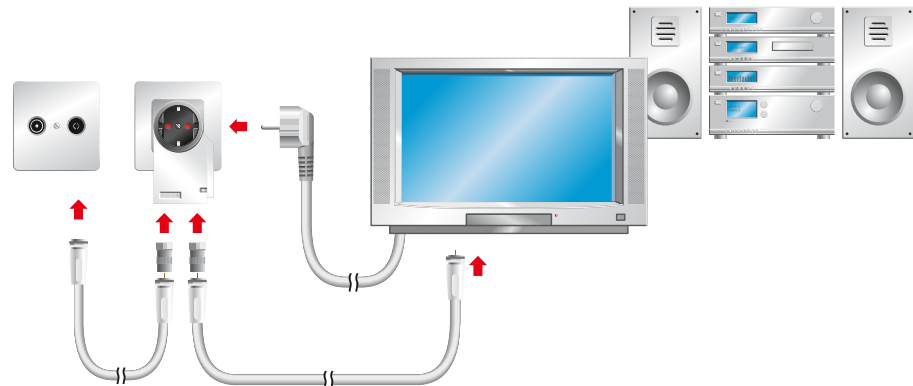
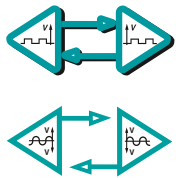
PT 3-HF-12DC-ST + PT 1X2-BE
2858043 and 2856113
Page 168

Protection of the SAT antenna connection



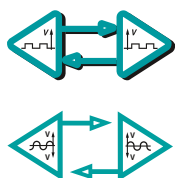
C-SAT-BOX
2880561
Page 204

Protection of the cable TV connection

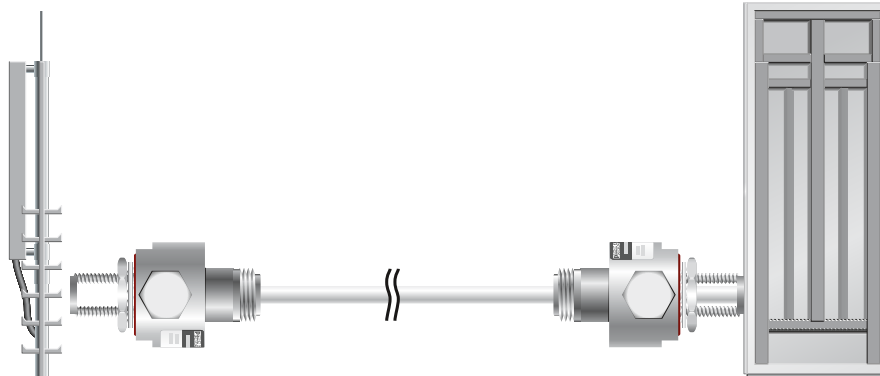


MNT-TV-SAT D
2882284
Page 89

Protection of antenna signals



- GPS
- GSM
- UMTS



CN-UB-280DC-3-BB

2801050

Page 200

Optional

CN-LAMBDA/4-2.25-BB

2801057

Page 202

Surge protection and interference filters

Surge protection for transceiver systems

Antenna systems

- For antennas with N and BNC connection
- High transmission capacities even for frequencies up to 6 GHz
- Mounting plate enables fixed mounting, e.g., in a control cabinet
- The protective adapters can also be used in a 75 Ω system with 50 Ω BNC connectors
- For the CN-UB-280DC, the gas-filled surge arrester can be replaced in case of malfunction



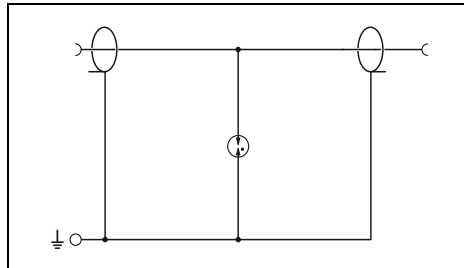
For GSM systems (0 - 3 GHz), grounded shield, connection: type N



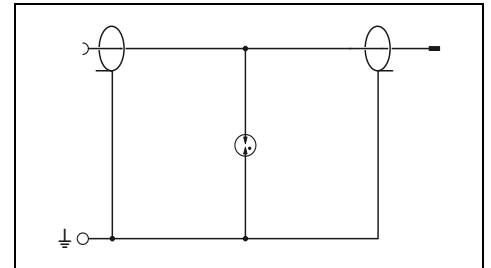
For GSM systems (0 - 6 GHz), grounded shield, connection: type N

Notes:
Attenuation characteristics at phoenixcontact.net/products

ERC



ERC



Technical data

Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_C	
Rated current	
Nominal discharge current I_n (8/20) μ s	
Core-Shield	20 kA
Core-Ground	20 kA
Total discharge current I_{total} (8/20) μ s	
Protection level U_p	
Core-Shield	≤ 900 V (C1 - 1 kV/500 A)
Core-Ground	≤ 900 V (C1 - 1 kV/500 A)
Cut-off frequency f_g (3 dB)	
Asymmetrical in the 50 Ω system	
Standing wave ratio SWR in a 50 Ω system	
Permissible. RF power P_{max}	
General data	
Dimensions W/H/D	
Temperature range	
Degree of protection in acc. with IEC 60529/EN 60529	
Connection method	
Test standards	

C2 / C3 / D1
280 V DC
5 A (25°C)

Technical data

C2 / C3 / D1
70 V DC / 50 V AC
10 A

5 kA
5 kA
5 kA

≤ 800 V
(C2 - 4 kV / 2 kA)
 ≤ 800 V
(C2 - 4 kV / 2 kA)

> 6 GHz
typ. 1.15 (≤ 6 GHz)
30 W (VSWR = 1.15)

24 mm / 24 mm / 50 mm
-40°C ... 90°C
IP68
N connector 50 Ω
IEC 61643-21

Ordering data

Description	
COAXTRAB, protective adapter for antenna connections	
Female-female	CN-UB-280DC-3-BB
Male-female	CN-UB-280DC-3-SB
COAXTRAB, as surge protection for coaxial cables, connection via male and female connectors	
BNC 50 Ω	
BNC 75 Ω	
BNC 50 Ω	

Type	Order No.	Pcs./Pkt.
CN-UB-280DC-3-BB	2801050	1
CN-UB-280DC-3-SB	2801051	1

Ordering data

Type	Order No.	Pcs./Pkt.
CN-UB-70DC-6-BB	2803166	1
CN-UB-70DC-6-SB	2803153	1

Accessories

Mounting plate , for individual attachment to housing panels	
straight	CN-UB/MP
angled	CN-UB/MP-90DEG-50
Adapter , insertion loss <0.3 dB at 2.4 GHz	
N (male) -> SMA (female)	RAD-ADP-N/M-SMA/F
0.3 m, N (female) -> SMA (male)	RAD-PIG-EF316-N-SMA
0.5 m, N (female) -> RSMA (male)	RAD-PIG-EF316-N-RSMA

Type	Order No.	Pcs./Pkt.
CN-UB/MP	2818135	10
CN-UB/MP-90DEG-50	2803137	1
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-N-SMA	2867694	1
RAD-PIG-EF316-N-RSMA	2701402	1

Accessories

Type	Order No.	Pcs./Pkt.
CN-UB/MP	2818135	10
CN-UB/MP-90DEG-50	2803137	1
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-N-SMA	2867694	1
RAD-PIG-EF316-N-RSMA	2701402	1



For TETRA systems (380 MHz - 470 MHz), floating shield, connection: type N

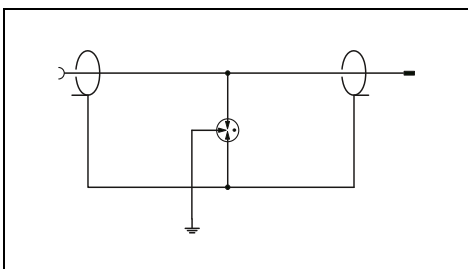


For video systems, floating shield, coarse protection, connection: BNC



For video systems, floating shield, connection: BNC

ERC



Technical data

C2 / C3 / D1
180 V DC / 130 V AC
5 A
(25°C)

5 kA
5 kA
10 kA

≤ 700 V
(C2 - 10 kV / 5 kA)
≤ 500 V
(C2 - 10 kV / 5 kA)

typ. 1 GHz
typ. 1.2 (≤ 200 MHz)
300 W (VSWR = 1.1)

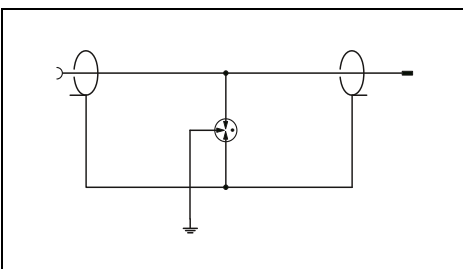
25.4 mm / 25.4 mm / 96 mm
-40°C ... 80°C
IP20
N connector 50 Ω
IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
CN-UB/E-BB	2817686	1
CN-UB/E	2763691	1

Accessories

ERC



Technical data

C2 / C3 / D1
180 V DC / 130 V AC
3.5 A
(25°C)

5 kA
5 kA
10 kA

≤ 700 V
(C2 - 10 kV / 5 kA)
≤ 500 V
(C2 - 10 kV / 5 kA)

typ. 1 GHz
typ. 1.3 (≤ 150 MHz)
300 W (VSWR = 1.1)

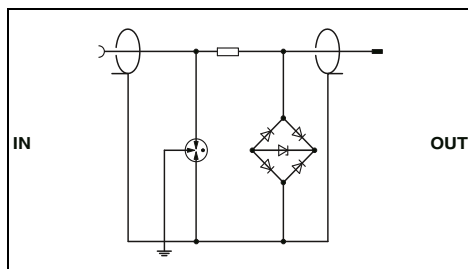
25.4 mm / 25.4 mm / 80 mm
-40°C ... 80°C
IP20
BNC 50 Ω
IEC 61643-21 / EN 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
C-UB/E	2763701	10

Accessories

ERC



Technical data

... 5DC/E	... 24DC/E	... 5DC/E 75
C2 / C3 / D1	C2 / C3 / D1	C2 / C3 / D1
5 V DC	30 V DC	5 V DC
185 mA (25°C)	185 mA (25°C)	185 mA (25°C)

10 kA	10 kA	10 kA
10 kA	10 kA	10 kA
20 kA	20 kA	20 kA

≤ 25 V (C3 - 10 A)	≤ 50 V (C3 - 10 A)	≤ 25 V (C3 - 10 A)
≤ 500 V (C3 - 10 A)	≤ 500 V (C3 - 10 A)	≤ 500 V (C3 - 10 A)

typ. 90 MHz	typ. 90 MHz	typ. 80 MHz
		-

BNC 50 Ω	BNC 50 Ω	BNC 75 Ω
		IEC 61643-21

Ordering data

Type	Order No.	Pcs./Pkt.
C-UBF- 5DC/E	2782300	10
C-UBF- 5DC/E 75	2763604	10
C-UBF-24DC/E	2782313	10

Accessories

Surge protection and interference filters

Surge protection for transceiver systems

Antenna systems

- For antennas with N and SMA connection
- High transmission capacities even for frequencies up to 6 GHz
- Maintenance-free surge protection with Lambda/4 technology
- Low protection level

Notes:
Attenuation characteristics at phoenixcontact.net/products

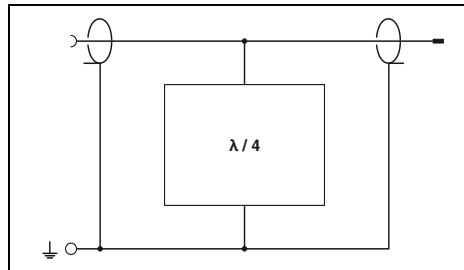


For TETRA systems (380 MHz - 470 MHz), grounded shield, connection: type N

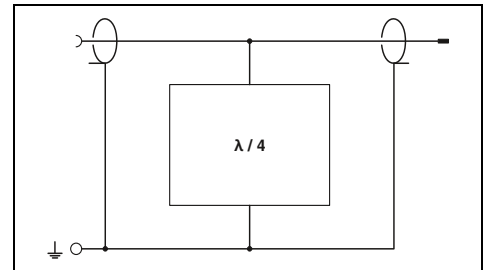


For GSM systems (0.8 GHz - 2.25 GHz), grounded shield, connection: type N

ERC



ERC



Technical data

Electrical data	
IEC test classification/EN type	C2 / C3 / D1
Rated current	5 A (25°C)
Nominal discharge current I_n (8/20) μ s	Core-Shield 20 kA Core-Ground 20 kA
Total discharge current I_{total} (8/20) μ s	30 kA
Protection level U_p	Core-Ground ≤ 95 V (C2 - 10 kV / 5 kA) Core-Shield ≤ 95 V (C2 - 10 kV / 5 kA)
Frequency range	380 MHz ... 470 MHz
Standing wave ratio SWR in a 50 Ω system	typ. 1.05 ($\leq 1,15$)
Permissible. RF power P_{max}	≤ 800 W
General data	
Temperature range	-40°C ... 90°C
Degree of protection in acc. with IEC 60529/EN 60529	IP68
Connection method	N connector
Test standards	IEC 61643-21

Technical data

Electrical data	
IEC test classification/EN type	C2 / C3 / D1
Rated current	-
Nominal discharge current I_n (8/20) μ s	50 kA
Total discharge current I_{total} (8/20) μ s	50 kA
Protection level U_p	-
Frequency range	≤ 5 V (C1 - 1 kV/500 A) ≤ 5 V (C1 - 1 kV/500 A) 0.8 GHz ... 2.25 GHz
Standing wave ratio SWR in a 50 Ω system	typ. 1.2
Permissible. RF power P_{max}	≤ 500 W
General data	
Temperature range	-40°C ... 85°C
Degree of protection in acc. with IEC 60529/EN 60529	IP68
Connection method	N connector 50 Ω
Test standards	IEC 61643-21/A1 / EN 61643-21/A1

Ordering data

Description	
COAXTRAB, protective adapter for antenna connections with Lambda/4 technology	Female-female Male-female
Surge protection for UMTS and quad-band GSM antenna, with SMA plug and SMA coupling	

Type	Order No.	Pcs./Pkt.
CN-LAMBDA/4-0.47-BB	2800021	1
CN-LAMBDA/4-0.47-SB	2800022	1

Ordering data

Type	Order No.	Pcs./Pkt.
CN-LAMBDA/4-2.25-BB	2801057	1
CN-LAMBDA/4-2.25-SB	2801056	1

Accessories

Mounting plate, for individual attachment to housing panels	straight angled
Adapter, insertion loss <0.3 dB at 2.4 GHz	N (male) -> SMA (female)
Adapter cable (pigtail)	0.3 m, N (female) -> SMA (male) 0.5 m, N (female) -> RSMA (male)

Type	Order No.	Pcs./Pkt.
CN-UB/MP-90DEG-50	2803137	1
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-N-SMA	2867694	1
RAD-PIG-EF316-N-RSMA	2701402	1

Accessories

Type	Order No.	Pcs./Pkt.
CN-UB/MP	2818135	10
CN-UB/MP-90DEG-50	2803137	1
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-N-SMA	2867694	1
RAD-PIG-EF316-N-RSMA	2701402	1



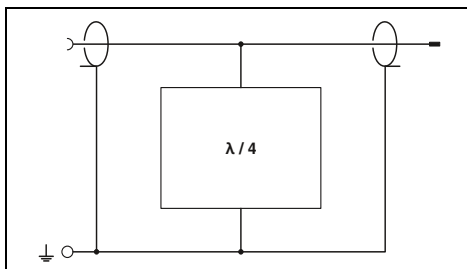
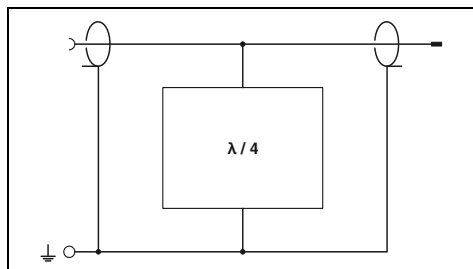
For GSM systems (0.8 GHz - 2.25 GHz), grounded shield, connection: SMA



For GSM and WIMAX systems (2.4 GHz - 5.9 GHz), grounded shield, connection: type N

ERC

ERC



Technical data

Technical data

C2 / C3 / D1
2 A (25°C)

6 kA
6 kA
6 kA

≤ 5 V (C1 - 1 kV/500 A)
-
0.8 GHz ... 2.25 GHz
≤ 1.2 (0.8 GHz ... 2.25 GHz)
≤ 110 W (VSWR = 1.0)

C2 / C3 / D1
5 A (25°C)

50 kA
50 kA
60 kA

≤ 11 V (6 kV / 3 kA)
≤ 11 V (6 kV / 3 kA)
2.4 GHz ... 5.9 GHz
typ. 1.1 (≤ 1.20 (2.4 GHz...5.9 GHz))
≤ 500 W

-40°C ... 70°C
IP55
SMA connector
IEC 61643-21/A1 / EN 61643-21/A1

-40°C ... 90°C
IP68
N connector
IEC 61643-21

Ordering data

Ordering data

Type	Order No.	Pcs./Pkt.
CSMA-LAMBDA/4-2.0-BS-SET	2800491	1

Type	Order No.	Pcs./Pkt.
CN-LAMBDA/4-5.9-BB	2838490	1
CN-LAMBDA/4-5.9-SB	2800023	1

Accessories

Accessories

Type	Order No.	Pcs./Pkt.
CN-UB/MP	2818135	10
CN-UB/MP-90DEG-50	2803137	1

Type	Order No.	Pcs./Pkt.
CN-UB/MP-90DEG-50	2803137	1
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-N-RSMA	2701402	1

Surge protection and interference filters

Surge protection for transceiver systems

TV and radio systems

Notes:
Attenuation characteristics at phoenixcontact.net/products

C-SAT-BOX

- Protection for antenna inputs in satellite receiver technology
- Use upstream of antenna distributor or multi-switch
- Analog and digital SAT signals
- Terrestrial antenna signals
- Direct wall mounting supported

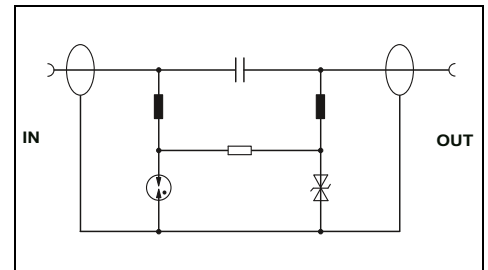
C-TV-SAT and C-TV/HIFI

- Protective adapter for antenna connections
- Use on broadband cable or SAT connection
- TV (IEC) or F connector



For antenna distributor or multi-switch, grounded shield, connection: F

ERC



Technical data

Electrical data	
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_c	20 V DC
Rated current	400 mA
Nominal discharge current I_n (8/20) μ s	
	Core-Shield 2.5 kA
	Core-Ground -
Total discharge current I_{total} (8/20) μ s	10 kA
Output voltage limitation at 1 kV/ μ s	
	Core-Shield \leq 80 V
	Core-Ground -
Cut-off frequency f_g (3 dB)	
In a 75 Ω system	Symm. / asymm. (shield)
	- / > 2.5 GHz
General data	
Dimensions W/H/D	144.9 mm / 31.5 mm / 71.5 mm
Temperature range	-25°C ... 55°C
Degree of protection in acc. with IEC 60529/EN 60529	IP40
Flammability rating in accordance with UL 94	-
Connection method	F connector
Test standards	IEC 61643-21 / EN 61643-21 / EN 50083-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
COAXTRAB , protective device for antenna distributors/ multi-switches for insertion in the antenna line	C-SAT-BOX	2880561	1
COAXTRAB , surge protection adapter	F connector TV connector		

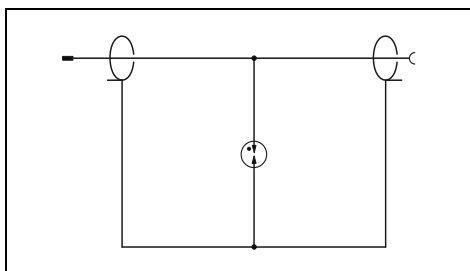
Accessories

Adapter , to connect the C-SAT-BOX with antenna distributors with a pitch of 20 mm (e.g. ASTRO, SPAUN)	ADAPTER KOAX TYP F	2880972	5
Connection cable , to connect the C-SAT-BOX with the antenna distributor, length: 0.2 m	KBL-SAT/20	2880985	5



For TV equipment and SAT systems,
grounded shield, connection: F or TV (IEC)

ERC



Technical data

F-connector	TV connector
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
24 V DC	24 V DC
1.5 A (25°C)	1.5 A (25°C)
2.5 kA	2.5 kA
-	-
≤ 600 V	≤ 600 V
- / > 3 GHz	- / > 1 GHz

28 mm / 44 mm / 66 mm
-25°C ... 75°C
IP20
V-0

F connector PAL-TV (IEC 169-2)
IEC 61643-21 / EN 61643-21 / EN 50083

Ordering data

Type	Order No.	Pcs./Pkt.
C-TV-SAT	2856993	1
C-TV/HIFI	2857002	1

Accessories

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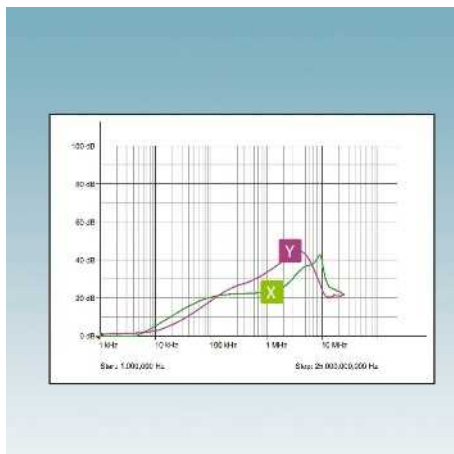
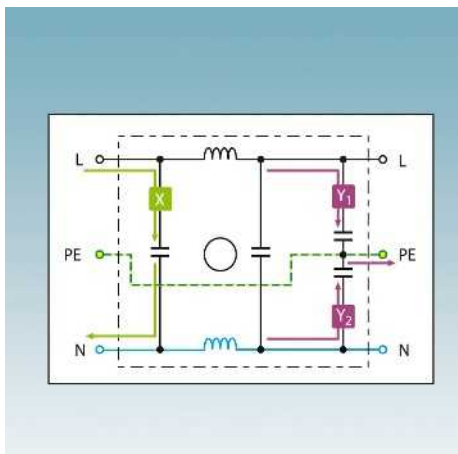
Reliable signals by means of interference suppression filters with integrated surge protection

High-frequency interference can also be caused by power electronics equipment. Switching operations triggered mechanically or electronically generate pulse-like and high-frequency interference voltages. These voltages spread unimpeded across the cable network. All the devices within this cable network are affected. Data errors, uncontrolled functions, and system crashes can result, with data processing devices at particular risk.

Interference voltage filters for power supply units

Interference suppression filters limit conducted high-frequency interference voltages. Devices used in data processing or automation particularly benefit from a clean power supply. The end result is safe operation and reliable measured results. Thanks to the integrated surge protection, surge pulses are effectively limited and surge currents are safely discharged.

i Your web code: #0149



Mains interference filters – Operating principle and range

Filtering of symmetrical disturbance variables

X - Interference voltages between the phase and neutral conductor are filtered.

Filtering of asymmetrical disturbance variables

Y₁, Y₂ - The opposite grounded interference voltages from phase to PE and from the neutral conductor to PE are filtered.

Operating range of filters

An attenuation curve diagram illustrates the effective operating range of mains interference filters. The relevant frequency-dependent attenuation can be read according to the symmetrical or asymmetrical filter circuit.

Interference suppression filters with surge protection

Interference suppression filters with integrated surge protection have two tasks: they absorb transient overvoltages and also limit high-frequency interference voltages and interference currents.

Versions are available for the power supply and for signal circuits.

Surge protection and interference filters

Interference suppression filters

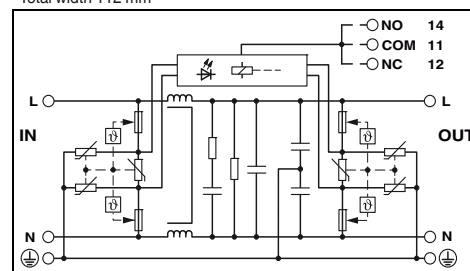
DIN-rail-mountable device protection with interference suppression filter, SFP filter

- Combined protective circuit for absorbing transient surge voltages and high-frequency interference voltages
- Thermal monitoring of the protective circuit
- Disconnection status signaled via floating remote indication contact
- Can be installed in industrial environments



20 A nominal current

Total width 112 mm



Technical data

Electrical data	... 120AC	... 230AC
IEC test classification / EN type / SPD type (UL)	- / T3 / 2CA	- / T3 / -
Nominal voltage U_N	120 V AC (TN) / 120 V AC (TT - only in use with RCD) / 120 V AC (IT)	240 V AC (TN) / 240 V AC (TT - only in use with RCD) / 240 V AC (IT - only in use with RCD)
Maximum continuous operating voltage U_c	150 V AC	264 V AC
Nominal load current I_L	20 A (40°C)	20 A (40°C)
Combined surge U_{OC}	6 kV (3 kA)	10 kV (5 kA)
Protection level U_p	≤ 0.45 kV	≤ 1 kV
Response time t_A	≤ 25 ns	≤ 25 ns
Maximum backup fuse in acc. with IEC	20 A (MCB B/general purpose)	20 A (MCB B/general purpose)
Input attenuation a_i		
	Symmetrical	20 dB (≥ 100 kHz / 50 Ω)
	Asymmetrical	30 dB (≥ 1 MHz / 50 Ω)
Inductance	2x 1 mH $\pm 30\%$ (with current compensation)	2x 1 mH $\pm 30\%$ (with current compensation)
General data		
Dimensions W/H/D		112 mm / 86.6 mm / 79 mm
Connection data rigid / flexible / AWG		2.5 mm ² ... 6 mm ² / 2.5 mm ² ... 4 mm ² / 14 ... 10
Temperature range	-25°C ... 70°C	-25°C ... 70°C
Flammability rating in accordance with UL 94		V-0
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
Connection data rigid / flexible / AWG		0.14 mm ² ... 1.5 mm ² / 0.14 mm ² ... 1.5 mm ² / 26 ... 16
Max. operating voltage		250 V AC / 250 V DC
Max. operating current		1 A AC / 1 A DC

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SFP-TRAB , DIN-rail-mountable device protection TVSS with integrated mains interference filter and visual signaling				
Nominal current: 20 A	120 V AC	SFP 1-20/120AC	2856702	1
Nominal current: 20 A	240 V AC	SFP 1-20/230AC	2859987	1
SFP-TRAB , DIN-rail-mountable device protection with integrated mains interference filter and visual signaling				
Nominal current: 5 A	120 V AC			
Nominal current: 10 A	120 V AC			
Nominal current: 15 A	120 V AC			



5 A nominal current

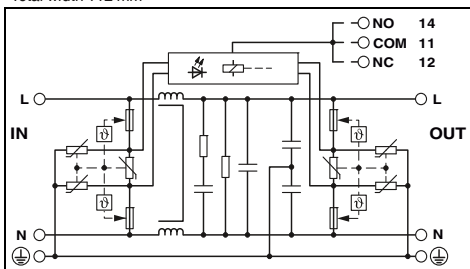


10 A nominal current



15 A nominal current

Total width 112 mm



Technical data

- / T3 / 2CA
120 V AC (TN) /
120 V AC (TT - only in use with RCD) /
120 V AC (IT)

150 V AC
5 A (70°C)
6 kV (3 kA)
≤ 0.45 kV
≤ 25 ns
20 A (MCB B/general purpose)

20 dB (≥ 100 kHz / 50 Ω)
30 dB (≥ 1 MHz / 50 Ω)
2x 1 mH ±30% (with current compensation)

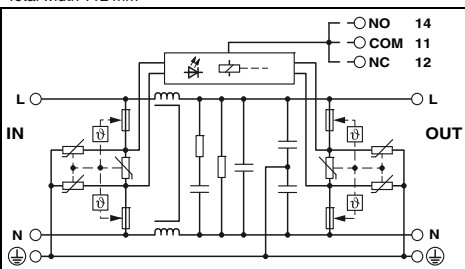
112 mm / 86.6 mm / 79 mm
2.5 mm² ... 6 mm² / 2.5 mm² ... 4 mm² / 14 ... 10
-25°C ... 70°C
V-0
IEC 61643-11 / EN 61643-11

PDT contact
0.14 mm² ... 1.5 mm² / 0.14 mm² ... 1.5 mm² / 26 ... 16
250 V AC / 250 V DC
1 A AC / 1 A DC

Ordering data

Type	Order No.	Pcs./Pkt.
SFP 1-5/120AC	2920667	1

Total width 112 mm



Technical data

- / T3 / 2CA
120 V AC (TN) /
120 V AC (TT - only in use with RCD) /
120 V AC (IT)

150 V AC
10 A (60°C)
6 kV (3 kA)
≤ 0.45 kV
≤ 25 ns
20 A (MCB B/general purpose)

20 dB (≥ 100 kHz / 50 Ω)
30 dB (≥ 1 MHz / 50 Ω)
2x 1 mH ±30% (with current compensation)

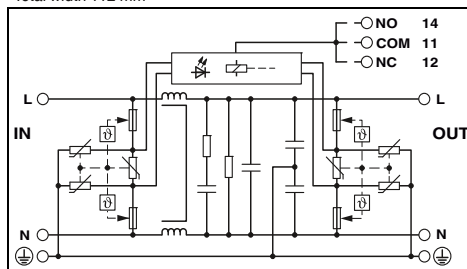
112 mm / 86.6 mm / 79 mm
2.5 mm² ... 6 mm² / 2.5 mm² ... 4 mm² / 14 ... 10
-25°C ... 70°C
V-0
IEC 61643-11 / EN 61643-11

PDT contact
0.14 mm² ... 1.5 mm² / 0.14 mm² ... 1.5 mm² / 26 ... 16
250 V AC / 250 V DC
1 A AC / 1 A DC

Ordering data

Type	Order No.	Pcs./Pkt.
SFP 1-10/120AC	2920670	1

Total width 112 mm



Technical data

- / T3 / 2CA
120 V AC (TN) /
120 V AC (TT - only in use with RCD) /
120 V AC (IT)

150 V AC
15 A (50°C)
6 kV (3 kA)
≤ 0.45 kV
≤ 25 ns
20 A (MCB B/general purpose)

20 dB (≥ 100 kHz / 50 Ω)
30 dB (≥ 1 MHz / 50 Ω)
2x 1 mH ±30% (with current compensation)

112 mm / 86.6 mm / 79 mm
2.5 mm² ... 6 mm² / 2.5 mm² ... 4 mm² / 14 ... 10
-25°C ... 70°C
V-0
IEC 61643-11 / EN 61643-11

PDT contact
0.14 mm² ... 1.5 mm² / 0.14 mm² ... 1.5 mm² / 26 ... 16
250 V AC / 250 V DC
1 A AC / 1 A DC

Ordering data

Type	Order No.	Pcs./Pkt.
SFP 1-15/120AC	2920683	1

Surge protection and interference filters

Interference suppression filters

TERMITRAB

Notes:
Attenuation characteristics at phoenixcontact.net/products

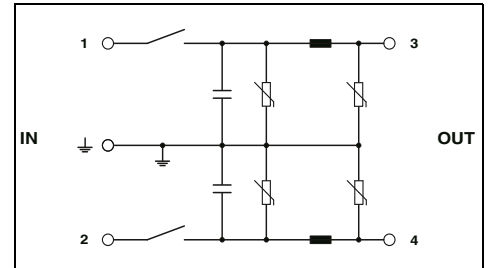
- Combined protective circuit for absorbing transient surge voltages and high-frequency interference voltages
- With spring-cage connection
- Disconnection of signal circuits by disconnect knife



Protection for two conductors with a common reference potential

ERC

Total width 6.2 mm



Technical data

Electrical data		C1 / C3
IEC test classification/EN type		38 V DC / 30 V AC
Maximum continuous operating voltage U_c		
Rated current		500 mA (55°C)
Nominal discharge current I_n (8/20) μ s	Core-Ground	350 A (per path) 700 A
Total discharge current I_{total} (8/20) μ s		1.5 kA (per path)
Max. discharge current I_{max} (8/20) μ s		
Output voltage limitation at 1 kV/ μ s	Core-Ground	≤ 70 V (per path)
Cut-off frequency f_g (3 dB)	Asymmetrical in the 50 Ω system	typ. 60 kHz
Resistance per path		0.5 Ω
Inductance per path		typ. 100 μ H
Capacity per path		typ. 130 nF
General data		
Connection data rigid / flexible / AWG		0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 ... 12
Temperature range		-40°C ... 85°C
Degree of protection in acc. with IEC 60529/EN 60529		IP20
Flammability rating in accordance with UL 94		V-0
Test standards		IEC 61643-21 / EN 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB , spring-cage terminal block with integrated surge protection as a filter circuit and disconnect knives, for mounting on NS 35	24 V AC	TT-ST-M-SFP-24AC	2858946	10

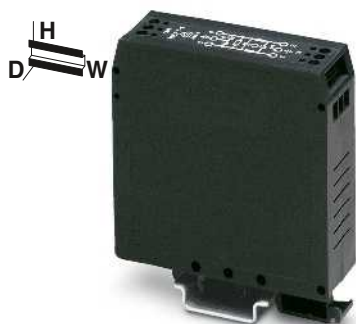
Accessories

Cover , for terminating a row of terminal blocks	TT-D-STTCO-BK	2858994	50
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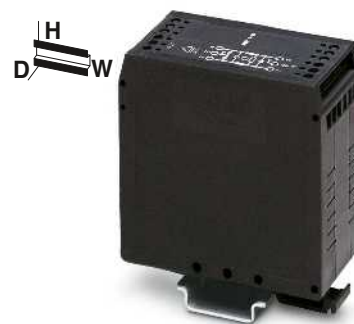
FILTRAB

- Low-pass filters for nominal currents of 1 to 10 A
- For single-phase circuits
- DIN rail module

Notes:
Attenuation characteristics at phoenixcontact.net/products

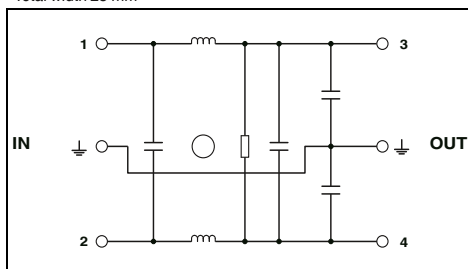


1 A / 3 A nominal current

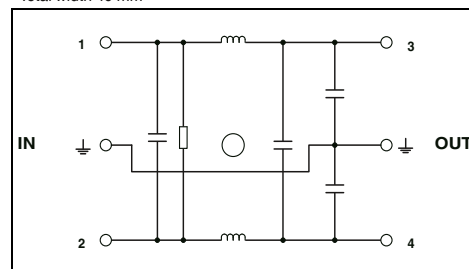


6 A / 10 A nominal current

ERIC Total width 25 mm



ERIC Total width 40 mm



Technical data

	NEF 1- 1	NEF 1- 3
Rated voltage	240 V AC (L-N) 264 V AC (L-N) / 264 V AC (L-PE)	240 V AC (L-N) 264 V AC (L-N) / 264 V AC (L-PE)
Rated current	1 A (40°C)	3 A (40°C)
Maximum backup fuse in acc. with IEC	1 A (gL)	3 A (gL)
Inductance	2x 10 mH	2x 2.7 mH
Input attenuation a _i	Symmetrical > 65 dB (50 Ω / 1 MHz) Asymmetrical > 45 dB (50 Ω / 1 MHz)	Symmetrical > 55 dB (50 Ω / 1 MHz) Asymmetrical > 35 dB (50 Ω / 1 MHz)
Dimensions W/H/D	25 mm / 79.4 mm / 84.15 mm	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 - 12	
Temperature range	-25°C ... 100°C (HMF)	
Flammability rating in accordance with UL 94	V-2	
Test standards	IEC 60939-2 / EN 60939-2	

Technical data

	NEF 1- 6	NEF 1-10
Rated voltage	240 V AC (L-N) 264 V AC (L-N) / 264 V AC (L-PE)	240 V AC (L-N) 264 V AC (L-N) / 264 V AC (L-PE)
Rated current	6 A (40°C)	10 A (40°C)
Maximum backup fuse in acc. with IEC	6.3 A (gL/C)	10 A (gL)
Inductance	2x 2.7 mH	2x 1.8 mH
Input attenuation a _i	Symmetrical > 80 dB (50 Ω / 1 MHz) Asymmetrical > 40 dB (50 Ω / 1 MHz)	Symmetrical > 80 dB (50 Ω / 1 MHz) Asymmetrical > 40 dB (50 Ω / 1 MHz)
Dimensions W/H/D	40 mm / 79.4 mm / 84.1 mm	
Connection data rigid / flexible / AWG	0.2 ... 4 mm ² / 0.2 ... 2.5 mm ² / 24 - 12	
Temperature range	-25°C ... 100°C (HMF)	
Flammability rating in accordance with UL 94	V-2	
Test standards	IEC 60939-2 / EN 60939-2	

Ordering data

Type	Order No.	Pcs./Pkt.
1 A	NEF 1- 1 2794123	10
3 A	NEF 1- 3 2794110	10

Ordering data

Type	Order No.	Pcs./Pkt.
6 A	NEF 1- 6 2783082	5
10 A	NEF 1-10 2788977	5

Description	Nominal load current I _N
FILTRAB , interference suppression filter for single-phase current circuits, for mounting on NS 32 or NS 35...	1 A 3 A 6 A 10 A



Clear insight into the system

ImpulseCheck is the world's first intelligent assistance system for surge protection in the field of mains protection. The module allows you to measure the state of health of every single protective device via cloud connection and provides new digital services.

Optimum protection for sensitive systems

In many cases, SPDs can limit surge voltages and discharge surge currents without your system sustaining any damage. Depending on the number, duration, and amplitude of the surge currents, SPDs may be pushed to their very limits and fail. Other faults in the electrical installation, such as short circuits or ground faults, can also contribute to the failure of SPDs. A failure is indicated by a status indicator on the SPD itself and additional remote signaling, if necessary.

The current, actual load on the SPDs can only be determined by performing an electrical test on the individual modules. However, this is laborious and only provides an insight into the state of the SPDs at the time of testing.

How does ImpulseCheck work?

ImpulseCheck enables the continuous monitoring of SPDs. Thanks to external sensor cables, the system can be easily installed or retrofitted in both new and existing systems. It takes just a few simple steps to attach up to 4 sensors to the connecting cables of the monitored SPD.

Surge currents with a very high time resolution are captured on each channel. Both high-frequency events and sustained currents are measured reliably. Electromagnetic interference is detected, allocated a time stamp, and transmitted to PROFICLOUD. Important parameters are evaluated and indicated from the signal curves for surge current events. In addition, the remote indication contact of the monitored SPD can be evaluated.

For Phoenix Contact SPDs, the actual load is determined at all times based on the recorded events. The determined status (green, yellow, red) is displayed in PROFICLOUD as well as on the device itself. This allows you to respond proactively before an SPD actually fails.

Benefit from digital added value

The cloud-based evaluation of measured data enables the direct use of new digital services. Status messages regarding surge protection can be displayed on any web-enabled device. For example, you can configure custom notifications for various events in PROFICLOUD or create standard-compliant status reports at the push of a button.

Thanks to the ongoing further development of new and existing devices for PROFICLOUD as well as the platform itself, it will be possible to network a wide range of applications and services in the future.

i Your web code: #2095

new

Intelligent assistance system for surge protection

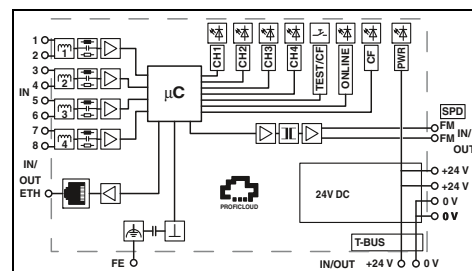
ImpulseCheck IPCH

- Determination and display of remaining service life (state of health) for each monitored mode of protection in PROFICLOUD
- Multi-stage state of health signaling for each monitored mode of protection directly on the device
- Real-time measurement of surge currents and detection of electromagnetic interference in order to diagnose problems in the system
- Automatic calculation of amplitude, charge, and specific energy
- Measurement of multiple pulses and sustained currents
- Display and retrieval of waveforms for individual recorded surge current events in PROFICLOUD
- Cloud-based notification on status change of the monitored modes of protection
- Additional interface for integrating the SPD remote indication contact
- Configuration of network connection via local web server
- Power supply via screw connection or DIN rail connector
- Easy installation, even when retrofitting, thanks to separate sensor cable
- Connection of up to 4 sensor cables, depending on the SPD circuit version

Notes:
ImpulseCheck is supplied without sensors. They must be ordered separately.



Evaluation and communication unit, for up to 4 sensors, Ethernet via RJ45



Ambient conditions	
Ambient temperature (operation)	-35°C ... 85°C
Degree of protection	IP20
General technical data	
Mounting type	DIN rail: 35 mm
Operating voltage	24 V DC (-15% ... +20%)
Detectable values (current strength)	100 A ... 40 kA
Sampling rate	500 kHz
Maximum measuring period	1 s
Connection designation	
	Connection method
	Conductor cross section rigid / flexible / AWG
Connection designation	
	Connection method
	Conductor cross section rigid / flexible / AWG
Connection designation	
	Connection method
	Transmission speed

Technical data

Technical data		
-35°C ... 85°C		
IP20		
DIN rail: 35 mm		
24 V DC (-15% ... +20%)		
100 A ... 40 kA		
500 kHz		
1 s		
24 V supply		
Screw terminal block		
0.14 mm ² ... 2.5 mm ² / 0.14 mm ² ... 2.5 mm ² / 26 ... 14		
Remote signaling		
Screw terminal block		
0.14 mm ² ... 2.5 mm ² / 0.14 mm ² ... 2.5 mm ² / 26 ... 14		
Ethernet		
RJ45		
10/100 Mbps		

Description	
ImpulseCheck	

Ordering data

Type	Order No.	Pcs./Pkt.
IPCH-4X-PCL-TCP-24DC-UT	1045379	1

Sensor, with connecting cable length of:	
1.5 m	
3.0 m	

Accessories

Type	Order No.	Pcs./Pkt.
IPCH-SC-1.5	1045380	1
IPCH-SC-3.0	1069191	1



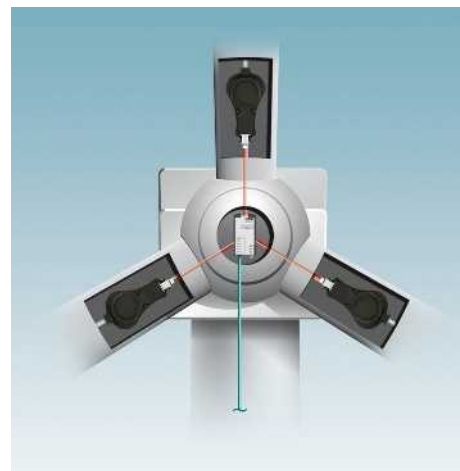
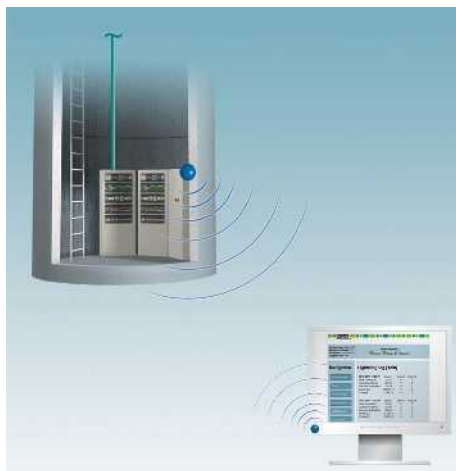
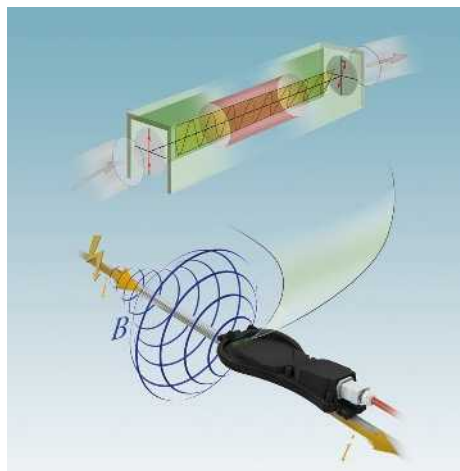
Lightning strikes cause devastating damage to buildings and systems. It is practically impossible for employees to continuously monitor exposed or large-scale systems, which means that damage is detected too late.

Detecting lightning with the lightning monitoring system

The LM-S lightning monitoring system supports continuous monitoring. Lightning events are detected, evaluated, and remotely monitored via network access. By consolidating the system operating parameters and the measuring data, the system provides a better basis for making decisions regarding control and maintenance.

The LM-S lightning current monitoring system consists of the following components:

- Sensor
- Connecting cable
- O/E module
- Evaluation unit



Faraday effect as a reliable measuring method

The internal measuring principle of the LM-S is based on the Faraday effect. Polarized light in a specific medium is rotated through a magnetic field over a defined length and measured.

The higher the amperage (i) generated by a lightning strike the greater the magnetic flux density (B) and, therefore, the rotation of the polarized light.

The lightning monitoring system detects this change in the light signal and uses this as the basis for the corresponding measured value results.

Remote monitoring in real time

The evaluation unit can be easily integrated into standard network systems via the RJ45 Ethernet interface. The data acquired can be accessed and the system can be configured via web interface, Modbus/TCP or OPC UA. The web interface is opened via the Internet browser on a PC connected to the system using IP addressing.

Detection and evaluation

The sensors are mounted on the lightning arrester cables. They record the magnetic field that occurs around the conductor due to the lightning surge current. The measured result is transmitted via fiber optics to the O/E module of the evaluation unit, where the optical signal is converted into an electrical signal. Based on the values obtained, the evaluation unit determines the lightning characteristics with their typical parameters, including, for example, the maximum lightning current strength, lightning current rate of rise, charge, and energy. These results can be forwarded to an available management system via the Ethernet interface.

Surge protection and interference filters

Lightning current measurement

Sensor

- Optical sensor for measuring lightning surge currents
- Subsequent mounting is possible
- Resistant to humidity
- Good UV resistance



Sensor

Detectable values	
Maximum current strength	400 kA
FO interface	
Connection method	SC-RJ socket with push/pull connector, IP67
General data	
Ambient temperature (operation)	-30°C ... 60°C
Ambient temperature (storage/transport)	-40°C ... 85°C
Degree of protection	IP67

Technical data

Maximum current strength	400 kA
Connection method	SC-RJ socket with push/pull connector, IP67
Ambient temperature (operation)	-30°C ... 60°C
Ambient temperature (storage/transport)	-40°C ... 85°C
Degree of protection	IP67

Description	
Sensor	

Ordering data

Type	Order No.	Pcs./Pkt.
LM-S-LS-H	2800616	1

Evaluation unit

- Real-time analysis and exact time allocation
- Status and diagnostic indicators
- Communication via Ethernet
- Operation and configuration via web interface, Modbus/TCP, and OPC-UA



Evaluation unit with O/E module



O/E module (replacement part)

Operating voltage	24 V DC ±4 V
Ethernet ports	RJ45
Transmission speed	10/100 Mbps
FO interface	B-FOC (ST®)
Number of ports	3
Remote indication contact	M12 D-coded
Max. operating voltage	60 V DC
General data	
Ambient temperature (operation)	-30°C ... 60°C
Degree of protection	IP20

Technical data

Operating voltage	24 V DC ±4 V
Ethernet ports	RJ45
Transmission speed	10/100 Mbps
FO interface	B-FOC (ST®)
Number of ports	3
Remote indication contact	M12 D-coded
Max. operating voltage	60 V DC
Ambient temperature (operation)	-30°C ... 60°C
Degree of protection	IP20

Technical data

Operating voltage	3.3 V DC
Ethernet ports	-
Transmission speed	-
FO interface	B-FOC (ST®)
Number of ports	3
Remote indication contact	-
Max. operating voltage	-
Ambient temperature (operation)	-30°C ... 60°C
Degree of protection	IP20

Ordering data

Type	Order No.	Pcs./Pkt.
LM-S-A/C-3S-ETH	2800618	1

Ordering data

Type	Order No.	Pcs./Pkt.
LM-S-C-3LS	2800617	1

Description	
Evaluation unit with O/E module	
Opto-electronic module	
O/E module only	

Assembled connecting cables

- Fiber optics for connecting LM-S sensors to the O/E module
- Cable in robust conduit for installation in harsh environments
- Ozone and UV resistant



General data		Technical data		
Ambient temperature (operation)		-40°C ... 70°C		
Description		Ordering data		
Assembled FO cable		Type	Order No.	Pcs./Pkt.
Length: 10 m		FOC-ST:A-SJ:C-HB02/10 PR	1423846	1
Length: 13 m		FOC-ST:A-SJ:C-HB02/13 PR	1426160	1

Connecting cable

- HCS cable for connecting LM-S sensors to the O/E module
- Good UV resistance
- Good oil resistance

Notes:
The specified plug configuration (see ordering example) must be used in order to use the connecting cable in the LM-S lightning monitoring system.
Recommended length: 10 to 200 m



Connecting cable for LM-S

Ordering example for LM-S connecting cable with variable cable length:

Assembled connecting cable for the LM-S lightning monitoring system, with a metal push-pull connector, a B-FOC plug, and a cable length of 10 m.

Description		Ordering data		
Connecting cable, variable		Type	Order No.	Pcs./Pkt.
		FOC-SJ:14-ST/HB02/...	1417723	1

Order No.	Length [m]
1417723 / FOC-SJ:14-ST/HB02	10.0
	Increments: 10.0 m ... 200 m = 1.0 m



CHECKMASTER 2 – The intelligent test device for surge protective devices

Outdoor and indoor lightning protection must be regularly tested in accordance with normative requirements (IEC 62305) and official regulations. A basic visual check is not enough to identify damage to surge protective devices. Only an electrical check using the CHECKMASTER 2 produces meaningful results. The electrical check is performed with the aid of a programmable logic controller, a high-voltage source, and a constant current source. During the check, a program-controlled electrical test is performed on all the relevant components of the surge protective device. Thanks to the integrated database for surge protective devices, spark gaps, gas-filled surge arresters, varistors, and suppressor diodes can be checked automatically. Surge protective devices that were previously damaged, surge protective devices that are nearing the electrical tolerance limits, and faulty surge protective devices can be safely identified.

In industries where high demands are placed on system availability, the CHECKMASTER 2 enables predictive maintenance to be carried out on surge protective devices. This provides additional security for failure-critical systems.

i Your web code: #0147



Easy selection

The CHECKMASTER 2 has a modular design. Corresponding test adapters are available for the various surge protective devices. Further information about the test adapters required can be found on the next page.

Convenient scanning

The barcodes on the surge protective devices present a fast and error-free solution for entering items. Plant-specific ID codes or user-defined designations can be entered via the color touch display or read from individually created barcode labels.

Fast logging and easy data export

The tests are documented in accordance with IEC 62305. The CHECKMASTER 2 saves all test results to the internal memory with mains failure protection. The test reports are available via USB stick for convenient further processing in Office programs.

CHECKMASTER 2

- Modular test device for pluggable surge protective devices from Phoenix Contact
- Easy and tool-free changing of test adapters
- Integrated programmable logic controller with high-voltage source and constant current source
- Automatic and program-controlled testing of surge protective devices
- Easy operation by means of color touch display with virtual keypad
- User interfaces: German, English
- Further languages available for download: French, Italian, Spanish, Portuguese, Turkish, Russian
- Barcode scanner for automatic identification of surge protective devices and for reading user-specific barcodes (e.g., plant identification codes)
- Plant identification codes can also be entered using the virtual keypad
- USB interface for connecting standard USB sticks
- Easy transfer of test reports to Office programs and easy system software update via USB stick
- No additional software required
- No data cable required
- Power supply cable with SCHUKO connector
- Robust plastic transport case; with removable lid
- Additional compartment for another test adapter
- Calibration certificate

Test adapters are not supplied as standard with the CHECKMASTER 2. The required test adapters must be ordered separately.

PA-CASE 2 transport case for test adapters

- Padded compartments for holding test adapters for the CHECKMASTER 2
- Test adapters are not supplied as standard with the PA-CASE 2

Free software for updating the CHECKMASTER 2 can be found in the download area on the Phoenix Contact homepage.

The CHECKMASTER 2 is designed for use in industrial environments (EMC: class A product) and may not meet the requirements for radiated disturbance variables for use in residential areas.

Nominal voltage U_N
Temperature range

Description

Test device, for testing the correct function of surge protective devices from Phoenix Contact; test adapters must be ordered separately

Transport case, to hold four test adapters

Test adapter, for testing the correct function of surge protective devices from Phoenix Contact:

FLASHTRAB-SEC-HYBRID
FLASHTRAB FLT-CP/SEC and VALVETRAB VAL-CP/SEC

VALVETRAB VAL-MS
PLUGTRAB PLT-SEC...UT/PT (width: 17.5 mm)

PLUGTRAB PT/PLT (width: 17.5 mm)
PLUGTRAB PT/PLT (width: 35 mm)

PLUGTRAB UFBK/UAK
TERMITRAB complete
COMTRAB CTM



Test device



Transport case



Test adapter

Total width 432 mm

Technical data

100 V AC ... 240 V AC
5°C ... 35°C

Ordering data			Ordering data			Ordering data		
Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
CHECKMASTER 2	2905256	1						
			PA-CASE 2	2906272	1			
						CM 2-PA-SEC-HYBRID	2907889	1
						CM 2-PA-FLT/VAL-CP/SEC	2905283	1
						CM 2-PA-VAL-MS	2905265	1
						CM 2-PA-PLT-UT/PT	1027866	1
						CM 2-PA-PT/PLT	2905284	1
						CM 2-PA-PT4/PLT3S	2907019	1
						CM 2-PA-PT/A	2907891	1
						CM 2-PA-TTC	2908707	1
						CM 2-PA-CTM	2905282	1

Surge protection and interference filters

Accessories for surge protection

Feed-through terminal block

- For wiring mixed combinations of lightning current and surge arresters
- As a system extension for FLASHTRAB and VALVETRAB applications
- Practical wiring of all common applications



Feed-through terminal block

Electrical data		Technical data	
Maximum continuous operating voltage U_c		500 V AC	
Nominal current I_N		-	
Impulse discharge curr. I_{imp} (10/350) μ s	Peak value	100 kA	
General data		Ordering data	
Dimensions W/H/D		17.7 mm / 89.8 mm / 65.5 mm	
Connection data rigid / flexible / AWG		0.5 ... 35 mm ² / 0.5 ... 25 mm ² / 20 ... 2	
Temperature range		-40°C ... 85°C	
Flammability rating in accordance with UL 94		V-0	
Test standards		EN 60947-7-1 / IEC 61643-11 / EN 61643-11	
Description		Type	Order No.
Feed-through terminal block with biconnect connecting terminal blocks as wiring aid for lightning current and surge arrester applications.		DK-BIC-35	2749880
			Pcs./Pkt.
			1

Equipotential bonding and TRABTECH housings

Equipotential bonding strip

- For main equipotential bonding in accordance with DIN VDE 0100
- Also for lightning protection equipotential bonding in accordance with DIN EN 62305 TRABTECH housing
- Use in harsh environmental conditions at the installation location
- Installation outdoors or indoors possible



Equipotential bonding strip

Ordering data			
Description	Type	Order No.	Pcs./Pkt.
Equipotential bonding strip	PAS-1	2765615	1

Marking material

- For clear and logical identification
- The multi-section ZB strips can be easily separated
- Can be marked with the MARKING system or by hand using B-STIFT



For terminal width 6.2 mm



Marking label for the SEC product range

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Marking labels , corresponding material can be found on the website Can be marked acc. to customer specifications	ZBN 18 CUS	0825059	1			
UniCard materials , can be marked with BLUEMARK, corresponding material can be found on our website	UC-TM 6 GN	0818360	10			
Zack marker strip, 5-section, unprinted , corresponding material can be found on our website 5-section	ZB 12:UNPRINTED	0812120	10			
Continuous labels , can be marked with thermal transfer printers, can be separated with a cutter, pitch as desired, strip length up to 1000 mm, 1 roll = 40 m continuous, height: 20 mm Color: yellow				EML (20XE)R EML (20XE)R YE	0803452 0803453	1 1

Shield fast connection and wiring bridges

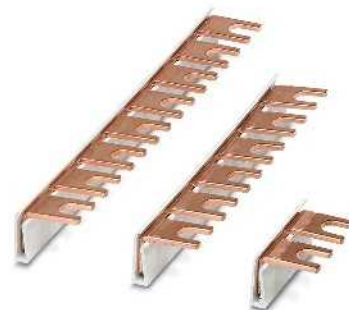
- For connecting cable shielding to cable terminal points
- Easy assembly

Wiring bridges

- 1-phase with various numbers of positions



Shield fast connection



Wiring bridges

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Shield fast connection For Ø 3-6 mm For Ø 5-10 mm	SSA 3-6 SSA 5-10	2839295 2839512	10 10			
Wiring bridge , for wiring applications with lightning current and surge arresters; these can be found on the website under the corresponding items				MPB 18/1- 2 MPB 18/1- 3 MPB 18/1- 4 MPB 18/1- 5 MPB 18/1- 6 MPB 18/1- 8 MPB 18/1- 9 MPB 18/1-12 MPB 18/1-57	2809209 2809212 2809225 2817864 2748564 2748577 2748580 2748593 2809238	10 10 10 10 10 10 10 10 1
Wiring bridge , 35 mm ² 6-pos. 8-pos.				MPB 18/1-6/35 MPB 18/1-8/35	2908705 2908704	10 10

For up-to-date modifications or supplements
to the catalog contents, please visit:
phoenixcontact.net/webcode/#0132

