4

Power Supplies, Surge Protection and Device Circuit Breakers

2017/2018

PHOENIX CONTACT
INSPIRING INNOVATIONS

Power supplies, surge protection and device circuit breakers

Terminal blocks

- Terminal blocks

Sensor/actuator cabling and connectors

- Sensor/actuator cabling
- Cables and lines
- Connectors

Marking systems, tools and mounting material

- Marking and labeling
- Tools
- Installation and mounting material

Interface technology and switching devices

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

Automation

- Lighting and signaling
- Fieldbus components and systems
- Functional safety
- HMIs and industrial PCs
- I/O systems
- Industrial cloud computing
- Industrial communication technology
- Software
- Controllers

PCB terminal blocks and PCB connectors

To quickly select a product, use our e-Paper.

Web code: #1517

Find out more with the web code

On some of the catalog pages, you can find our webcode: a hash symbol followed by a four-digit number combination.

Web code: #1234 (example)

This allows you to access information on our website quickly.

It could not be easier:

1. Go to the Phoenix Contact website
2. Enter # and the number combination in the search field
3. Get more information and product versions

#1234 **Search**

Or use the direct link:
phoenixcontact.net/webcode/#1234

You will find the latest information and all new products directly in the product area of our website:

phoenixcontact.net/products

Also discover the Phoenix Contact catalog app interactively on your tablet.

Download on the App Store

GET IT ON Google play

Table of contents

Overview 4
The illustrated table of contents will help you find the right product more quickly

Surge protection and interference suppression filters 7

Power supplies and UPS 198

Device circuit breakers 306

Technical information 336

Index 350

Surge protection for the power supply

Type 1/2 combination protective device
FLASHTRAB SEC HYBRID ... Page 28
FLASHTRAB SEC PLUS 440 ... Page 29
FLASHTRAB SEC PLUS 350 ... Page 31
FLASHTRAB SEC PLUS 264 ... Page 34

Type 1/2 combination protective device
POWERTRAB Page 40
VALVETRAB MS T1/T2 Page 36

Type 1+2 protective device combination
FLASHTRAB SEC T1+T2... Page 42

Type 2 surge protective device
VALVETRAB SEC Page 45
VALVETRAB MS Page 52

Set solutions

Type 3 device protection
PLUGTRAB SEC / PT Page 71
BLOCKTRAB Page 73
MAINTRAB Page 74

Building set Page 76

Isolating spark gap

FLASHTRAB ISG Page 78

Surge protection for measurement and control technology

DIN rail modules
TERMITRAB complete Page 92
PLUGTRAB Page 96
LINETRAB Page 100

Special systems Page 101
LSA-PLUS modules Page 102

Surge protection for information technology

For networks Page 142
For interfaces Page 144

MAINTRAB Page 74
TERMITRAB complete Page 150
PLUGTRAB PT-IQ Page 163

Surge protection for transceiver systems

For mobile phone networks Page 176
For video communication Page 177

For radio and television sets Page 180

EMC solutions

Mains interference filters with integrated surge protection Page 184
Interference suppression filters Page 187

Lightning monitoring system

LM-S Page 188

Test devices

CHECKMASTER 2 Page 192

Power supplies

QUINT POWER with NFC Page 206
QUINT POWER Page 210
QUINT POWER, with protective coating Page 216

TRIO POWER Page 218

UNO POWER Page 226

MINI POWER Page 234

STEP POWER Page 238

DC/DC converters

QUINT DC/DC converters Page 248
QUINT DC/DC converters, with protective coating Page 254
MINI DC/DC converters Page 256

Redundancy modules

QUINT ORING Page 260
QUINT S-ORING Page 262
QUINT DIODE Page 264
TRIO DIODE Page 266
UNO DIODE, STEP DIODE Page 267

UPS for the control cabinet

QUINT DC UPS
QUINT UPS Page 274

QUINT/TRIO AC UPS
QUINT UPS Page 280
TRIO UPS-2G Page 282

Energy storage for
QUINT UPS Page 284

UPS with integrated energy storage
QUINT UPS Page 294
QUINT BUFFER Page 295
STEP UPS, UNO UPS Page 298

Device circuit breakers

UPS with integrated power supply
TRIO UPS Page 300
MINI UPS Page 301

Multi-channel electronic circuit breakers – CBM/CBMC Page 310

Single-channel device circuit breakers Page 318

TCP thermal circuit breakers Page 334
Fuse terminal blocks, see Catalog 1

N
N
PHOENIX CONTACT
FLASHTRAB
N/PE
FLT-SEC-P
T1-N/PE-350/100-P
VALVETRAB
T2
VAL-SEC
T2-350-P
PHOENIX CONTACT
FLASHTRAB
T1
FLT-SEC
T1-350/25-P
VALVETRAB
T2
VAL-SEC
T2-350-P
PHOENIX CONTACT
FLASHTRAB
T1
FLT-SEC
T1-350/25-P
VALVETRAB
T2
VAL-SEC
T2-350-P
PHOENIX CONTACT
FLASHTRAB
T1
FLT-SEC
T1-350/25-P
L1
L2
L3

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 only 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.

Your web code: #0142

Basics	**8**
Surge protection for the power supply	**12**
Selection guide	**16**
Applications	**20**
Type 1/2 combination protective device	**28**
Type 1+2 protective device combination	**42**
Type 2 surge protective device	**45**
Type 3 device protection	**71**
Isolating spark gap	**78**
Surge protection for measurement and control technology	**80**
Selection guide	**84**
Applications	**86**
Protection for current loops	**92**
Protection for digital signals	**104**
Protection for resistance-dependent measurements	**120**
Single-stage protective devices	**124**
Protection for EX applications	**128**
Surge protection for information technology and telecommunications	**136**
Selection guides	**138**
Applications	**140**
Protection for data interfaces	**142**
Protection for fieldbus systems	**150**
Protection for telecommunications interfaces	**162**
Surge protection for transceiver systems	**170**
Selection guide	**172**
Applications	**174**
Protection for antenna systems	**176**
Protection for TV and radio systems	**180**
Interference suppression filters	**182**
Lightning current measurement	**188**
Test devices	**192**
Accessories for surge protection	**196**

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

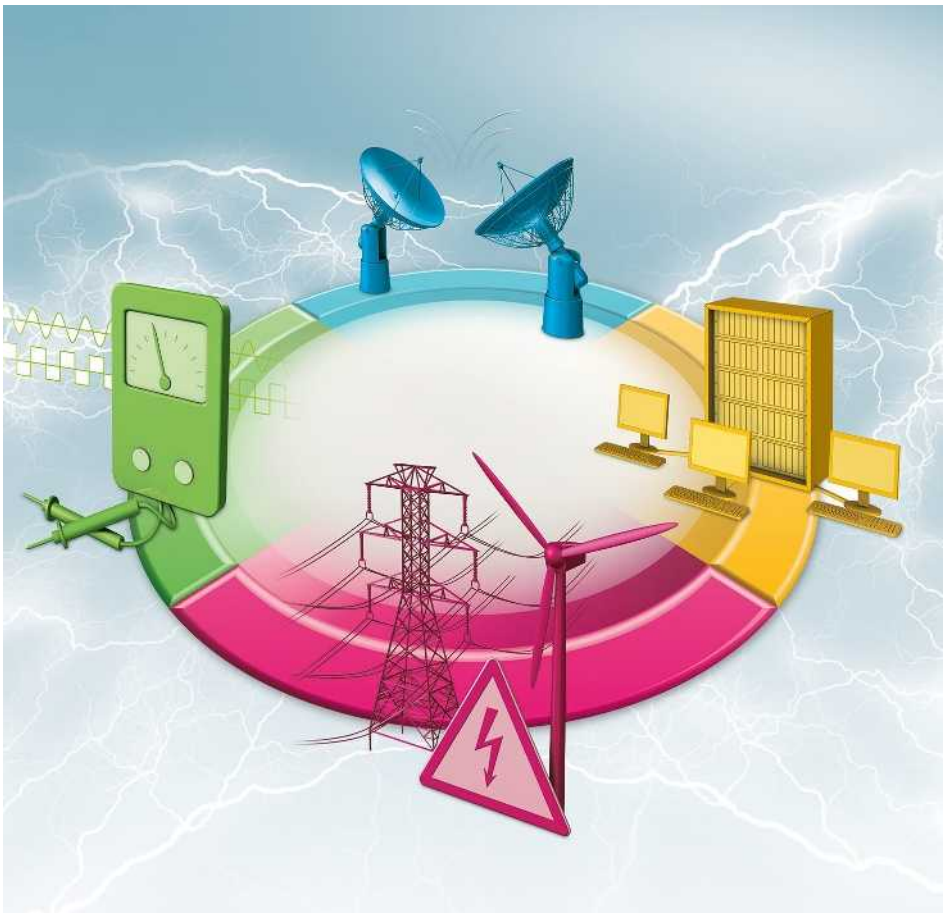
Device failure or defects caused by surge voltages are more frequent than expected. For non-private systems the consequences of a failure are generally much more serious, such as downtimes or data loss. The failure of a device or a machine that is used in a professional environment often leads to costs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

Your web code: #1133

The protective circle principle



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

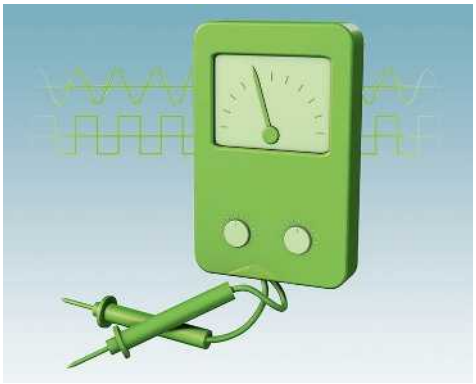
An imaginary circle should be drawn around the object to be protected. A surge protective device should be installed at all points where cables intersect this circle.

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 combination protective device

Type 1/2 surge protective devices must satisfy the highest requirements in terms of amplitude and specific energy from surge voltages, 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 withstand capability 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 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 before the terminal 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 insertion in sockets
– Devices for direct mounting on a PCB of the terminal device

Combination protective device or a combination of protective devices?

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

According to IEC 61643-11 product standard requirements, a type 2 protective device must only be able to discharge 8/20 pulses. A type 1 SPD is designed for both 8/20 µs pulses as well as for 10/350 µs pulses. In this way, a type 1 SPD is the same as a type 2 SPD. Exhibiting the test class II for a type 1 SPD is therefore a redundant piece of information and provides no additional qualification. Such SPDs are referred to as combination protective devices (type 1/2 SPDs). This is a protective device that satisfies both test categories.

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

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. Affected interfaces could, for example, be as follows: Ethernet, serial, and 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 atmospherical discharge. Surge voltages can even reach the sensitive interfaces of transceiver systems via this cable path.

Safe Energy Control (SEC) technology

The new surge protective devices with SEC Technology represent an easy-to-install product range which combines maximum performance and superior durability. Electrical equipment is reliably protected and maintenance costs are reduced. Installation of protective devices with SEC Technology is easy, cost-effective, and space-saving.

Isolated and durable

A consistent surge protection concept requires a powerful type 1 lightning current arrester. Conventional type 1 spark gaps burden the installation with high line follow currents, which can also cause the surge protection upstream to be triggered. The lightning current arresters in the SEC range are the first of their kind to feature spark gap technology with no line follow current. The avoidance of line follow currents benefits the entire installation. This not only applies to the protected equipment, but the entire supply, including the arrester. Maximum system availability is achieved because the fuse protection upstream is not triggered.

Solution without backup fuse for every application

The powerful combination protective devices and surge protective devices with Safe Energy Control Technology provide a solution without separate arrester backup fuse for all common applications. For applications where the protection of the installation is the top priority, type 1 and type 2 protective devices can be used for main fuse ratings of 315 A gG without separate overcurrent protection. For applications beyond this scope, products are available with integrated surge-proof fuse, such as the FLT-SEC-HYBRID. The type 3 protective devices in the PLT-SEC family can be operated in branch wiring without any kind of backup fuse, which is also thanks to the integrated surge-proof fuses.

Compact and consistent pluggable design

With the FLT-SEC-PLUS-440, the SEC range offers the most compact type 1 spark gap for this nominal voltage, with the VAL-SEC the narrowest type 2 arrester, and with the FLT-SEC-T1+T2 the only directly coordinated combination of type 1 spark gap and type 2 varistor arrester in a confined space. All products in the SEC range have a pluggable design. Maintenance work is therefore made much easier.

Everything in the green – we're betting that you won't see red for five years

With the low-wear surge protective devices in the SEC range, you won't have to think about replacing wear parts for at least five years. Thanks to the SEC technology, the high-quality components are particularly durable. However, should the status indicator signal the need for replacement within the first five years following purchase, you will receive a free replacement device.

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 combination protective device 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 combination protective device for use in industry and wind turbine generators.

Lightning current 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

Integrated surge-proof fuses eliminate the need for a separate fuse in the branch. This saves space and simplifies planning.

Type 1/2 combination protective devices 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 combination protective devices for lightning protection class 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 terminal 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 available for protection class I and II.

Surge protection with residual current device

VAL-CP-RCD… are combinations of type 2 device protection with residual current device. They therefore combine personal protection and surge protection in a single device.

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.

Surge protection set

The basic solution for building installations. The GEB-SET… consists of a type 1/2 combination protective device and three MAINTRAB device protection plugs.

Selection guide for 230/400 V systems

The selection matrix makes it easy to select suitable surge protection for the desired application.

Further application recommendations are available on request.

Standard applications

Network type				IEC test classification / EN type				
				I / T1	I / T1+	I+II / T1+T2	II / T2	III / T3
3-phase	TN-S/TT	L1 L2 L3 N PE	230 / 400 V	✓				
					✓			
						✓		
							✓	
								✓
	TN-C	L1 L2 L3 PEN	230 / 400 V	✓				
					✓			
						✓		
							✓	
1-phase	TN-S/TT	L1 N PE	230 V	✓				
					✓			
						✓		
							✓	
								✓
	TN-C	L1 PEN	230 V	✓				
					✓			
						✓		

Special installation requirements

Network type				IEC test classification / EN type				
				I / T1	I / T1+	I+II / T1+T2	II / T2	III / T3
3-phase	TN-S/TT	L1 L2 L3 N PE	230 / 400 V	✓				
							✓	
							✓	
							✓	
							✓	
							✓	
				✓			✓	✓
	TN-C	L1 L2 L3 PEN	230 / 400 V	✓			✓	
							✓	
							✓	
							✓	
1-phase	TN-S/TT	L1 N PE	230 V	✓				
							✓	
							✓	
								✓
								✓
								✓
	TN-C	L1 PEN	230 V	✓				

Note

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

Surge protective device (SPD)		Order No.	Page
FLT-SEC-P-T1-3S-350/25-FM		2905421	31
FLT-SEC-H-T1-3C-264/25-FM	+ FLT-SEC-P-T1-N/PE-350/100-FM	2905871 + 2905472	28
FLT-SEC-T1+T2-3S-350/25-FM		2905470	42
VAL-SEC-T2-3S-350-FM		2905340	46
PLT-SEC-T3-3S-230-FM		2905230	71
FLT-SEC-P-T1-3C-350/25-FM		2905419	31
FLT-SEC-H-T1-3C-264/25-FM		2905871	28
FLT-SEC-T1+T2-3C-350/25-FM		2905469	42
VAL-SEC-T2-3C-350-FM		2905339	46
FLT-SEC-P-T1-1S-350/25-FM		2905415	33
FLT-SEC-H-T1-1C-264/25-FM	+ FLT-SEC-P-T1-N/PE-350/100-FM	2801615 + 2905472	28
FLT-SEC-T1+T2-1S-350/25-FM		2905466	43
VAL-SEC-T2-1S-350-FM		2905333	47
PLT-SEC-T3-230-FM		2905229	71
FLT-SEC-P-T1-1C-350/25-FM		2905414	33
FLT-SEC-H-T1-1C-264/25-FM		2801615	28
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 the L-N mode of protection	2909589	34
VAL-SEC-T2-3S-350/40-FM	Where I_n = 40 kA in the N-PE mode of protection	2909635	45
VAL-SEC-T2-3S-350VF-FM	Free of leakage current	2909590	46
VAL-CP-RCD-3S/40/0.3	Combination with RCD	2882802	67
VAL-CP-MCB-3S-350/40/FM	Combination with MCB	2882750	66
VAL-CP-MOSO 60-3S-FM	Combination with MCB for 60 mm rail system	2804403	68
GEB-SET-T1/T2 TAE/TV-SAT	Set solution for building installation	2801022	76
FLT-SEC-P-T1-3C-264/50-FM	Where I_{imp} = 50 kA in the L-N mode of protection	2907390	34
VAL-SEC-T2-3C-350VF-FM	Free of leakage current	2909591	46
VAL-CP-MCB-3C-350/40/FM	Combination with MCB	2882776	66
VAL-CP-MOSO 60-3C-FM	Combination with MCB for 60 mm rail system	2804416	68
FLT-SEC-P-T1-1S-264/50-FM	Where I_{imp} = 50 kA in the L-N mode of protection	2907388	35
VAL-SEC-T2-1S-350VF-FM	Free of leakage current	2909592	47
VAL-CP-MCB-1S-350/40/FM	Combination with MCB	2882763	66
MNT-1 D	Attachment plug	2882200	74
BT-1S-230AC/A	Universal mounting (acoustic)	2803409	73
BT-1S-230AC/O	Universal mounting (optical)	2800625	73
FLT-SEC-P-T1-1C-264/50-FM	Where I_{imp} = 50 kA in the L-N mode of protection	2907387	35

Selection guide for other network types

The selection matrix makes it easy to select suitable surge protection for the desired application. Further application recommendations on request.

Network type				IEC test classification/EN type				
				I / T1	I / T1+	I+II/T1+T2	II / T2	III / T3
3-phase	TN-S/TT	L1 L2 L3 N PE	120 / 208 V				✓	
			400 / 690 V	✓				
	TN-C	L1 L2 L3 PEN	120 / 208 V	✓				
							✓	
			400 / 690 V	✓				
					✓			
							✓	
			554 / 960 V	✓				
							✓	
	IT	L1 L2 L3 PE	400 V	✓				
					✓			
							✓	
			500 - 690 V	✓				
							✓	
2-phase	TN-S/TT	L1 L2 N PE	120 / 208 V				✓	
	TN-C	L1 L2 PEN	120 / 208 V				✓	
1-phase	TN-S/TT	L1 N PE	120 V	✓				
							✓	
								✓
	TN-C	L1 PEN	120 V				✓	
Linear DC source		DC+/- DC-/+ PE	24 / 48 V	✓				
							✓	
			24 V					✓
			48 V					✓
			120 V				✓	
								✓
			220 V				✓	
								✓
			380 V	✓				
Photovoltaics DC source	1 string	L+ L- PE	600 V	✓				
							✓	
			1000 V	✓				
							✓	
			1500 V	✓				
							✓	

Note

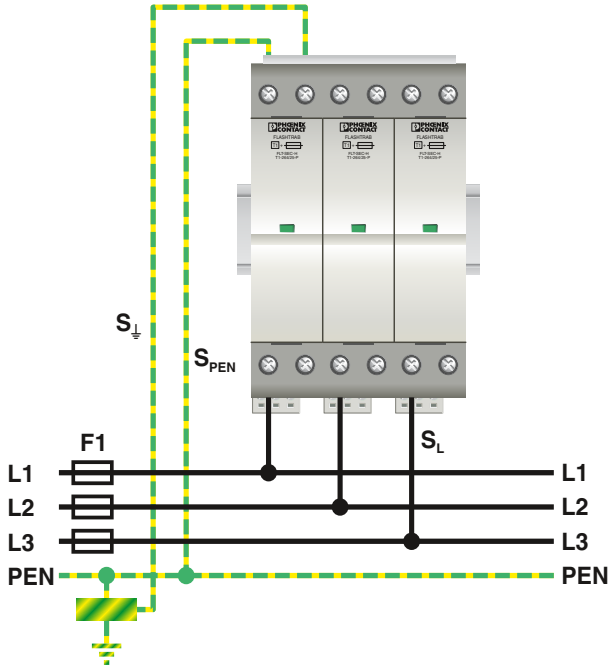
Products bearing this stamp (plug elements) can be tested with the CHECKMASTER.

Surge protective device (SPD)	Order No.	Page
VAL-SEC-T2-3S-175-FM	2905354	48
FLT-SEC-P-T1-3S-440/35-FM	2908264	29
VAL-MS-T1/T2 175/12.5/3+0-FM	2800672	37
VAL-SEC-T2-3C-175-FM	2905353	48
FLT-SEC-P-T1-3C-440/35-FM	2905988	29
FLT-SEC-H-T1-3C-440/25-FM	2907260	28
VAL-SEC-T2-3C-440-FM	2909968	45
PWT 100-800AC-FM	2800531	40
VAL-MS 750/30/3+0-FM	2920272	56
FLT-SEC-P-T1-3C-440/35-FM	2905988	29
FLT-SEC-H-T1-3C-440/25-FM	2907260	28
VAL-SEC-T2-3C-440-FM	2909968	45
PWT 100-800AC-FM	2800531	40
VAL-MS 750/30/3+0-FM	2920272	56
VAL-SEC-T2-2S-175-FM	2905351	49
VAL-SEC-T2-2C-175-FM	2905350	49
VAL-MS-T1/T2 175/12.5/1+1-FM	2800674	37
VAL-SEC-T2-1S-175-FM	2905348	49
PLT-SEC-T3-120-FM	2905228	71
VAL-MS 120 ST + VAL-MS BE/FM	2807586 + 2817738	58
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	38
VAL-SEC-T2-2+0-48DC-FM	2907865	50
PLT-SEC-T3-24-FM	2905223	71
PLT-SEC-T3-60-FM	2905225	71
VAL-SEC-T2-2+0-120DC-FM	2907874	50
PLT-SEC-T3-120-FM	2905228	71
VAL-SEC-T2-2+0-220DC-FM	2907875	51
PLT-SEC-T3-230-FM	2905229	71
VAL-SEC-T2-2+0-380DC-FM	2907876	51
VAL-MS-T1/T2 600DC-PV/2+V-FM	2801164	41
VAL-MS 600DC-PV/2+V-FM	2800641	65
VAL-MS-T1/T2 1000DC-PV/2+V-FM	2801161	41
VAL-MS 1000DC-PV/2+V-FM	2800627	65
VAL-MB-T1/T2 1500DC-PV/2+V-FM	2905640	41
VAL-MB-T2 1500DC-PV/2+V-FM	2905646	64

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 class	I, II, III, IV
Lightning protection zone transition	LPZ 0_A → LPZ 1
Coordination	Coordination with type 2 arresters of the SEC family is guaranteed
Connecting cables	– The required conductor cross sections must be taken from the table. – The connection to the main grounding rail ($S_⏚$) is absolutely essential (see figure). – For $S_⏚$, use a minimum cross section of 16 mm². If this connection ($S_⏚$) is to be equal to the connection to the protective conductor (S_{PEN}) in the application, use a minimum cross section of 35 mm² for S_{PEN}. – If the cable 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	– Can be used without backup fuse in branch wiring – The integrated overcurrent protection is selective to upstream F1 fuses ≥ 400 A gG
Products in the catalog	Page 28

S_L mm²	S_{PEN} mm²
35	35

Table 1: Connecting cables

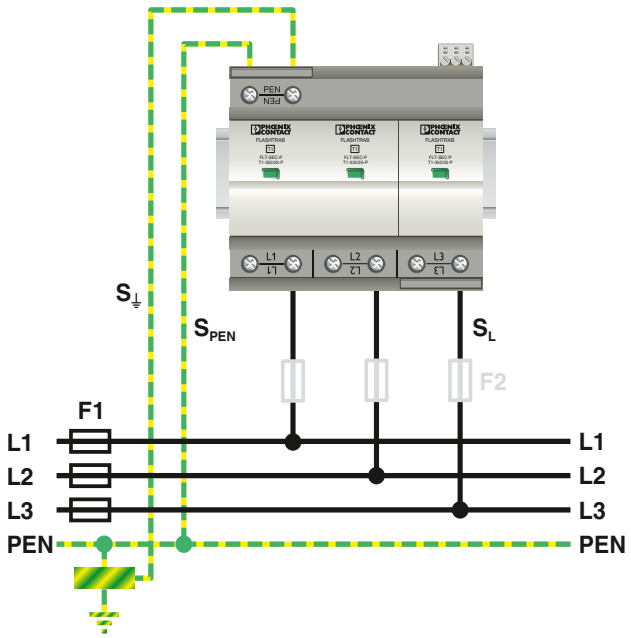
	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm² ... 1.5 mm²		

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 class	I, II, III, IV
Lightning protection zone transition	LPZ 0_A ⟶ LPZ 1
Coordination	Coordination with type 2 arresters of the SEC family is guaranteed
Connecting cables	– The required conductor cross sections must be taken from the tables. – The connection to the main grounding rail ($S_{\perp}$) is absolutely essential (see figure). – For $S_{\perp}$, use a minimum cross section of 16 mm². If this connection ($S_{\perp}$) is to be equal to the connection to the protective conductor (S_{PEN}) in the application, use a minimum cross section of 16 mm² for S_{PEN}. – Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	– Can be used without backup fuse in branch wiring up to 315 A gG – If the surge protection fuse needs to be selective to the upstream installation, a separate F2 backup fuse is required. Once F2 has tripped, there is no more surge protection for the system. – Can be used without backup fuse in through wiring up to 125 A gG
Products in the catalog	Page 29

F1 A gG	F2 A gG	S_L mm²	S_{PEN}(S_{PEN}= $S_{\perp}$) mm²
40 50 63		6 10 10	6 (16) 10 (16) 10 (16)
80 100 125		10 16 16	10 (25) 16 (25) 16 (25)
160		25	25
200		25	25 (35)
250		35	35
315		2 x 25	2 x 25
400	≤ 250	35	35
≥ 500	≤ 315	2 x 25	2 x 25

Table 1: Branch wiring

F1 A gG	S_L mm²	S_{PEN}(S_{PEN}= $S_{\perp}$) mm²
40 50	10 10	10 (16) 10 (16)
63	10	10 (25)
80	16	16 (25)
100	25	25
125	35	35

Table 2: Through wiring

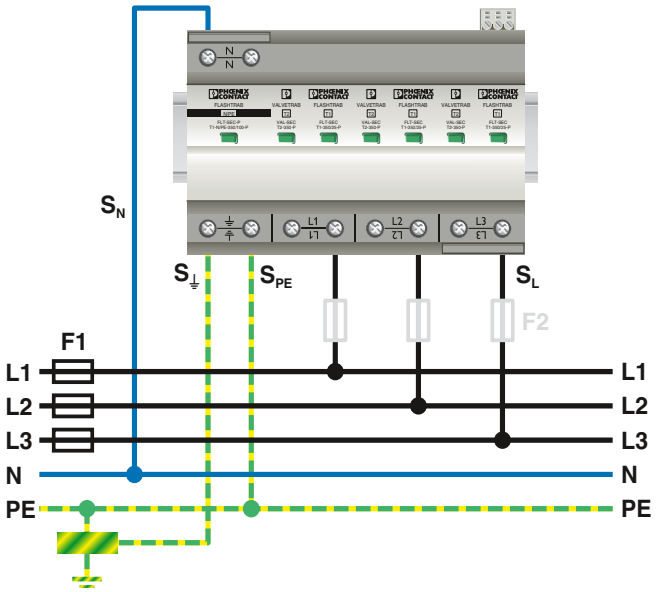
	U_{max}	I_{max}
AC AC DC DC	250 V 125 V (UL) 125 V 30 V	1 A 1 A (UL) 0.2 A 1 A
0.14 mm² ... 1.5 mm²		

Table 3: Remote signaling data

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 class	I, II, III, IV
Lightning protection zone transition	LPZ 0_A ⟶ LPZ 2
Coordination	Coordination with type 3 arresters of the SEC family is guaranteed
Connecting cables	– The required conductor cross sections must be taken from the tables. – The connection to the main grounding rail ($S_{\perp}$) is absolutely essential (see figure). – For $S_{\perp}$, use a minimum cross section of 16 mm². If this connection ($S_{\perp}$) is to be equal to the connection to the protective conductor (S_{PE}) in the application, use a minimum cross section of 16 mm² for S_{PE}. – Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii.
Backup fuses	– Can be used without backup fuse in branch wiring up to 315 A gG – If the surge protection fuse needs to be selective to the upstream installation, a separate F2 backup fuse is required. Once F2 has tripped, there is no more surge protection 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	$S_L = S_N$ mm²	$S_{PE}(S_{PE} = S_{\perp})$ mm²
40 50 63		6 10 10	6 (16) 10 (16) 10 (16)
80 100 125		10 16 16	10 (25) 16 (25) 16 (25)
160		25	25
200		25	25(35)
250		35	35
315		2 x 25	2 x 25
400	≤ 250	35	35
≥ 500	≤ 315	2 x 25	2 x 25

Table 1: Branch wiring

F1 A gG	$S_L = S_N$ mm²	$S_{PE}(S_{PE} = S_{\perp})$ mm²
40 50	10 10	10 (16) 10 (16)
63	10	10 (25)
80	16	16 (25)
100	25	25
125	35	35

Table 2: Through wiring

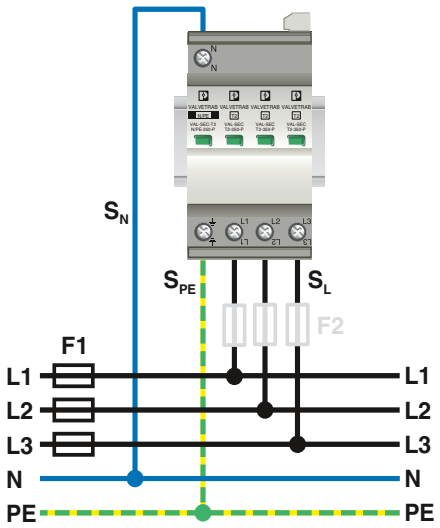
	U_{max}	I_{max}
AC AC DC DC	250 V 125 V (UL) 125 V 30 V	1 A 1 A (UL) 0.2 A 1 A
0.14 mm² ... 1.5 mm²		

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 arresters of the SEC family is guaranteed
Connecting cables	– The required conductor cross sections must be taken from the tables. – 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. 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	– Can be used without backup fuse in branch wiring up to 315 A gG – If the surge protection fuse needs to be selective to the upstream installation, a separate F2 backup fuse is required. Once F2 has tripped, there is no more surge protection for the system. – Can be used without backup fuse in through wiring up to 63 A gG
Products in the catalog	Page 46

F1 A gG	F2 A gG	$S_L = S_N$ mm²	S_{PE} mm²
25 32 40 50 63		6 6 6 6 6	6 6 6 6 6
80 100		10 10	10 10
125 160		16 16	16 16
200 250 315		25 25 25	25 25 25
400	≤ 250	25	25
≥ 500	≤ 315	25	25

Table 1: Branch wiring

F1 A gG	$S_L = S_N$ mm²	S_{PE} mm²
25 32 40	6 6 6	6 6 6
50 63	10 10	10 10

Table 2: Through wiring

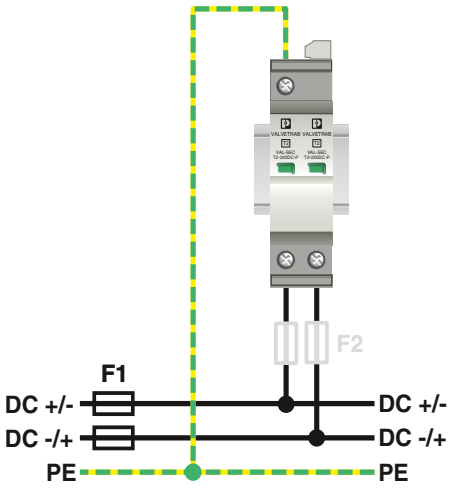
	U_{max}	I_{max}
AC AC DC DC	250 V 125 V (UL) 125 V 30 V	1 A 1 A (UL) 0.2 A 1 A
0.14 mm² ... 1.5 mm²		

Table 3: Remote signaling data

Type 2 protection for the power supply

VAL-SEC DC

Branch wiring in insulated 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 of the SEC family is guaranteed.
Connecting cables	– For branch wiring, the connecting cables and cross sections only have to be designed for short circuits and ground faults. – For through wiring, operating current and overload also have to be taken into account. – Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii
Backup fuses	– The required backup fuses must be taken from the tables.
Products in the catalog	Page 51

Prospective short-circuit current I_p at installation location	Backup fuse (F2)
≤ 200 A	-
> 200 A	20 A (gG / MCB characteristic B)

Backup fuses for U_N ≤ 220 V DC

Prospective short-circuit current I_p at installation location	Backup fuse (F2)
≤ 100 A	-
> 100 A	10 A (gG / MCB characteristic B)
> 200 A	20 A (gG / MCB characteristic B)

Backup fuses for U_N ≤ 400 V DC

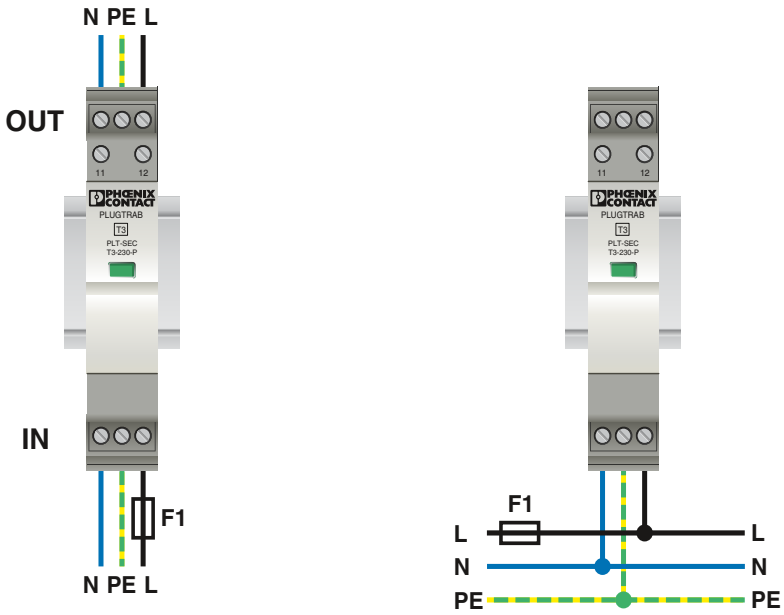
	U_{max}	I_{max}
AC	250 V	1 A
AC	125 V (UL)	1 A (UL)
DC	125 V	0.2 A
DC	30 V	1 A
0.14 mm² ... 1.5 mm²		

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 terminal device to be protected
Lightning protection zone transition	LPZ 2 ⟶ LPZ 3
Coordination	Coordination with type 2 arresters of the SEC family is guaranteed
Connection	– Max. conductor cross section 4 mm² solid and 2.5 mm² stranded – The maximum load current I_L is 26 A for through wiring
Backup fuses	– Can be used without backup fuse for prospective short-circuit currents up to 1500 A – The integrated overcurrent protection is selective to upstream F1 fuses ≥ 16 A gG – For backup fuses > 40 A, make sure that the connecting cables are protected against ground faults and short circuits. **Recommendation:** use cables with increased temperature stability, such as XLPE/EPR-insulated cables.
Products in the catalog	Page 71

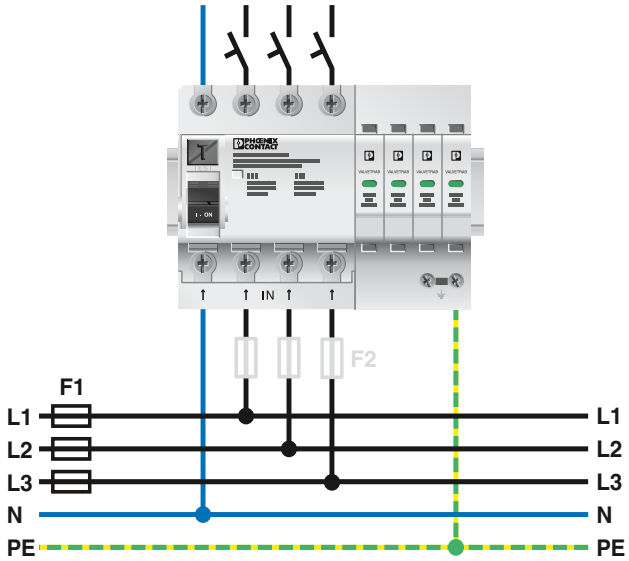
	U_{max}	I_{max}
AC	250 V	3 A
DC	125 V	0.2 A
DC	30 V	1 A
0.2 mm² ... 2.5 mm²		

Table 1: Remote signaling data

Type 2 protection for the power supply

VAL-CP-RCD

Branch wiring in the TN-S network

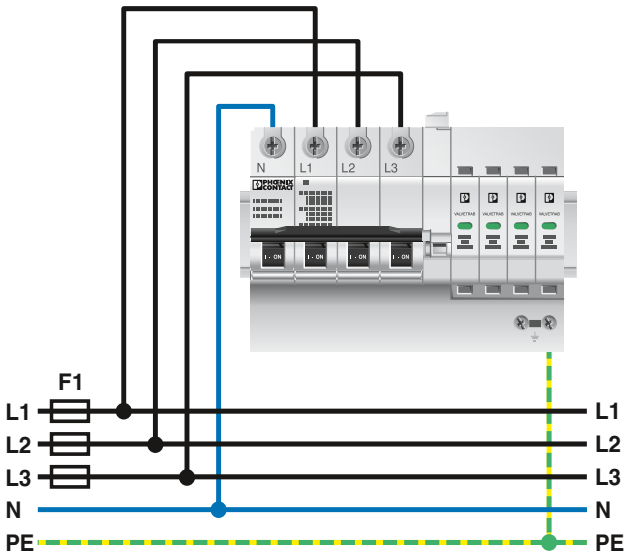


Technical characteristics	
Typical installation location	In sub-distributions in place of an RCD
Lightning protection zone transition	LPZ 0_B ⟶ LPZ 1 LPZ 1 ⟶ LPZ 2
Coordination	Coordination with type 1 and type 3 arresters of the SEC family is guaranteed
RCD	The RCD used is a type A/type A selective
Connection	– The conductor cross sections are based on the upstream F1 overcurrent protection device – F1 ≤ 50 A ⟶ 6 mm² – F1 > 50 A ⟶ 10 mm² – Lay the connecting cables as short as possible, without loops, and with the largest possible bending radii – The maximum load current I_L is 40 A
Backup fuses	– Can be used without backup fuse in branch and through wiring up to 63 A gG
Products in the catalog	Page 67

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 arresters of the SEC family is guaranteed
Connecting cables	– The required conductor cross sections must be taken from the table – 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	– Can be used without backup fuse in branch wiring – The integrated overcurrent protection is selective to upstream F1 fuses ≥ 63 A gG
Products in the catalog	Page 66

F1 A gG	$S_L = S_N$ mm²	S_{PE} mm²
63 80	10 10	10 10
100 125	16 16	16 16
160 200	25 25	25 25
250	35	2 x 16
> 250	35	2 x 16

Table 1: Branch wiring

	U_{max}	I_{max}
AC DC	250 V 250 V	2 A 0.05 A
0.14 mm² ... 1.5 mm²		

Table 2: Remote signaling data

Type 1/2 combination protective device 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 checked with CHECKMASTER

Notes:

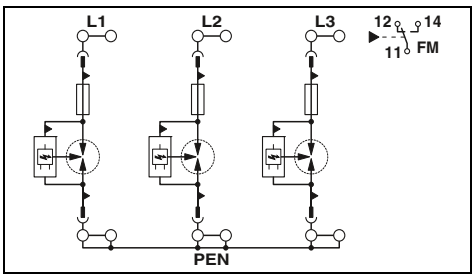
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

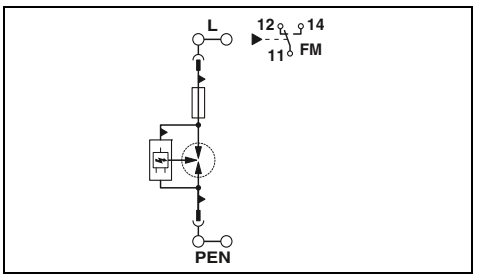
new

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

new

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) µs		25 kA	25 kA
Nominal discharge current I_n (8/20) µs		25 kA	25 kA
Max. discharge current I_{max} (8/20)µs		50 kA	50 kA
Protection level U_p		≤ 1.5 kV	≤ 2.5 kV
Follow current interrupt rating I_{fi}		50 kA	50 kA
Response time tA		≤ 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	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	
Temperature range		-40 °C ... 80 °C	
Test standards		IEC 61643-11 / EN 61643-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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)	

Technical data

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) µs		25 kA	25 kA
Nominal discharge current I_n (8/20) µs		25 kA	25 kA
Max. discharge current I_{max} (8/20)µs		50 kA	50 kA
Protection level U_p		≤ 1.5 kV	≤ 2.5 kV
Follow current interrupt rating I_{fi}		50 kA	50 kA
Response time tA		≤ 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	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	
Temperature range		-40 °C ... 80 °C	
Test standards		IEC 61643-11 / EN 61643-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

Accessories

Replacement plug				
	L-N / L-PEN	**FLT-SEC-H-T1-264/25-P**	2905968	1
	L-N / L-PEN	**FLT-SEC-H-T1-440/25-P**	2907261	1
Wiring bridge, 35 mm²				
6-pos.		**MPB 18/1-6/35**	2908705	10
8-pos.		**MPB 18/1-8/35**	2908704	10

Ordering data

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

Accessories

FLT-SEC-H-T1-264/25-P	2905968	1
FLT-SEC-H-T1-440/25-P	2907261	1
MPB 18/1-6/35	2908705	10
MPB 18/1-8/35	2908704	10

Type 1/2 combination protective device 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 checked with CHECKMASTER

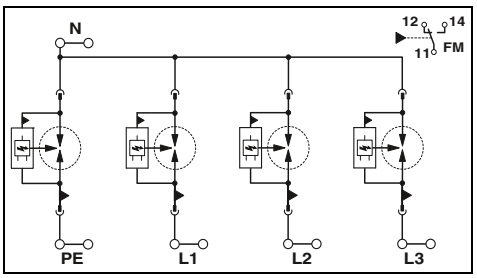
Notes:

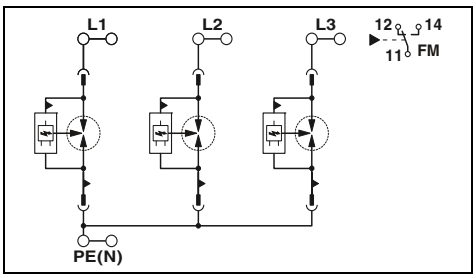
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

new

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

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





Technical data

Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		400/690 V AC (TN-S) / 400/690 V AC (TT)	400/690 V AC (TN-C) / 400 V AC (IT)
Mode of protection		L-N / L-PE / N-PE	L-PE / L-PEN
Maximum continuous operating voltage U_C		440 V AC	440 V AC
Impulse discharge current I_{imp} (10/350) µs		35 kA / 35 kA / 100 kA	35 kA
Nominal discharge current I_n (8/20) µs		35 kA / 35 kA / 100 kA	35 kA
Max. discharge current I_{max} (8/20)µs		50 kA / 50 kA / -	50 kA
Protection level U_p		≤ 2.5 kV / ≤ 4.5 kV / ≤ 2.5 kV	≤ 2.5 kV
Follow current interrupt rating I_{fi}		50 kA / 50 kA / 100 A	50 kA
Response time tA		≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA	50 kA
Max. backup fuse with branch wiring		400 A (gG)	400 A (gG)
General data			
Dimensions W/H/D		142.4 mm / 95.2 mm / 74.5 mm	106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

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

Accessories

Replacement plug			
L-N / L-PEN	**FLT-SEC-P-T1-440/35-P**	2905989	1
N-PE	**FLT-SEC-P-T1-N/PE-440/100-P**	2907263	1

Ordering data

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

Accessories

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-440/35-P	2905989	1

Type 1/2 combination protective device 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 checked with CHECKMASTER

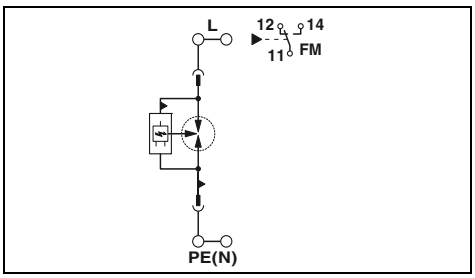
Notes:

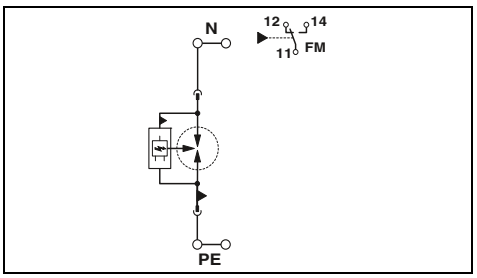
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

2-conductor system, L, PE(N)

new

N-PE spark gap





		Technical data	Technical data
Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		400 V AC (TN) / 400 V AC (IT)	400 V AC (TN - only N-PE) / 400 V AC (TT - only N-PE)
Mode of protection		L-N / L-PE / L-PEN / N-PE (4+0)	N-PE
Maximum continuous operating voltage U_C		440 V AC	440 V AC
Impulse discharge current I_{imp} (10/350) µs		35 kA	100 kA
Nominal discharge current I_n (8/20) µs		35 kA	100 kA
Max. discharge current I_{max} (8/20)µs		50 kA	-
Protection level U_p		≤ 2.5 kV	≤ 2.5 kV
Follow current interrupt rating I_{fi}		50 kA	100 A
Response time tA		≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA	-
Max. backup fuse with branch wiring		400 A (gG)	-
General data			
Dimensions W/H/D		35.6 mm / 95.2 mm / 74.5 mm	35.6 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
FLASHTRAB						
	FLT-SEC-P-T1-1C-440/35-FM	2905987	1	**FLT-SEC-P-T1-N/PE-440/100-FM**	2907262	1
	Accessories			**Accessories**		
Replacement plug						
L-N / L-PEN	**FLT-SEC-P-T1-440/35-P**	2905989	1			
N-PE				**FLT-SEC-P-T1-N/PE-440/100-P**	2907263	1

Type 1/2 combination protective device FLASHTRAB SEC PLUS 350

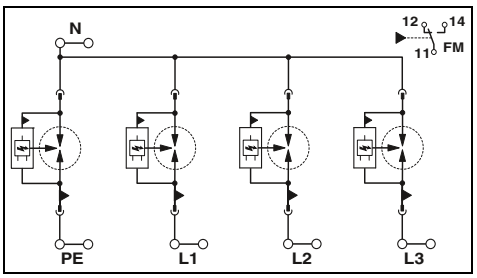
- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating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

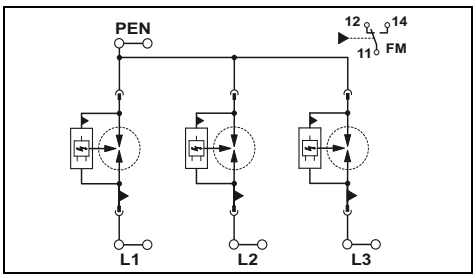
5-conductor system; L1, L2, L3, N, PE

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.





Technical data

Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-C)
Mode of protection		L-N / L-PE / N-PE	L-PEN
Maximum continuous operating voltage U_C		350 V AC	350 V AC
Impulse discharge current I_{imp} (10/350) µs		25 kA / 25 kA / 100 kA	25 kA
Nominal discharge current I_n (8/20) µs		25 kA / 25 kA / 100 kA	25 kA
Max. discharge current I_{max} (8/20)µs		50 kA / 50 kA / -	50 kA
Protection level U_p		≤ 1.5 kV / ≤ 2.5 kV / ≤ 1.5 kV	≤ 1.5 kV
Follow current interrupt rating I_{fi}		50 kA / - / 100 A	50 kA
Response time tA		≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA	50 kA
Max. backup fuse with branch wiring		315 A (gG)	315 A (gG)
General data			
Dimensions W/H/D		142.4 mm / 95.2 mm / 74.5 mm	106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
UL connection data	AWG	12 ... 2	12 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
FLASHTRAB			
	FLT-SEC-P-T1-3S-350/25-FM	2905421	1

Accessories

Replacement plug			
L-N / L-PEN	**FLT-SEC-P-T1-350/25-P**	2905422	1
N-PE	**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

Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-350/25-P	2905422	1

Type 1/2 combination protective device FLASHTRAB SEC PLUS 350

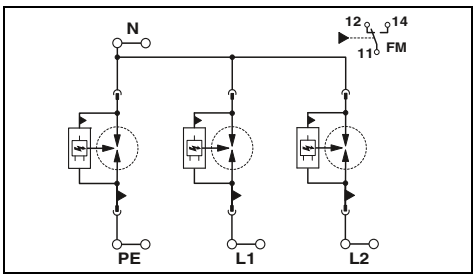
- Spark gap has no line follow current
- Free of leakage current, suitable for use in the pre-meter area
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level of 1.5 kV
- Optical, mechanical status indicator
- With floating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

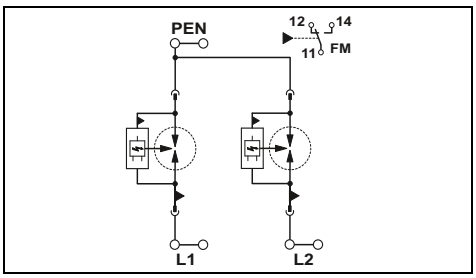
4-conductor system;
L1, L2, N, PE

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

Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-C)
Mode of protection		L-N / L-PE / N-PE	L-PEN
Maximum continuous operating voltage U_C		350 V AC	350 V AC
Impulse discharge current I_{imp} (10/350) µs		25 kA / 25 kA / 100 kA	25 kA
Nominal discharge current I_n (8/20) µs		25 kA / 25 kA / 100 kA	25 kA
Max. discharge current I_{max} (8/20)µs		50 kA / 50 kA / -	50 kA
Protection level U_p		≤ 1.5 kV / ≤ 2.5 kV / ≤ 1.5 kV	≤ 1.5 kV
Follow current interrupt rating I_{fi}		50 kA / - / 100 A	50 kA
Response time tA		≤ 100 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA	50 kA
Max. backup fuse with branch wiring		315 A (gG)	315 A (gG)
General data			
Dimensions W/H/D		106.8 mm / 95.2 mm / 74.5 mm	71.2 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
UL connection data	AWG	12 ... 2	12 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
FLASHTRAB			
	FLT-SEC-P-T1-2S-350/25-FM	2905418	1

Accessories

Replacement plug			
L-N / L-PEN	**FLT-SEC-P-T1-350/25-P**	2905422	1
N-PE	**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

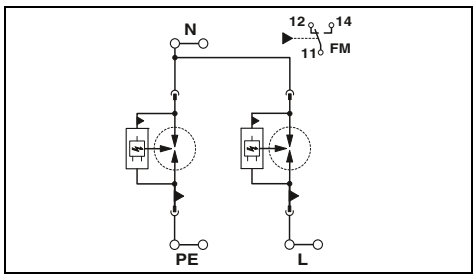
Accessories

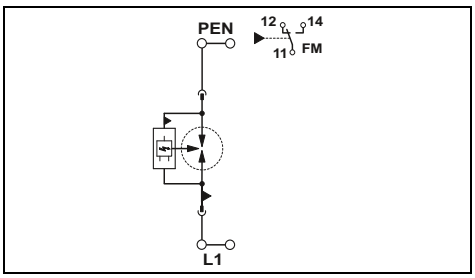
Type	Order No.	Pcs./Pkt.
FLT-SEC-P-T1-350/25-P	2905422	1

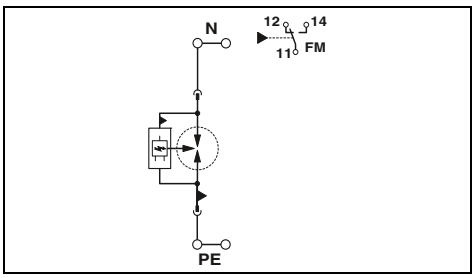
3-conductor system;
L, N, PE

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	
12 ... 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	
12 ... 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

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	
12 ... 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

Surge protection for the power supply

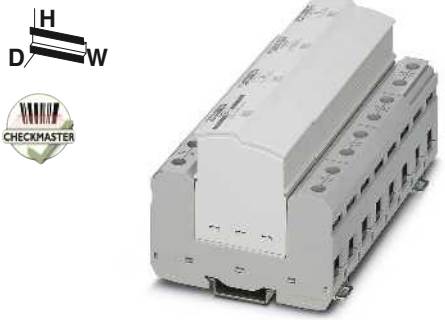
Type 1/2 combination protective device FLASHTRAB SEC PLUS 264

- 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 checked with CHECKMASTER

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.

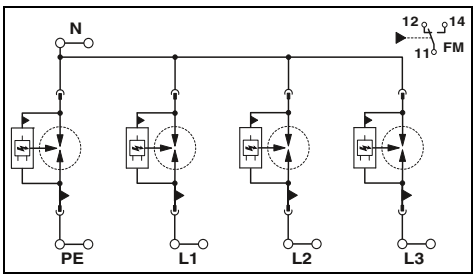
new

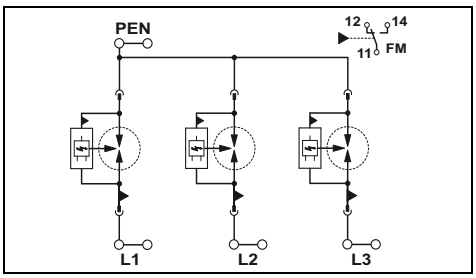


5-conductor system; L1, L2, L3, N, PE

new

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





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		L-N / L-PE / N-PE
Maximum continuous operating voltage U_C		264 V AC / 264 V AC / 350 V AC
Impulse discharge current I_{imp} (10/350) µs		50 kA / 50 kA / 100 kA
Nominal discharge current I_n (8/20) µs		50 kA / 50 kA / 100 kA
Max. discharge current I_{max} (8/20)µs		100 kA
Protection level U_p		≤ 2.5 kV / ≤ 3 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}		50 kA / - / 100 A
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA
Max. backup fuse with branch wiring		500 A (gG)
General data		
Dimensions W/H/D		142.4 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
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.
FLASHTRAB			
	FLT-SEC-P-T1-3S-264/50-FM	2909589	1
Accessories			
Replacement plug			
L-N / L-PEN	**FLT-SEC-P-T1-264/50-P**	2907391	5
N-PE	**FLT-SEC-P-T1-N/PE-350/100-P**	2905473	1

Technical data

Electrical data		
IEC test classification		I / II , T1 / T2
Nominal voltage U_N		240/415 V AC (TN-C)
Mode of protection		L-PEN
Maximum continuous operating voltage U_C		264 V AC
Impulse discharge current I_{imp} (10/350) µs		50 kA
Nominal discharge current I_n (8/20) µs		50 kA
Max. discharge current I_{max} (8/20)µs		100 kA
Protection level U_p		≤ 2.5 kV
Follow current interrupt rating I_{fi}		50 kA
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA
Max. backup fuse with branch wiring		500 A (gG)
General data		
Dimensions W/H/D		106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
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-T1-3C-264/50-FM	2907390	1
Accessories		
FLT-SEC-P-T1-264/50-P	2907391	5

new

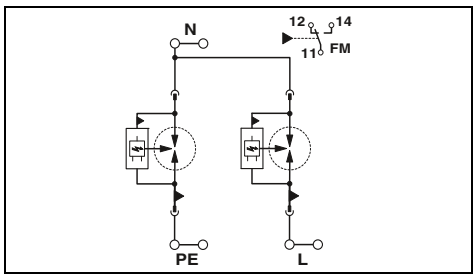
3-conductor system;
L, N, PE

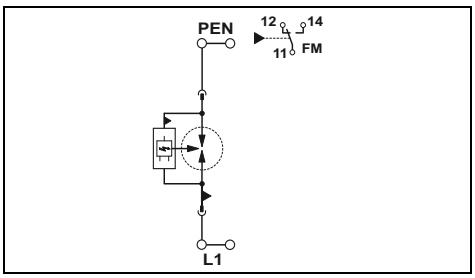
new

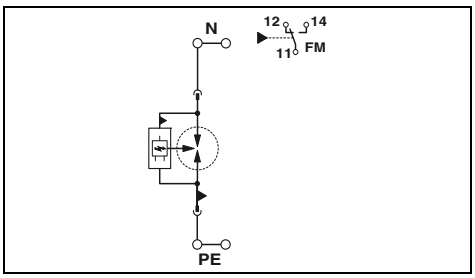
2-conductor system;
L, PEN

new

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	
264 V AC / 264 V AC / 350 V AC	
50 kA / 50 kA / 100 kA	
50 kA / 50 kA / 100 kA	
100 kA	
≤ 2.5 kV / ≤ 3 kV / ≤ 1.5 kV	
50 kA / - / 100 A	
≤ 100 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	
-	
-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

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

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	
≤ 2.5 kV	
50 kA	
≤ 100 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	
-	
-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

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

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	
12 ... 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

Type 1/2 combination protective device VALVETRAB MS

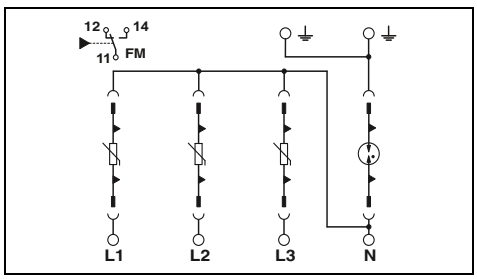
- Consistent pluggability (even for N/PE spark gap)
- Secure hold of plugs in the event of high lightning current loads and strong vibration thanks to new latching
- Thermal disconnect device for each individual connector
- Optical, mechanical status indication for the individual arresters
- With or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

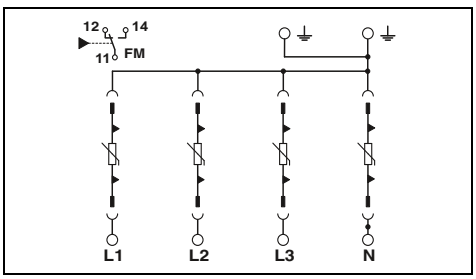
Notes:

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 (3+1 circuit)

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





Technical data

Electrical data		...335	...335
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-S)
Mode of protection		L-N / L-PE / N-PE	L-PE / N-PE
Maximum continuous operating voltage U_C		335 V AC / 335 V AC / 264 V AC	335 V AC
Impulse discharge current I_{imp} (10/350) µs		12.5 kA / 12.5 kA / 50 kA	12.5 kA
Nominal discharge current I_n (8/20) µs		12.5 kA / 12.5 kA / 50 kA	12.5 kA
Max. discharge current I_{max} (8/20)µs		50 kA	50 kA
Protection level U_p		≤ 1.2 kV / ≤ 2 kV / ≤ 1.7 kV	≤ 1.2 kV
Response time tA		≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
Max. backup fuse with branch wiring		160 A (gG)	160 A (gG)
General data			
Dimensions W/H/D		71.2 mm / 99 mm / 77.5 mm	71.2 mm / 99 mm / 77.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data	AWG	10 ... 2	10 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 30 V DC	250 V AC / 30 V DC
Max. operating current		1.5 A AC / 1 A DC	1.5 A AC / 1 A DC

Ordering data

Description	U_C	Type	Order No.	Pcs./Pkt.
VALVETRAB-MS, varistor-based lightning current arrester				
with remote indication contact	335 V AC	**VAL-MS-T1/T2 335/12.5/3+1-FM**	2800183	1
without remote indication contact	335 V AC	**VAL-MS-T1/T2 335/12.5/3+1**	2800184	1
	175 V AC			

Accessories

Replacement plug				
335 V AC	L-N / L-PEN	**VAL-MS-T1/T2 335/12.5 ST**	2800190	10
175 V AC	L-N / L-PEN			
	N-PE	**F-MS-T1/T2 50 ST**	2800191	10

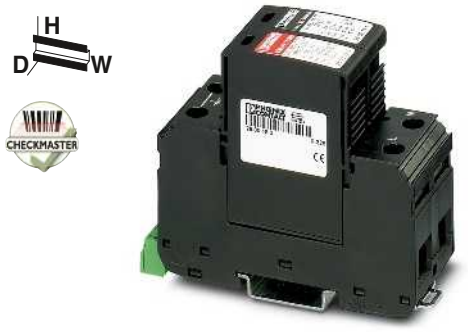
Ordering data

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

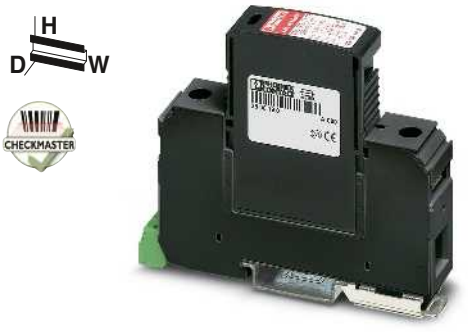
Accessories

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

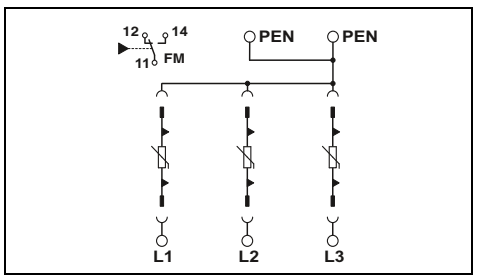
4-conductor system;
L1, L2, L3, PEN

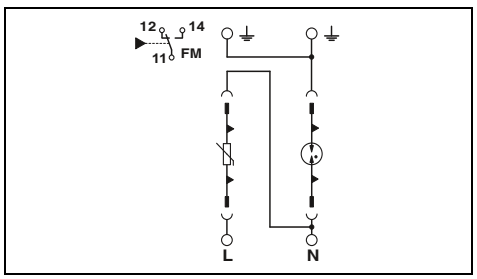


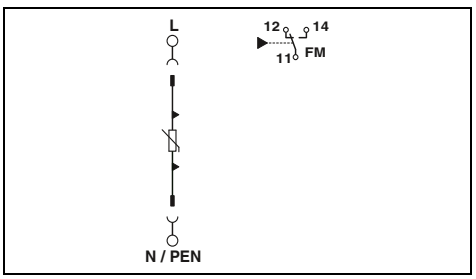
3-conductor system;
L, N, PE



2-conductor system;
L, N, PEN







Technical data

...335	...175
I / II , T1 / T2	I / II , T1 / T2
240/415 V AC (TN-C)	120/208 V AC (TN-C)
L-PEN	L-PEN
335 V AC	175 V AC
12.5 kA	12.5 kA
12.5 kA	12.5 kA
50 kA	50 kA
≤ 1.2 kV	≤ 0.8 kV
≤ 25 ns	≤ 25 ns
25 kA	25 kA
160 A (gG)	160 A (gG)
53.4 mm / 99 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	
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-T1/T2 335/12.5/3+0-FM	2800188	1
VAL-MS-T1/T2 335/12.5/3+0	2800189	1
VAL-MS-T1/T2 175/12.5/3+0-FM	2800672	1

Accessories

VAL-MS-T1/T2 335/12.5 ST	2800190	10
VAL-MS-T1/T2 175/12.5 ST	2800676	10

Technical data

...335	...175
I / II , T1 / T2	I / II , T1 / T2
240 V AC (TN-S) / 240 V AC (TT)	120 V AC (TN-S) / 120 V AC (TT)
L-N / L-PE / N-PE	L-N / L-PE / N-PE
335 V AC / 335 V AC / 264 V AC	175 V AC / 175 V AC / 264 V AC
12.5 kA / 12.5 kA / 50 kA	12.5 kA / 12.5 kA / 50 kA
12.5 kA / 12.5 kA / 50 kA	12.5 kA / 12.5 kA / 50 kA
50 kA	50 kA
≤ 1.2 kV / ≤ 2 kV / ≤ 1.7 kV	≤ 0.8 kV / ≤ 2 kV / ≤ 1.7 kV
≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
25 kA	25 kA
160 A (gG)	160 A (gG)
35.6 mm / 99 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	
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-T1/T2 335/12.5/1+1-FM	2800186	1
VAL-MS-T1/T2 335/12.5/1+1	2800187	1
VAL-MS-T1/T2 175/12.5/1+1-FM	2800674	1

Accessories

VAL-MS-T1/T2 335/12.5 ST	2800190	10
VAL-MS-T1/T2 175/12.5 ST	2800676	10
F-MS-T1/T2 50 ST	2800191	10

Technical data

...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
≤ 25 ns
25 kA
160 A (gG)
17.5 mm / 99 mm / 77.5 mm
1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 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 / 30 V DC
1 A AC / 1 A DC

Ordering data

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

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

Type 1/2 combination protective device VALVETRAB MS

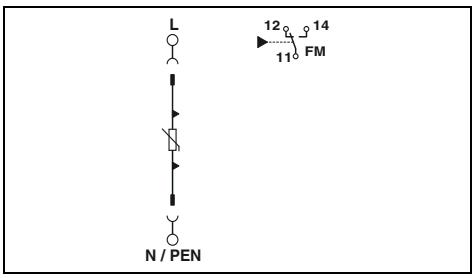
- Universal pluggability
- Thermal disconnect device for each individual connector
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be checked with CHECKMASTER

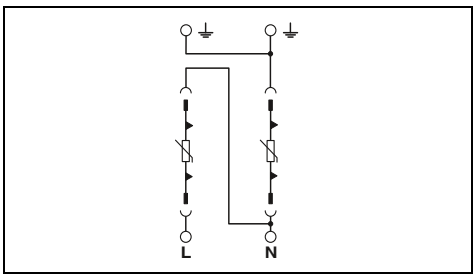
Notes:

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, PEN

3-conductor system; L, N, PE





Technical data

Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		60 V AC (TN)	60 V AC (TN-S)
Mode of protection		L-N / L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE	L-N / N-PE / (L+) - (L-) / (L+) - PE
Maximum continuous operating voltage U_C		75 V AC / 100 V DC	75 V AC / 100 V DC
Impulse discharge current I_{imp} (10/350) µs		12.5 kA	12.5 kA
Nominal discharge current I_n (8/20) µs		12.5 kA	12.5 kA
Max. discharge current I_{max} (8/20)µs		30 kA	30 kA
Protection level U_p		≤ 0.4 kV	≤ 0.4 kV
Response time tA		≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
Max. backup fuse with branch wiring		160 A (gG)	160 A (gG)
General data			
Dimensions W/H/D		17.5 mm / 97 mm / 77.5 mm	35.6 mm / 97 mm / 77.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data	AWG	10 ... 2	10 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1.5 A AC / 1 A DC (30 V DC)	1.5 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB-MS, varistor-based lightning current arrester			
with remote indication contact	**VAL-MS-T1/T2 48/12.5/1+0-FM**	2801240	1
without remote indication contact	**VAL-MS-T1/T2 48/12.5/1+0**	2801241	1

Accessories

Replacement plug L-N / L-PEN	**VAL-MS-T1/T2 48/12.5 ST**	2801242	10

Technical data

Electrical data			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		60 V AC (TN)	60 V AC (TN-S)
Mode of protection		L-N / L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE	L-N / N-PE / (L+) - (L-) / (L+) - PE
Maximum continuous operating voltage U_C		75 V AC / 100 V DC	75 V AC / 100 V DC
Impulse discharge current I_{imp} (10/350) µs		12.5 kA	12.5 kA
Nominal discharge current I_n (8/20) µs		12.5 kA	12.5 kA
Max. discharge current I_{max} (8/20)µs		30 kA	30 kA
Protection level U_p		≤ 0.4 kV	≤ 0.4 kV
Response time tA		≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
Max. backup fuse with branch wiring		160 A (gG)	160 A (gG)
General data			
Dimensions W/H/D		17.5 mm / 97 mm / 77.5 mm	35.6 mm / 97 mm / 77.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data	AWG	10 ... 2	10 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1.5 A AC / 1 A DC (30 V DC)	1.5 A AC / 1 A DC (30 V DC)

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

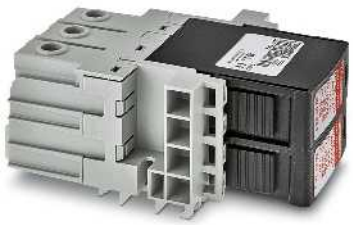
Accessories

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

Type 1/2 combination protective device VALVETRAB MS

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

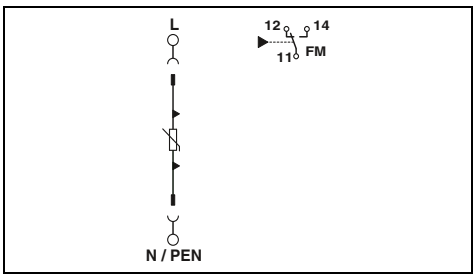
2-conductor system;
L, PEN

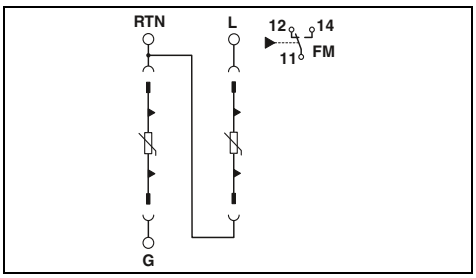


3-conductor system;
L, N, PE

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			
IEC test classification		I / II , T1 / T2	I / II , T1 / T2
Nominal voltage U_N		- / -48 V DC	60 V AC (TN-S) / -48 V DC
Mode of protection		L-PEN / (L+) - (L-) / (L-) - PE / (L+) - PE	L-N / N-PE / (L+) - (L-) / (L+) - PE
Maximum continuous operating voltage U_C		75 V AC / 100 V DC	75 V AC / 100 V DC
Impulse discharge current I_{imp} (10/350) µs		12.5 kA 12.5 kA	12.5 kA
Nominal discharge current I_n (8/20) µs		12.5 kA	12.5 kA
Max. discharge current I_{max} (8/20)µs		30 kA	30 kA
Protection level U_p		≤ 0.4 kV	≤ 0.4 kV
Response time tA		≤ 25 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
Max. backup fuse with branch wiring		160 A AC (gG)	160 A AC (gG)
General data			
Dimensions W/H/D		17.5 mm / 77.1 mm / 89.2 mm	70.6 mm / 40.6 mm / 98.1 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	- mm² / - mm² / 15 ... 2
UL connection data	AWG	10 ... 2	10 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		EN 61643-11/A11	-
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	- mm² / - mm² / 24 ... 20
UL connection data	AWG	-	-
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1.5 A / 1 A (30 V DC)	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 L-N / L-PEN	**VAL-MS-T1/T2 48/12.5 ST**	2801242	10
VALVETRAB, base element	**VAL-MS-T1/T2 BE/O-FM**	2905652	12
	VAL-MS-T1/T2 BE/O	2905650	12

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-MS-T1/T2 48/12.5/1+1/1U/FM	2909629	1

Accessories

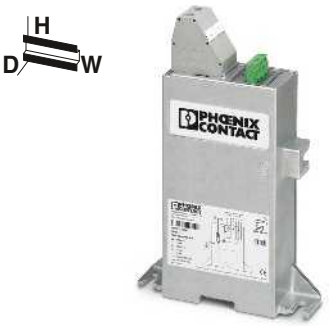
VAL-MS-T1/T2 48/12.5 ST	2801242	10
VAL-MS BE/1+1/1U/FM	2909628	1

Type 1/2 combination protective device 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 according to 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

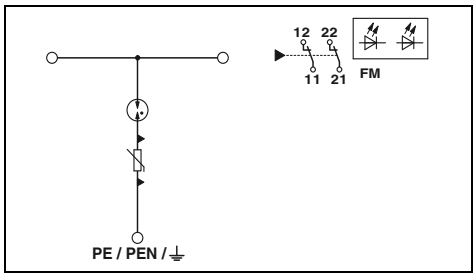
Notes:

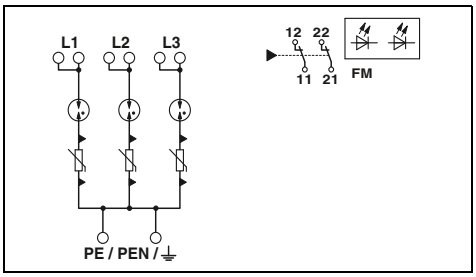
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



2-conductor system, L, PE/PEN

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





Technical data

Electrical data		
IEC test classification		I / II , T1 / T2
Nominal voltage U_N		690 V AC / 554/960 V AC (TN-C) / 690 V AC (IT)
Mode of protection		L-PE
Maximum continuous operating voltage U_C		800 V AC
Impulse discharge current I_{imp} (10/350) µs		35 kA
Nominal discharge current I_n (8/20) µs		35 kA
Max. discharge current I_{max} (8/20)µs		100 kA
Residual voltage at 5 kA		≤ 2.2 kV
Protection level U_p		≤ 4.5 kV
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA
Max. backup fuse with branch wiring		400 A (gG; 2 x 50 mm²)
General data		
Dimensions W/H/D		56 mm / 191 mm / 280 mm
IEC connection data	Solid/stranded/AWG	16 ... 50 mm² / 16 ... 50 mm² / 6 ... 1/0
UL connection data	AWG	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	Solid/stranded/AWG	0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 24 ... 12
UL connection data	AWG	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	Type	Order No.	Pcs./Pkt.
POWERTRAB			
	PWT 35-800AC-FM	2800419	1
POWERTRAB, incl. mounting set			

Accessories

Mounting set for connecting three lightning current arresters of type PWT 35-800AC-FM	**PWT CCT-SET**	2800532	1
Mounting set for connecting four lightning current arresters of type PWT 35-800AC-FM	**PWT CCT-SET 4**	2905613	1

Technical data

Electrical data		
IEC test classification		I / II , T1 / T2
Nominal voltage U_N		690 V AC / 554/960 V AC (TN-C) / 690 V AC (IT)
Mode of protection		L-PE
Maximum continuous operating voltage U_C		800 V AC
Impulse discharge current I_{imp} (10/350) µs		35 kA
Nominal discharge current I_n (8/20) µs		35 kA
Max. discharge current I_{max} (8/20)µs		100 kA
Residual voltage at 5 kA		≤ 2.2 kV
Protection level U_p		≤ 4.5 kV
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		50 kA
Max. backup fuse with branch wiring		400 A (gG; 2 x 50 mm²)
General data		
Dimensions W/H/D		176 mm / 191 mm / 280 mm
IEC connection data	Solid/stranded/AWG	16 ... 50 mm² / 16 ... 50 mm² / 6 ... 1/0
UL connection data	AWG	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	Solid/stranded/AWG	0.2 ... 2.5 mm² / 0.2 ... 2.5 mm² / 24 ... 12
UL connection data	AWG	24 ... 12
Max. operating voltage		30 V AC / 30 V DC
Max. operating current		1.5 A AC / 1.5 A DC

Ordering data

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

Accessories

Type 1/2 combination protective device VALVETRAB MB / 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

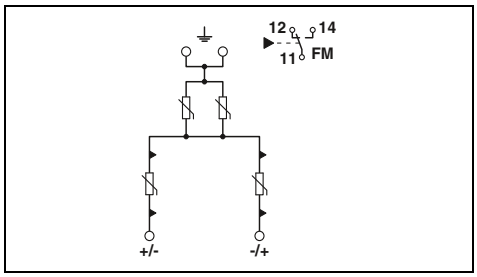
Notes:

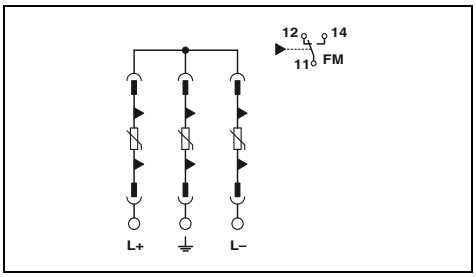
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

new

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

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





Technical data

Electrical data		... 600DC	... 1000DC	... 1500DC
IEC test classification		PV I / II , T1 / T2	PV I / II , T1 / T2	PV I / II , T1 / T2
Mode of protection		(L+) - (L-) / (L+) - PE / (L-) - PE	(L+) - (L-) / (L+) - PE / (L-) - PE	(L+) - (L-) / (L+) - PE / (L-) - PE
Maximum continuous operating voltage U_{CPV}		800 V DC	1000 V DC	1500 V DC
Impulse discharge current I_{imp} (10/350) µs		6.25 kA	6.25 kA	6.25 kA
Nominal discharge current I_n (8/20) µs		20 kA	20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		40 kA	40 kA	40 kA
Protection level U_p		≤ 2.9 kV	≤ 3.3 kV	≤ 4.5 kV
Response time tA		≤ 25 ns	≤ 25 ns	≤ 25 ns
Open circuit voltage U_{OCSTC}		≤ 667 V DC	≤ 833 V DC	≤ 1250 V DC
Short-circuit current rating I_{SCPV}		2000 A	2000 A	2000 A
General data				
Dimensions W/H/D		71.2 mm / 120 mm / 65.5 mm		
IEC connection data	Solid/stranded/AWG	- mm² / 2.5 ... 35 mm² / 14 ... 2		
Temperature range		-40 °C ... 80 °C		
Test standards		EN 50539-11		
Remote indication contact		PDT contact		
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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 ...PV			
	VAL-MB-T1/T2 600DC-PV/2+V-FM	2906292	1
	VAL-MB-T1/T2 1000DC-PV/2+V-FM	2905638	1
	VAL-MB-T1/T2 1500DC-PV/2+V-FM	2905640	1
VALVETRAB ...PV, without FM contact			
	VAL-MB-T1/T2 600DC-PV/2+V	2906293	1
	VAL-MB-T1/T2 1000DC-PV/2+V	2905639	1
	VAL-MB-T1/T2 1500DC-PV/2+V	2905641	1

Accessories

Replacement plug				
600 V DC	(L+)-PE & (L-)-PE & (L+)-(L-)			
1000 V DC	(L+)-PE & (L-)-PE & (L+)-(L-)			

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	(L+) - (L-) / (L+) - PE / (L-) - PE
Maximum continuous operating voltage U_{CPV}		720 V DC	1050 V DC
Impulse discharge current I_{imp} (10/350) µs		5 kA	5 kA
Nominal discharge current I_n (8/20) µs		15 kA	15 kA
Max. discharge current I_{max} (8/20)µs		40 kA	40 kA
Protection level U_p		≤ 2.6 kV	≤ 3.5 kV
Response time tA		≤ 25 ns	≤ 25 ns
Open circuit voltage U_{OCSTC}		≤ 600 V DC	≤ 875 V DC
Short-circuit current rating I_{SCPV}		1000 A	1000 A
General data			
Dimensions W/H/D		53.4 mm / 99 mm / 65.5 mm	
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	
Temperature range		-40 °C ... 80 °C	
Test standards		EN 50539-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	
Max. operating voltage		250 V AC / 30 V DC	
Max. operating current		1.5 A AC / 1 A DC	

Ordering data

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

VAL-MS-T1/T2 600DC-PV-ST	2801165	1
VAL-MS-T1/T2 1000DC-PV-ST	2801162	1

Type 1+2 protective device combination FLASHTRAB SEC T1+T2

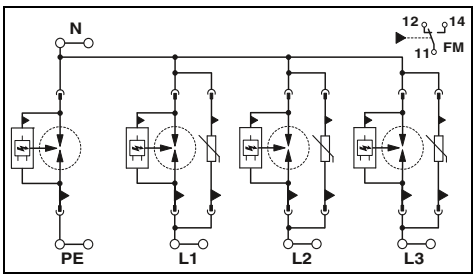
- Directly coordinated combination of type 1 spark gap without line follow current and type 2 varistor arrester
- Particularly suitable for maximum protection of sensitive devices in harsh environments
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations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

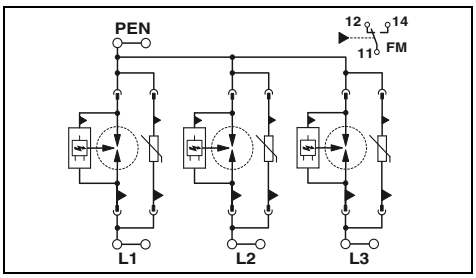
Notes:

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		
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		L-N / L-PE / N-PE
Maximum continuous operating voltage U_C		350 V AC
Impulse discharge current I_{imp} (10/350) µs		25 kA / 25 kA / 100 kA
Nominal discharge current I_n (8/20) µs		25 kA / 25 kA / 100 kA
Protection level U_p		≤ 1.5 kV / ≤ 2.2 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}		25 kA (264 V AC) / - / 100 A (350 V AC)
Response time tA		≤ 25 ns / - / ≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA (264 V AC)
Max. backup fuse with branch wiring		315 A (gG)
General data		
Dimensions W/H/D		142.4 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
UL connection data	AWG	12 ... 2
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	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

Description	Type	Order No.	Pcs./Pkt.
Type 1+2 protective device combination			
	FLT-SEC-T1+T2-3S-350/25-FM	**2905470**	1

Accessories

Replacement plug			
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

Technical data

Electrical data		
IEC test classification		I + II , T1 + 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
Impulse discharge current I_{imp} (10/350) µs		25 kA
Nominal discharge current I_n (8/20) µs		25 kA
Protection level U_p		≤ 1.5 kV
Follow current interrupt rating I_{fi}		25 kA (264 V AC)
Response time tA		≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA (264 V AC)
Max. backup fuse with branch wiring		315 A (gG)
General data		
Dimensions W/H/D		106.8 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
UL connection data	AWG	12 ... 2
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	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+T2-3C-350/25-FM	**2905469**	1

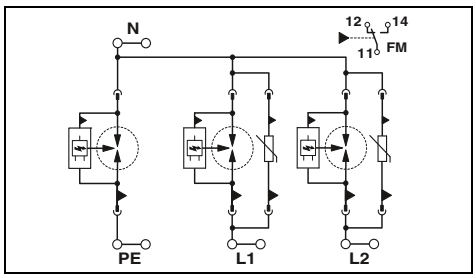
Accessories

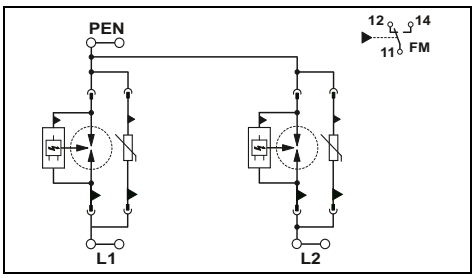
FLT-SEC-T1-350/25-P	**2905471**	1
VAL-SEC-T2-350-P	**2905346**	1

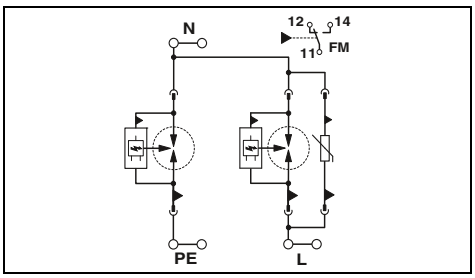
4-conductor system;
L1, L2, N, PE

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	
≤ 1.5 kV / ≤ 2.2 kV / ≤ 1.5 kV	
25 kA (264 V AC) / - / 100 A (350 V AC)	
≤ 25 ns / - / ≤ 100 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	
12 ... 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	
≤ 1.5 kV	
25 kA (264 V AC)	
≤ 25 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	
12 ... 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	
≤ 1.5 kV / ≤ 2.2 kV / ≤ 1.5 kV	
25 kA (264 V AC) / - / 100 A (350 V AC)	
≤ 25 ns / - / ≤ 100 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	
12 ... 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

Type 1+2 protective device combination FLASHTRAB SEC T1+T2

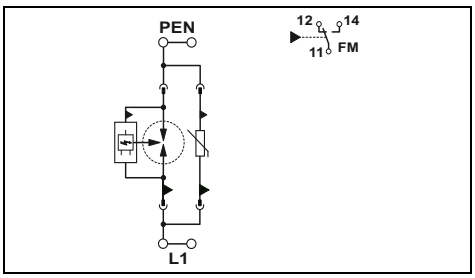
- Directly coordinated combination of type 1 spark gap without line follow current and type 2 varistor arrester
- Particularly suitable for maximum protection of sensitive devices in harsh environments
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations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

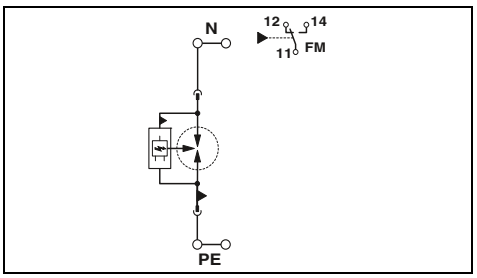
Notes:

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, PEN

N-PE spark gap





Technical data

Electrical data			
IEC test classification		I + II , T1 + T2	I / II , T1 / T2
Nominal voltage U_N		240 V AC (TN-C) / 240 V AC (TT)	240 V AC (TN - only N-PE) / 240 V AC (TT - only N-PE)
Mode of protection		L-PEN	N-PE
Maximum continuous operating voltage U_C		350 V AC	350 V AC
Impulse discharge current I_{imp} (10/350) µs		25 kA	100 kA
Nominal discharge current I_n (8/20) µs		25 kA	100 kA
Protection level U_p		≤ 1.5 kV	≤ 1.5 kV
Follow current interrupt rating I_{fi}		25 kA (264 V AC)	100 A
Response time tA		≤ 25 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA (264 V AC)	-
Max. backup fuse with branch wiring		315 A (gG)	-
General data			
Dimensions W/H/D		35.6 mm / 95.2 mm / 74.5 mm	35.6 mm / 95.2 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2	2.5 ... 35 mm² / 2.5 ... 35 mm² / 13 ... 2
UL connection data	AWG	12 ... 2	12 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Type 1+2 protective device combination			
	FLT-SEC-T1+T2-1C-350/25-FM	2905465	1

Accessories

Replacement plug			
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			

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

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 increased 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 checked with CHECKMASTER

Notes:

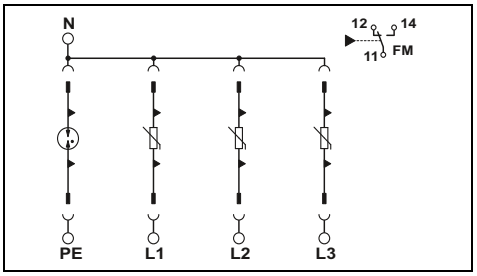
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

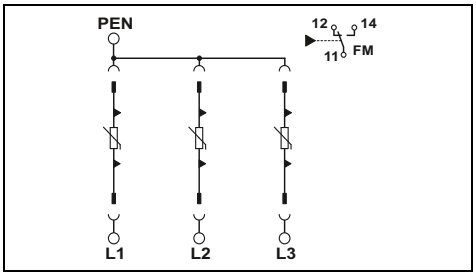
new

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

new

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





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		L-N / L-PE / N-PE
Maximum continuous operating voltage U_C		350 V AC / 350 V AC / 264 V AC
Nominal discharge current I_n (8/20) µs		20 kA / 20 kA / 40 kA
Max. discharge current I_{max} (8/20)µs		40 kA / 40 kA / 80 kA
Protection level U_p		≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV
Response time tA		≤ 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)
Max. backup fuse with branch wiring		315 A (gG)
General data		
Dimensions W/H/D		49.2 mm / 97.9 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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-T2-3S-350/40-FM**	2909635	1
without remote indication contact	**VAL-SEC-T2-3S-350/40**	2909637	1

Accessories

Replacement plug			
L-N / L-PEN	**VAL-SEC-T2-350-P**	2905346	1
N-PE	**VAL-SEC-T2-N/PE-264/40-P**	2909636	1

Technical data

Electrical data		
IEC test classification		II , T2
Nominal voltage U_N		400/690 V AC (TN-C)
Mode of protection		L-PEN
Maximum continuous operating voltage U_C		440 V AC
Nominal discharge current I_n (8/20) µs		20 kA
Max. discharge current I_{max} (8/20)µs		40 kA
Protection level U_p		≤ 1.9 kV
Response time tA		≤ 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)
Max. backup fuse with branch wiring		315 A (gG)
General data		
Dimensions W/H/D		37.3 mm / 97.9 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-3C-440-FM	2909968	1

Accessories

VAL-SEC-T2-440-P	2909969	1

Type 2 surge protective device VALVETRAB SEC 350

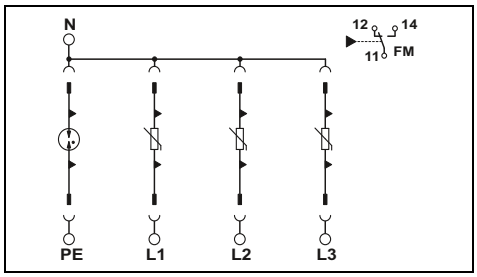
- Varistor arrester with a low leakage current
- High-performance gas-filled surge arrester for N/PE protection
- Extremely narrow design, just 12 mm per position
- Pluggable
- High continuous voltage of 350 V AC for 230/400 V AC networks with high voltage fluctuations
- Low voltage protection level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

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.

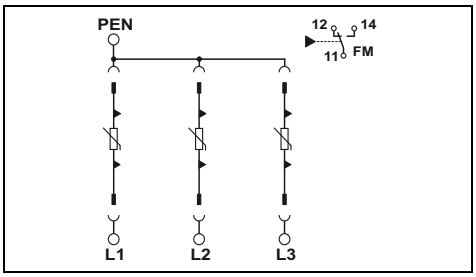
new

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



new

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



Technical data

		... 350	... 350VF
Electrical data			
IEC test classification		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)
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) µs		20 kA	10 kA / 10 kA / 20 kA
Max. discharge current I_{max} (8/20)µs		40 kA	20 kA / 20 kA / 40 kA
Protection level U_p		≤ 1.5 kV / ≤ 1.9 kV / ≤ 1.5 kV	≤ 1.5 kV / ≤ 2.3 kV / ≤ 1.5 kV
Response time tA		≤ 25 ns / ≤ 100 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
Max. backup fuse with branch wiring		315 A (gG)	200 A (gG)
General data			
Dimensions W/H/D		49.2 mm / 97.9 mm / 74.5 mm	
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
UL connection data	AWG	14 ... 2 (solid)	
Temperature range		-40 °C ... 80 °C	
Test standards		IEC 61643-11 / EN 61643-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	
UL connection data	AWG	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

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

Accessories

Replacement plug				
	L-N / L-PEN	**VAL-SEC-T2-350-P**	2905346	1
	N-PE	**VAL-SEC-T2-N/PE-350-P**	2905347	1
Free of leakage current	L-N / L-PEN	**VAL-SEC-T2-350VF-P**	2909596	1

Technical data

		... 350	... 350VF
Electrical data			
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) µs		20 kA	10 kA
Max. discharge current I_{max} (8/20)µs		40 kA	20 kA
Protection level U_p		≤ 1.5 kV	≤ 1.5 kV
Response time tA		≤ 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
Max. backup fuse with branch wiring		315 A (gG)	200 A (gG)
General data			
Dimensions W/H/D		37.3 mm / 97.9 mm / 74.5 mm	
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
UL connection data	AWG	14 ... 2 (solid)	
Temperature range		-40 °C ... 80 °C	
Test standards		IEC 61643-11 / EN 61643-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	
UL connection data	AWG	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.
VAL-SEC-T2-3C-350-FM	2905339	1
VAL-SEC-T2-3C-350	2905344	1
VAL-SEC-T2-3C-350VF-FM	2909591	1

Accessories

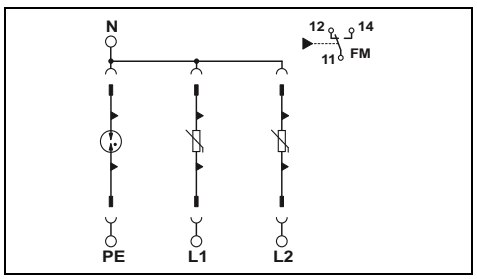
VAL-SEC-T2-350-P	2905346	1
VAL-SEC-T2-350VF-P	2909596	1

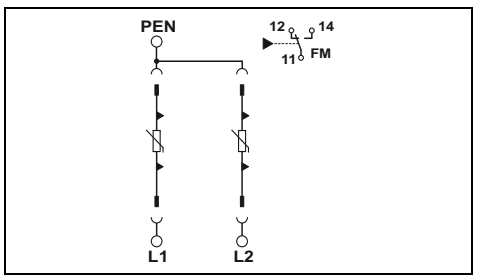
new

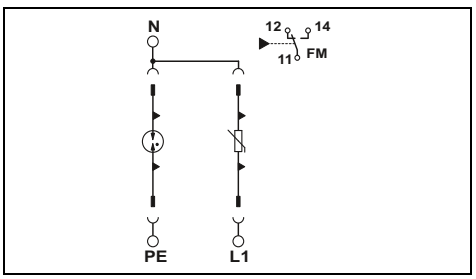
4-conductor system;
L1, L2, N, PE

3-conductor system;
L1, L2, PEN

3-conductor system; L, N, PE







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)	
37.3 mm / 97.9 mm / 74.5 mm	
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
14 ... 2 (solid)	
-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-350-FM	2905338	1
VAL-SEC-T2-2S-350	2905343	1

Accessories

VAL-SEC-T2-350-P	2905346	1
VAL-SEC-T2-N/PE-350-P	2905347	1

Technical data

... 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)	
25.4 mm / 97.9 mm / 74.5 mm	
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
14 ... 2 (solid)	
-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-350-FM	2905337	1
VAL-SEC-T2-2C-350	2905342	1

Accessories

VAL-SEC-T2-350-P	2905346	1

Technical data

... 350	... 350VF	
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)	
25.4 mm / 97.9 mm / 74.5 mm		
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4		
14 ... 2 (solid)		
-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-350-FM	2905333	1
VAL-SEC-T2-1S-350	2905341	1
VAL-SEC-T2-1S-350VF-FM	2909592	1

Accessories

VAL-SEC-T2-350-P	2905346	1
VAL-SEC-T2-N/PE-350-P	2905347	1
VAL-SEC-T2-350VF-P	2909596	1

Type 2 surge protective device VALVETRAB SEC 175

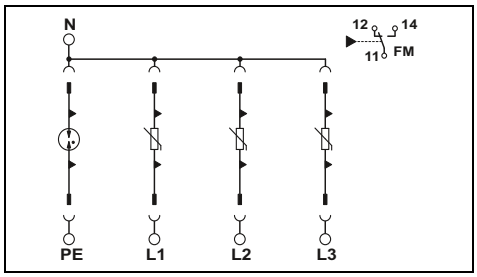
- Varistor arrester with a low leakage current
- High-performance gas-filled surge arrester for N/PE protection
- Extremely narrow design, just 12 mm per position
- Pluggable
- High continuous voltage of 175 V AC for 120/208 V AC networks with high voltage fluctuations
- Low voltage protection level 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 checked with CHECKMASTER

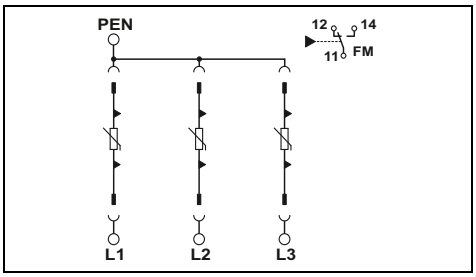
Notes:

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		... 175	... 175
IEC test classification		II , T2	II , T2
Nominal voltage U_N		120/208 V AC (TN-S) / 120/208 V AC (TT)	120/208 V AC (TN-C)
Mode of protection		L-N / L-PE / N-PE	L-PEN
Maximum continuous operating voltage U_C		175 V AC / 175 V AC / 150 V AC	175 V AC
Nominal discharge current I_n (8/20) µs		20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		40 kA	40 kA
Protection level U_p		≤ 0.85 kV / ≤ 1.3 kV / ≤ 0.95 kV	≤ 0.85 kV
Response time tA		≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 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)	25 kA (in case of 315 A gG backup fuse) / 50 kA (in case of 200 A gG backup fuse)
Max. backup fuse with branch wiring		315 A (gG)	315 A (gG)
General data			
Dimensions W/H/D		49.2 mm / 97.9 mm / 74.5 mm	37.3 mm / 97.9 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
UL connection data	AWG	14 ... 2 (solid)	14 ... 2 (solid)
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	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-175-FM**	2905354	1

Accessories

Replacement plug			
L-N / L-PEN	**VAL-SEC-T2-175-P**	2905355	1
N-PE	**VAL-SEC-T2-N/PE-175-P**	2905356	1

Ordering data

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

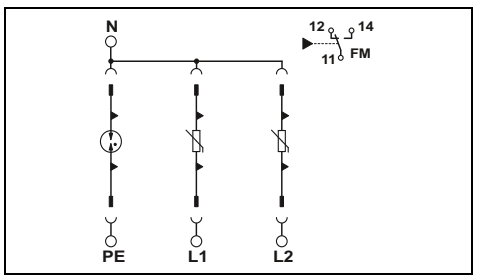
Accessories

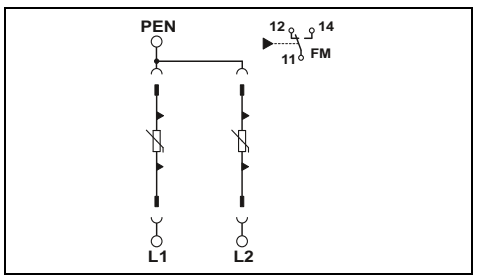
Type	Order No.	Pcs./Pkt.
VAL-SEC-T2-175-P	2905355	1

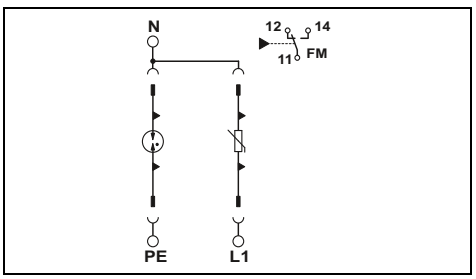
4-conductor system;
L1, L2, N, PE

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 (solid)
	-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 (solid)
	-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

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 (solid)
	-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

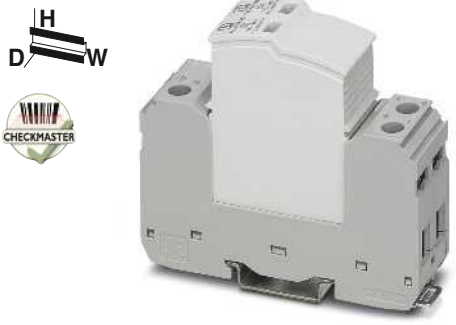
Type 2 surge protective device VALVETRAB SEC DC

- 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 checked with CHECKMASTER

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.

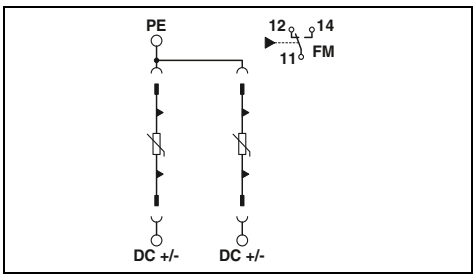
new

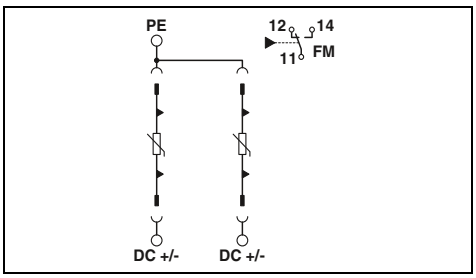


3-conductor system, DC+, DC-, PE for 48 V DC

new

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





Technical data

Electrical data		
IEC test classification		II , T2
Nominal voltage U_N		48 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) µs		20 kA
Max. discharge current I_{max} (8/20)µs		40 kA
Protection level U_p		≤ 0.9 kV / ≤ 0.5 kV
Response time tA		≤ 25 ns
Short-circuit current rating I_{SCCR}		0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)
Max. backup fuse with branch wiring		20 A (gG / B at I_{SCCR} > 200 A)
General data		
Dimensions W/H/D		25.4 mm / 97.9 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

Accessories

Replacement plug (DC+/DC-) - PE	**VAL-SEC-T2-48DC-P**	2907877	1

Technical data

Electrical data		
IEC test classification		II , T2
Nominal voltage U_N		100 V DC ... 120 V DC
Mode of protection		(DC+) - (DC-) / (DC+/DC-) - PE
Maximum continuous operating voltage U_C		150 V DC
Nominal discharge current I_n (8/20) µs		20 kA
Max. discharge current I_{max} (8/20)µs		40 kA
Protection level U_p		≤ 1.8 kV / ≤ 0.85 kV
Response time tA		≤ 25 ns
Short-circuit current rating I_{SCCR}		0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)
Max. backup fuse with branch wiring		20 A (gG / B at I_{SCCR} > 200 A)
General data		
Dimensions W/H/D		25.4 mm / 97.9 mm / 74.5 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

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

Accessories

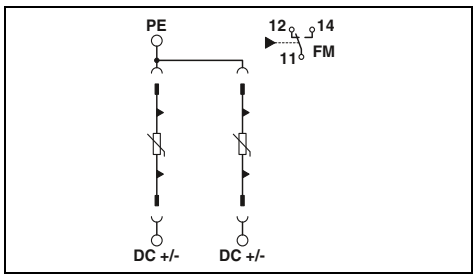
	VAL-SEC-T2-120DC-P	2907878	1

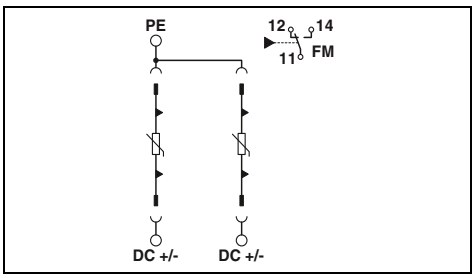
new

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

new

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





Technical data

II , T2	
200 V DC ... 220 V DC	
(DC+) - (DC-) / (DC+/DC-) - PE	
250 V DC	
20 kA	
40 kA	
≤ 3 kV / ≤ 1.5 kV	
≤ 25 ns	
0.2 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)	
20 A (gG / B at I_{SCCR} > 200 A)	
25.4 mm / 97.9 mm / 74.5 mm	
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
-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

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

Accessories

VAL-SEC-T2-220DC-P	2907879	1

Technical data

II , T2	
350 V DC ... 400 V DC	
(DC+) - (DC-) / (DC+/DC-) - PE	
450 V DC	
20 kA	
40 kA	
≤ 3 kV / ≤ 1.5 kV	
≤ 25 ns	
0.1 kA (without backup fuse) / 6 kA (for 20 A gG/B backup fuse)	
20 A (gG / B at I_{SCCR} > 200 A)	
25.4 mm / 97.9 mm / 74.5 mm	
2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	
-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

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

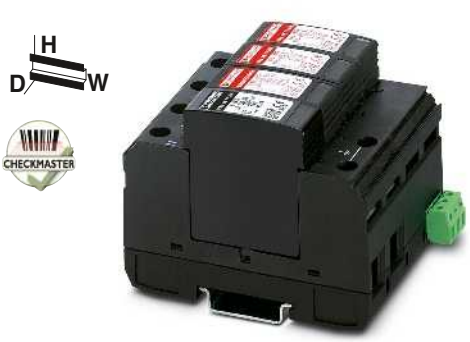
Accessories

VAL-SEC-T2-380DC-P	2907880	1

Type 2 surge protective device VALVETRAB MS 230 / 320

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

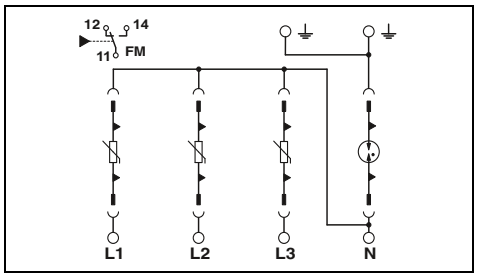
5-conductor system; L1, L2, L3, N, PE, supply line supply from below

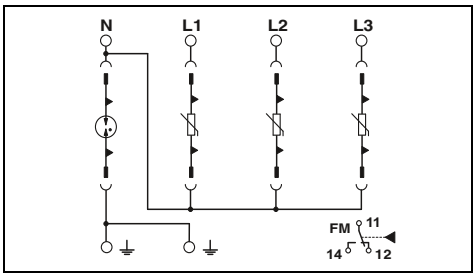


5-conductor system; L1, L2, L3, N, PE, supply line supply from above

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	VAL-MS 230	VAL-MS 320
IEC test classification	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)
Mode of protection	L-N / L-PE / N-PE	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C	275 V AC / 275 V AC / 260 V AC	335 V AC / 335 V AC / 260 V AC
Nominal discharge current I_n (8/20) µs	20 kA	20 kA
Max. discharge current I_{max} (8/20)µs	40 kA	40 kA
Protection level U_p	≤ 1.35 kV / ≤ 1.6 kV / ≤ 1.5 kV	≤ 1.6 kV / ≤ 1.9 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}	- / - / 100 A	- / - / 100 A
Response time tA	≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	25 kA	25 kA
Max. backup fuse with branch wiring	125 A (gG)	125 A (gG)

General data		
Dimensions W/H/D	71 mm / 99 mm / 65.5 mm	71 mm / 99 mm / 65.5 mm
IEC connection data (Solid/stranded/AWG)	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data (AWG)	10 ... 2	10 ... 2
Temperature range	-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards	IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact	PDT contact	PDT contact
IEC connection data (Solid/stranded/AWG)	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data (AWG)	30 ... 14	30 ... 14
Max. operating voltage	250 V AC / 30 V DC	250 V AC / 30 V DC
Max. operating current	750 mA AC / 1 A DC	750 mA AC / 1 A DC

Ordering data

Description	U_C	Type	Order No.	Pcs./Pkt.
VALVETRAB, multi-position surge protective device combination				
without remote indication contact	275 V AC	**VAL-MS 230/3+1**	2838209	1
with remote indication contact	275 V AC	**VAL-MS 230/3+1 FM**	2838199	1
without remote indication contact	335 V AC	**VAL-MS 320/3+1**	2859178	1
with remote indication contact	335 V AC	**VAL-MS 320/3+1/FM**	2859181	1

Accessories

Replacement plug			
1L-N/PE	**VAL-MS 230 ST**	2798844	10
1L-N/PE	**VAL-MS 320 ST**	2838843	10
N-PE	**F-MS 12 ST**	2817990	10

Ordering data

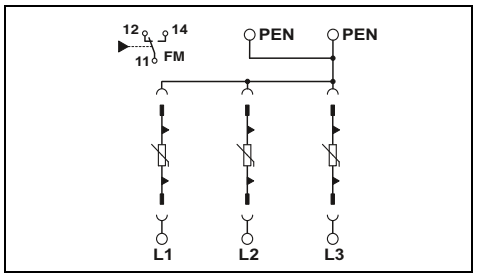
Type	Order No.	Pcs./Pkt.
VAL-MS 320/3+1/FM-UD	2856689	1

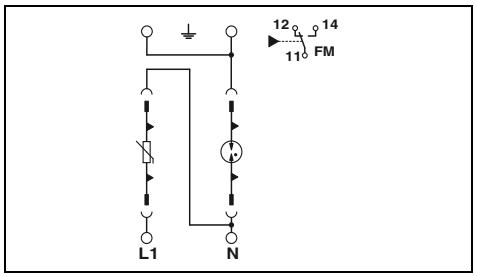
Accessories

VAL-MS 320-UD ST	2858315	10
F-MS 12 ST	2817990	10

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)	
53.4 mm / 99 mm / 65.5 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	

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 / - / 260 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)
35.6 mm / 97 mm / 65.5 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

Accessories

VAL-MS 320 ST	**2838843**	10

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

Type 2 surge protective device VALVETRAB MS 350

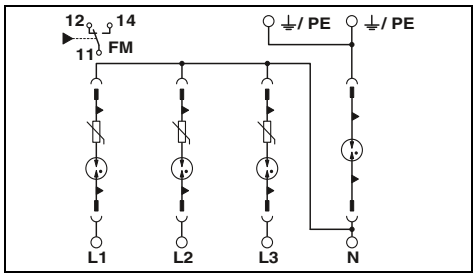
- DIN-rail-mountable protective devices
- Comprising base element and plug
- Free of leakage current
- Thermal disconnect device for each individual connector
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding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

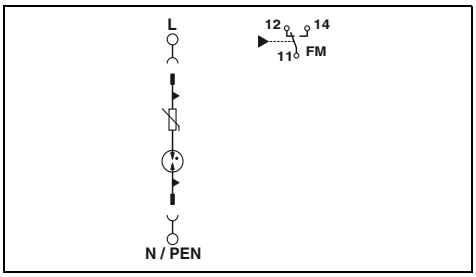
5-conductor system; L1, L2, L3, N, PE
Free of leakage current

2-conductor system; L, N, PEN
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.





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		L-N / L-PE / N-PE
Maximum continuous operating voltage U_C		350 V AC / 350 V AC / 260 V AC
Nominal discharge current I_n (8/20) µs		10 kA / 10 kA / 20 kA
Max. discharge current I_{max} (8/20)µs		20 kA / 20 kA / 40 kA
Protection level U_p		≤ 1.5 kV / ≤ 2 kV / ≤ 1.5 kV
Follow current interrupt rating I_{fi}		- / - / 100 A
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA
Max. backup fuse with branch wiring		125 A (gG)
General data		
Dimensions W/H/D		71 mm / 99 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14
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 350VF/3+1-FM**	2858632	1
without remote indication contact	**VAL-MS 350 VF/3+1**	2858755	1

Accessories

Replacement plug			
1L-N/PE	**VAL-MS 350 VF ST**	2856595	10
N-PE	**F-MS 12 ST**	2817990	10

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) µs		10 kA
Max. discharge current I_{max} (8/20)µs		20 kA
Protection level U_p		≤ 1.5 kV
Follow current interrupt rating I_{fi}		- / - / -
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA
Max. backup fuse with branch wiring		125 A (gG)
General data		
Dimensions W/H/D		17.6 mm / 97 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14
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.
VAL-MS 350 VF/FM	2856579	1
VAL-MS 350VF	2856582	1

Accessories

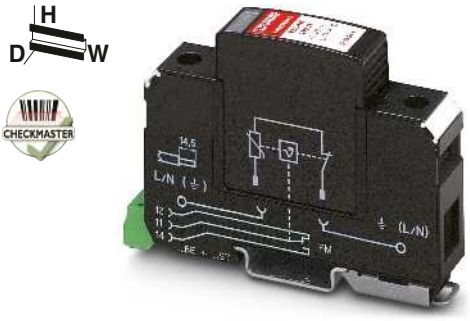
VAL-MS 350 VF ST	2856595	10

Type 2 surge protective device VALVETRAB MS

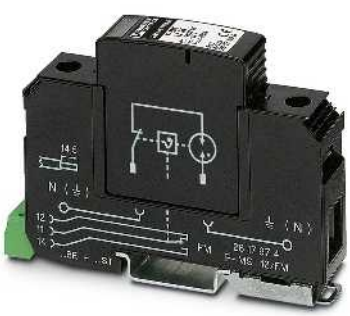
- Universal pluggability
- Also suitable for industry solutions, e.g., in the rail and telecommunications sectors
- Thermal disconnect device for each individual connector
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical coding of all slots
- Plugs can be checked with CHECKMASTER

Notes:

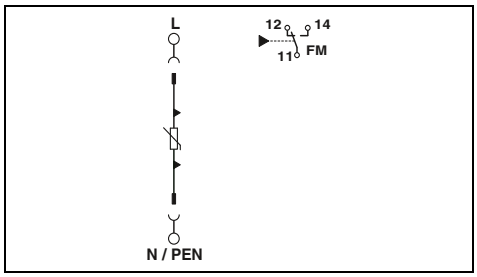
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

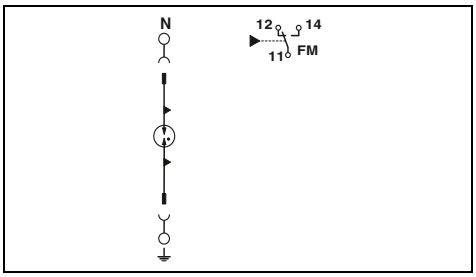


2-conductor system; L, N, PEN



N-PE spark gap





Technical data

Electrical data			
IEC test classification		II , T2	II , T2
Nominal voltage U_N		60 V AC (TN)	240/415 V AC (TN - only N-PE) / 240/415 V AC (TT - only N-PE)
Mode of protection		L-PEN	N-PE
Maximum continuous operating voltage U_C		75 V AC / 100 V DC	260 V AC
Nominal discharge current I_n (8/20) µs		15 kA	20 kA
Max. discharge current I_{max} (8/20)µs		40 kA	40 kA
Protection level U_p		≤ 0.55 kV	≤ 1.5 kV
Follow current interrupt rating I_{fi}		-	100 A (260 V)
Response time tA		≤ 25 ns	≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA	-
Max. backup fuse with branch wiring		125 A AC (gG)	-
General data			
Dimensions W/H/D		17.6 mm / 97 mm / 65.5 mm	17.6 mm / 97 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data	AWG	10 ... 2	10 ... 2
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14	30 ... 14
Max. operating voltage		250 V AC / 30 V DC	250 V AC / 30 V DC
Max. operating current		1 A AC / 1 A DC	1 A AC / 1 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS			
with remote indication contact	**VAL-MS 60/FM**	2868033	1
without remote indication contact	**VAL-MS 60**	2868020	1

Accessories

Replacement plug 1L-N/PE	**VAL-MS 60 ST**	2807573	10

Ordering data

Type	Order No.	Pcs./Pkt.
F-MS 12/FM	2817974	1
F-MS 12	2817987	1

Accessories

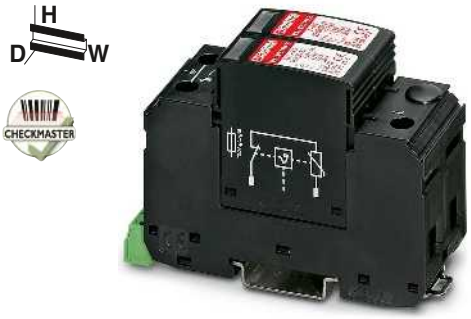
F-MS 12 ST	2817990	10

Type 2 surge protective device VALVETRAB MS

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

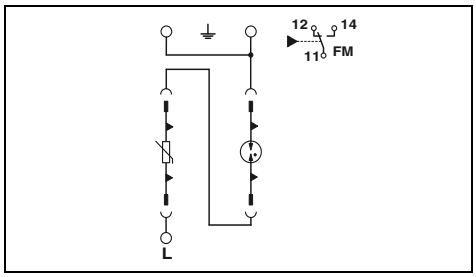
Notes:

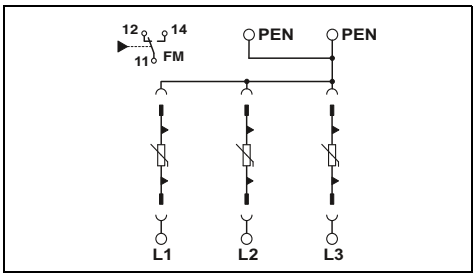
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



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

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		400/690 V AC (TN-C) / 690 V AC (IT)
Mode of protection		L-PE / L-PEN
Maximum continuous operating voltage U_C		800 V AC
Nominal discharge current I_n (8/20) µs		15 kA
Max. discharge current I_{max} (8/20)µs		30 kA
Protection level U_p		≤ 5 kV
Response time tA		≤ 100 ns
Short-circuit current rating I_{SCCR}		25 kA
Max. backup fuse with branch wiring		100 A (gG)
General data		
Dimensions W/H/D		35.6 mm / 99 mm / 58 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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			
1L-N/PE	**VAL-MS 750/30-ST**	2920256	10
N-PE	**F-MS 2200/30 ST**	2805392	10

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		L-PE / L-PEN
Maximum continuous operating voltage U_C		760 V AC
Nominal discharge current I_n (8/20) µs		15 kA
Max. discharge current I_{max} (8/20)µs		30 kA
Protection level U_p		≤ 2.9 kV
Response time tA		≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA
Max. backup fuse with branch wiring		100 A (gG)
General data		
Dimensions W/H/D		53.4 mm / 99 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

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

Accessories

Type	Order No.	Pcs./Pkt.
VAL-MS 750/30-ST	2920256	10

Type 2 surge protective device VALVETRAB MS

- Custom surge protection configuration
- 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 checked with CHECKMASTER

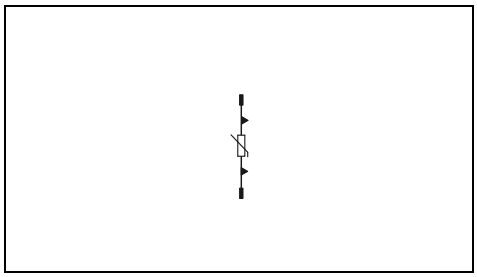
Notes:

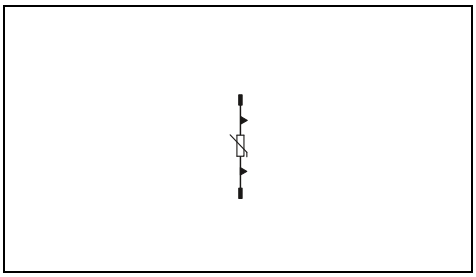
Choose the plug based on technical data.
Choose the base element corresponding to the required circuit and remote signaling function:
- TN-C: X+0 - circuit
- TN-S, TT: X+1 - circuit
- IT: Y+0 - circuit
- X = Number of phases
- Y = Number of phases + if required, neutral conductor

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 63.

For 24 and 48 V DC

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





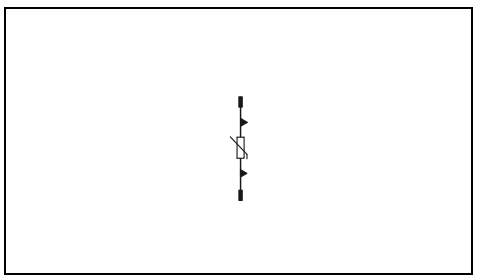
	Technical data	Technical data
Electrical data		
IEC test classification	II , T2	II , T2
Nominal voltage U_N (IEC)	60 V AC (TN)	120/208 V AC (TN)
Nominal voltage U_N (UL)	60 V AC	120 V AC
Maximum continuous operating voltage U_C	75 V AC / 100 V DC	150 V AC
Nominal discharge current I_n (8/20) µs	15 kA	20 kA
Max. discharge current I_{max} (8/20)µs	40 kA	40 kA
Protection level U_p	≤ 0.55 kV	≤ 0.9 kV
General data		
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards	IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11

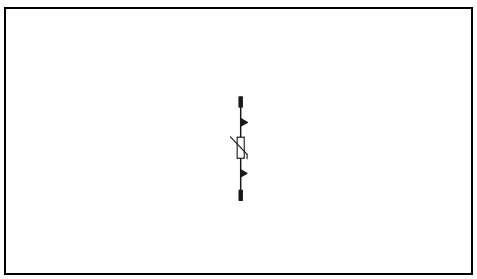
Description		Ordering data: Type	Order No.	Pcs./Pkt.	Ordering data: Type	Order No.	Pcs./Pkt.
VALVETRAB surge protection plug							
		VAL-MS 60 ST	2807573	10	**VAL-MS 120 ST**	2807586	10
Accessories							
Base element, with RI contact							
	1+0	**VAL-MS BE/FM**	2817738	10	**VAL-MS BE/FM**	2817738	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O-FM**	2905652	12	**VAL-MS-T1/T2 BE/O-FM**	2905652	12
	1+1				**VAL-MS/1+1-BE/FM**	2920531	1
	2+0	**VAL-MS/2+0-BE/FM**	2805321	1			
orthogonal	2+0	**VAL-MS BE/2+0/1U/FM**	2907037	1			
	3+0						
	3+1				**VAL-MS/3+1-BE/FM**	2838898	1
	4+0						
Base element, without RI contact							
	1+0	**VAL-MS BE**	2817741	10	**VAL-MS BE**	2817741	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O**	2905650	12	**VAL-MS-T1/T2 BE/O**	2905650	12
	1+1				**VAL-MS/1+1-BE**	2920528	1
	2+0	**VAL-MS/2+0-BE**	2804584	1			
	3+0						
	3+1				**VAL-MS/3+1-BE**	2838885	1

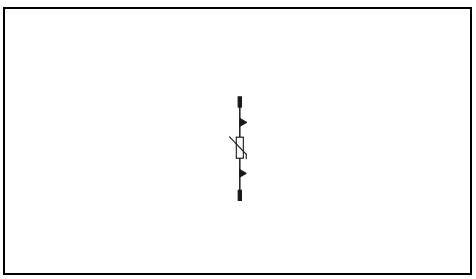
For 240/415 V TN and TT systems, as well as high-leg delta systems

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	II , T2	II , T2
240/415 V AC (TN) / 240/415 V AC (TT)	240/415 V AC (TN) / 240/415 V AC (TT)	240/415 V AC (TN) / 240/415 V AC (TT) / 230 V AC (IT)
230 V AC	230 V AC	230 V AC
275 V AC	275 V AC	385 V AC
20 kA	20 kA	20 kA
40 kA	40 kA	40 kA
≤ 1.35 kV	≤ 1.35 kV	≤ 1.8 kV
17.5 mm / 52.4 mm / 55.3 mm	17.5 mm / 52.4 mm / 55.3 mm	17.5 mm / 52.4 mm / 55.3 mm
-40 °C ... 80 °C	-40 °C ... 80 °C	-40 °C ... 80 °C
IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11	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+0/1U/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

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+0/1U/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

Type 2 surge protective device VALVETRAB MS

- Custom surge protection configuration
- 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 checked with CHECKMASTER

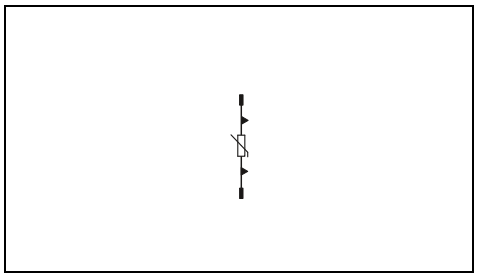
Notes:

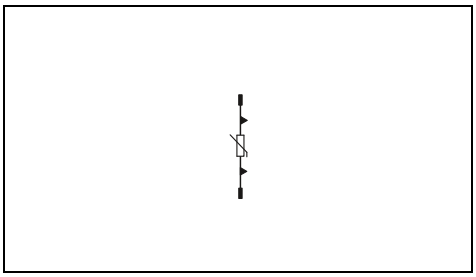
Choose the plug based on technical data.
Choose the base element corresponding to the required circuit and remote signaling function:
- TN-C: X+0 - circuit
- TN-S, TT: X+1 - circuit
- IT: Y+0 - circuit
- X = Number of phases
- Y = Number of phases + if required, neutral conductor

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 63.

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

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





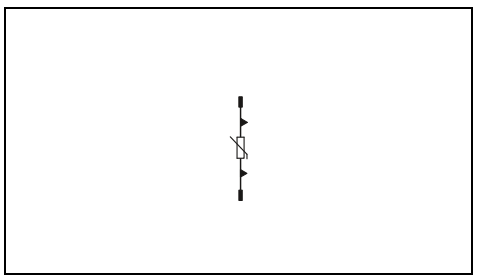
	Technical data	Technical data
Electrical data		
IEC test classification	II , T2	II , T2
Nominal voltage U_N (IEC)	240/415 V AC (TN) / 240/415 V AC (TT) / 230 V AC (IT)	240/415 V AC (TN) / 240/415 V AC (TT)
Nominal voltage U_N (UL)	230 V AC	320 V AC
Maximum continuous operating voltage U_C	385 V AC	335 V AC
Nominal discharge current I_n (8/20) µs	20 kA	20 kA
Max. discharge current I_{max} (8/20)µs	40 kA	40 kA
Protection level U_p	≤ 1.8 kV	≤ 1.5 kV
General data		
Dimensions W/H/D	17.5 mm / 52.4 mm / 55.3 mm	17.5 mm / 52.4 mm / 55.3 mm
Temperature range	-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards	IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11

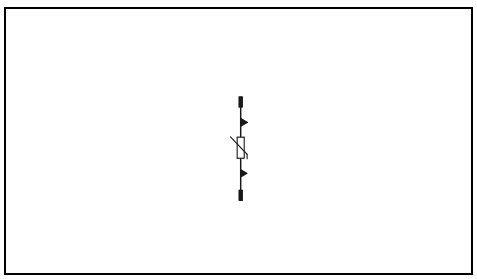
Description		Ordering data: Type	Order No.	Pcs./Pkt.	Ordering data: Type	Order No.	Pcs./Pkt.
VALVETRAB surge protection plug							
		VAL-MS 230 IT ST	2807599	10	**VAL-MS 320 ST**	2838843	10
Accessories							
Base element, with RI contact							
	1+0	**VAL-MS BE/FM**	2817738	10	**VAL-MS BE/FM**	2817738	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O-FM**	2905652	12	**VAL-MS-T1/T2 BE/O-FM**	2905652	12
	1+1				**VAL-MS/1+1-BE/FM**	2920531	1
	2+0	**VAL-MS/2+0-BE/FM**	2805321	1	**VAL-MS/2+0-BE/FM**	2805321	1
orthogonal	2+0	**VAL-MS BE/2+0/1U/FM**	2907037	1	**VAL-MS BE/2+0/1U/FM**	2907037	1
	3+0	**VAL-MS/3+0-BE/FM**	2881803	1	**VAL-MS/3+0-BE/FM**	2881803	1
	3+1				**VAL-MS/3+1-BE/FM**	2838898	1
	4+0	**VAL-MS/4+0-BE/FM RN.**	2906484	1	**VAL-MS/4+0-BE/FM RN.**	2906484	1
Base element, without RI contact							
	1+0	**VAL-MS BE**	2817741	10	**VAL-MS BE**	2817741	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O**	2905650	12	**VAL-MS-T1/T2 BE/O**	2905650	12
	1+1				**VAL-MS/1+1-BE**	2920528	1
	2+0	**VAL-MS/2+0-BE**	2804584	1	**VAL-MS/2+0-BE**	2804584	1
	3+0	**VAL-MS/3+0-BE**	2881816	1	**VAL-MS/3+0-BE**	2881816	1
	3+1				**VAL-MS/3+1-BE**	2838885	1

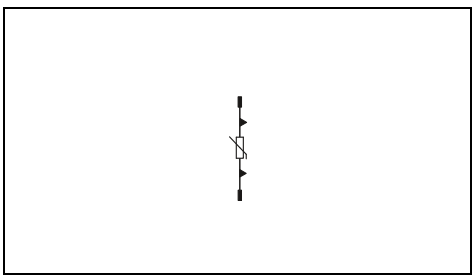
For 240/415 V TN and TT systems with higher voltage fluctuations, marking rotated 180°

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

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

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

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

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 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

Type 2 surge protective device VALVETRAB MS

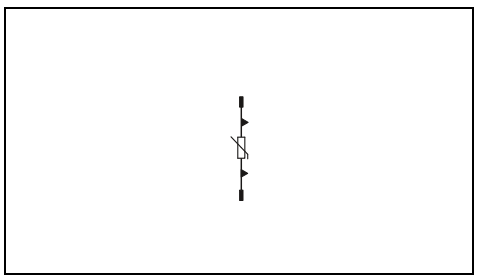
- Custom surge protection configuration
- Optical, mechanical status indicator of the plug
- Disconnect device in the plug
- Base element coding the first time a plug is inserted
- Plugs can be checked with CHECKMASTER

Notes:

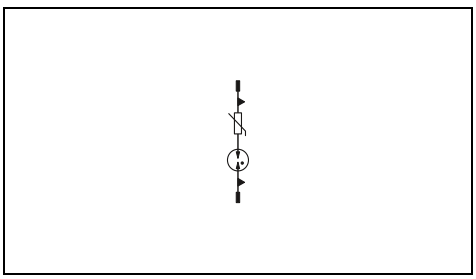
Choose the plug based on technical data.
Choose the base element corresponding to the required circuit and remote signaling function:
- TN-C: X+0 - circuit
- TN-S, TT: X+1 - circuit
- IT: Y+0 - circuit
- X = Number of phases
- Y = Number of phases + if required, neutral conductor

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 63.

For 400/690 V TN systems, 400 V IT systems, 500 V IT systems, 480 V delta systems



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)	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) µs	15 kA
Max. discharge current I_{max} (8/20)µs	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

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) µs	10 kA
Max. discharge current I_{max} (8/20)µs	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		Type	Order No.	Pcs./Pkt.
VALVETRAB surge protection plug				
		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				
	1+0	**VAL-MS BE/FM**	2817738	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O-FM**	2905652	12
	1+1			
	2+0			
orthogonal	2+0			
	3+0	**VAL-MS/3+0-BE/FM**	2881803	1
	3+1			
	4+0	**VAL-MS/4+0-BE/FM RN.**	2906484	1
Base element, without RI contact				
	1+0	**VAL-MS BE**	2817741	10
orthogonal	1+0	**VAL-MS-T1/T2 BE/O**	2905650	12
	1+1			
	2+0			
	3+0	**VAL-MS/3+0-BE**	2881816	1
	3+1			

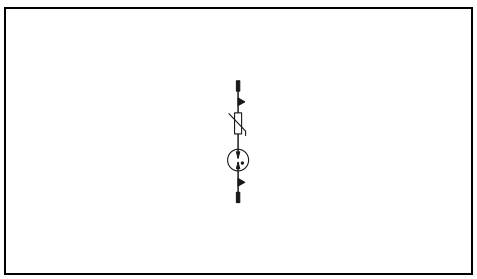
Accessories

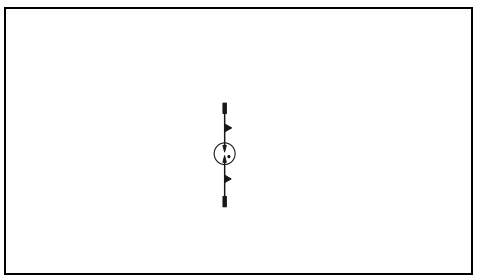
VAL-MS BE/FM	2817738	10
VAL-MS-T1/T2 BE/O-FM	2905652	12
VAL-MS/1+1-BE/FM	2920531	1
VAL-MS/2+0-BE/FM	2805321	1
VAL-MS BE/2+0/1U/FM	2907037	1
VAL-MS BE	2817741	10
VAL-MS-T1/T2 BE/O	2905650	12
VAL-MS/1+1-BE	2920528	1
VAL-MS/2+0-BE	2804584	1

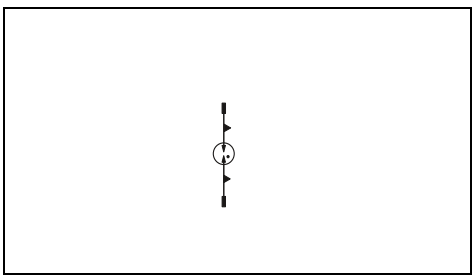
For 240/415 V TN and TT systems with significantly higher voltage fluctuations, free of leakage current

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)	240/415 V AC (TN - only N-PE) / 240/415 V AC (TT - only N-PE)
350 V AC	- V AC
350 V AC	260 V AC
10 kA	20 kA
20 kA	40 kA
≤ 1.5 kV	≤ 1.5 kV
17.5 mm / 52.4 mm / 55.3 mm	17.5 mm / 52.4 mm / 55.3 mm
-40 °C ... 80 °C	-40 °C ... 80 °C
IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11

Ordering data

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

Ordering data

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

Ordering data

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

Accessories

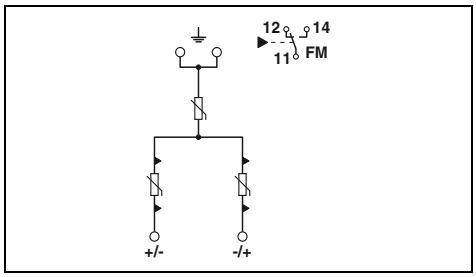
VAL-MS BE/FM	2817738	10
VAL-MS/3+1-BE/FM-UD	2858674	1
VAL-MS BE	2817741	10

Type 2 surge protective device VALVETRAB MB

new

- 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



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) µs		20 kA
Max. discharge current I_{max} (8/20)µs		40 kA
Protection level U_p		≤ 4.5 kV
Response time tA		≤ 25 ns
Open circuit voltage U_{OCSTC}		≤ 1250 V DC
Short-circuit current rating I_{SCPV}		2000 A
General data		
Dimensions W/H/D		71.2 mm / 120 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	- mm² / 2.5 ... 35 mm² / 14 ... 2
Temperature range		-40 °C ... 80 °C
Test standards		EN 50539-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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

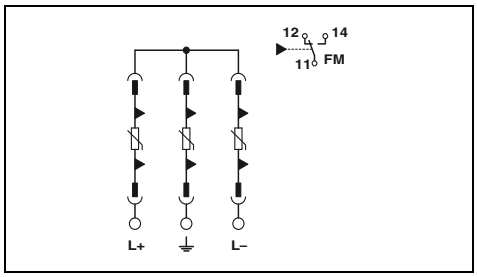
Type 2 surge protective device VALVETRAB MS

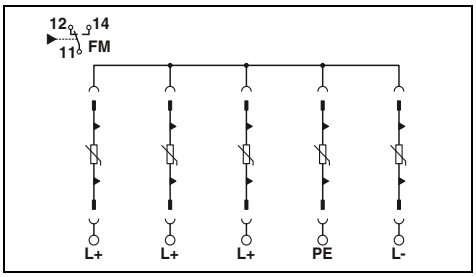
- Consistently pluggable type 2 surge protective device
- For insulated and single-sided grounded PV applications
- Reliable contact, thanks to integrated rotating latch
- Optical, mechanical status indication for the individual arresters
- With or without floating remote indication contact
- Mechanical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

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

new

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





Technical data

Electrical data		... 1000DC	... 600DC
IEC test classification		PV II , T2	PV II , T2
Mode of protection		(L+) - (L-) / (L+) - PE / (L-) - PE	(L+) - (L-) / (L+) - PE / (L-) - PE
Maximum continuous operating voltage U_{CPV}		1170 V DC	800 V DC
Max. discharge current I_{max} (8/20)µs		40 kA	40 kA
Protection level U_p		≤ 3.7 kV	≤ 2.7 kV
Response time tA		≤ 25 ns	≤ 25 ns
Open circuit voltage U_{OCSTC}		≤ 970 V DC	≤ 670 V DC
Short-circuit current rating I_{SCPV}		1000 A	1000 A
General data			
Dimensions W/H/D		53.4 mm / 99 mm / 65.5 mm	
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2	
UL connection data	AWG	10 ... 2	
Temperature range		-40 °C ... 80 °C	
Test standards		EN 50539-11	
Remote indication contact		PDT contact	
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 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	

Technical data

Electrical data		... 1000DC
IEC test classification		PV II , T2
Mode of protection		(L+) - (L-) / (L+) - PE / (L-) - PE
Maximum continuous operating voltage U_{CPV}		1170 V DC
Max. discharge current I_{max} (8/20)µs		40 kA
Protection level U_p		≤ 3.8 kV
Response time tA		≤ 25 ns
Open circuit voltage U_{OCSTC}		≤ 970 V DC
Short-circuit current rating I_{SCPV}		1000 A
General data		
Dimensions W/H/D		89 mm / 98.57 mm / 64.7 mm
IEC connection data	Solid/stranded/AWG	1.5 ... 35 mm² / 1.5 ... 25 mm² / 15 ... 2
UL connection data	AWG	10 ... 2
Temperature range		-40 °C ... 85 °C
Test standards		EN 50539-11
Remote indication contact		PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
UL connection data	AWG	30 ... 14
Max. operating voltage		125 V AC / 30 V DC
Max. operating current		3 A AC / 3 A DC

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB MS...PV			
with remote indication contact	**VAL-MS 1000DC-PV/2+V-FM**	2800627	1
without remote indication contact	**VAL-MS 1000DC-PV/2+V**	2800628	1
with remote indication contact	**VAL-MS 600DC-PV/2+V-FM**	2800641	1
without remote indication contact	**VAL-MS 600DC-PV/2+V**	2800642	1

Accessories

Replacement plug			
1000 V DC	**VAL-MS 1000DC-PV-ST**	2800624	1
600 V DC	**VAL-MS 600DC-PV-ST**	2800623	1

Ordering data

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

Accessories

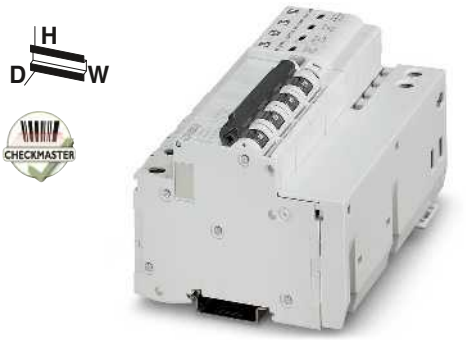
VAL-MS 4+V/BE/FM	2908725	1

Type 2 surge protective device VALVETRAB combi MCB

- Combinations of type 2 arresters with integrated arrester backup fuse
- Overload of the surge protection results in all-pos. 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 arresters
- Consistently pluggable type 2 surge protective device
- Disconnect device on each individual connector
- Optical, mechanical status indication for all protective plugs
- Plugs can be checked with CHECKMASTER

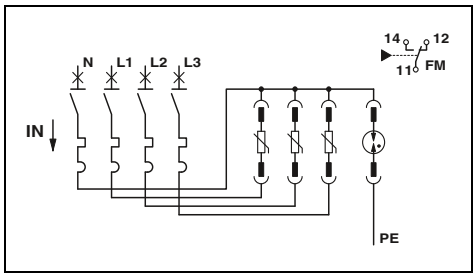
Notes:

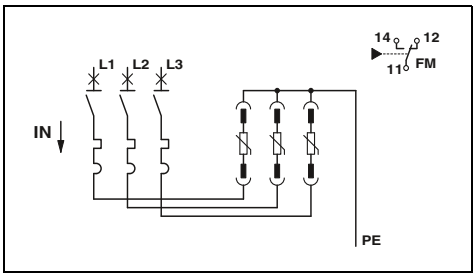
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.



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

		... 3S-350	... 1S-350
Electrical data			
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) µs		20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		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 tA		≤ 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	
IEC connection data	Solid/stranded/AWG	4 ... 35 mm² / 4 ... 25 mm² / 18 ... 2	
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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	
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

Accessories

Replacement plug				
	L-N / L-PEN	**VAL-CP-350-ST-GY**	2882718	10
	N-PE	**VAL-CP-N/PE-350-ST-GY**	2882734	10

Technical data

		... 3C-350
Electrical data		
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) µs		20 kA
Max. discharge current I_{max} (8/20)µs		30 kA
Protection level U_p		≤ 2.5 kV
Follow current interrupt rating I_{fi}		-
Response time tA		≤ 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	Solid/stranded/AWG	4 ... 35 mm² / 4 ... 25 mm² / 18 ... 2
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	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
Max. operating voltage		250 V AC / 250 V DC
Max. operating current		2 A AC / 1 mA DC ... 50 mA DC

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-CP-MCB-3C-350/40/FM	2882776	1

Accessories

VAL-CP-350-ST-GY	2882718	10

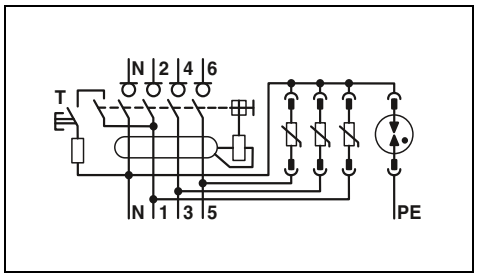
Type 2 surge protective device VALVETRAB combi RCD

- Combination of type 2 surge protective device and RCD residual current circuit breaker
- Personal protection and surge protection in one device
- Consistently pluggable type 2 surge protective device
- Disconnect device on each individual connector
- Optical, mechanical status indication for all protective plugs
- Residual current circuit breaker is not triggered by magnetic influences caused by discharge currents in the type 2 arrester
- Plugs can be checked with CHECKMASTER

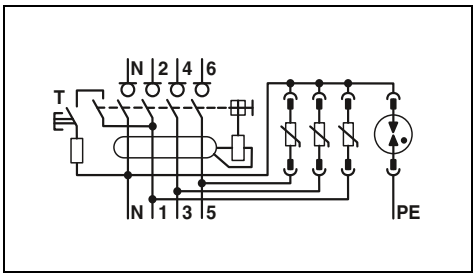
Notes:

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 selective RCD residual current circuit breaker, 300 mA



5-conductor system; L1, L2, L3, N, PE
With selective RCD residual current circuit breaker, 30 mA



Technical data

Electrical data			
IEC test classification		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)
Mode of protection		L-N / L-PE / N-PE	L-N / L-PE / N-PE
Maximum continuous operating voltage U_C		350 V AC / - / 264 V AC	350 V AC / - / 264 V AC
Nominal discharge current I_n (8/20) µs		20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		30 kA	30 kA
Protection level U_p		≤ 2 kV / - / ≤ 2 kV	≤ 2 kV / - / ≤ 2 kV
Follow current interrupt rating I_{fi}		- / - / 100 A (264 V AC)	- / - / 100 A (264 V AC)
Response time tA		≤ 25 ns / - / ≤ 100 ns	≤ 25 ns / - / ≤ 100 ns
Short-circuit current rating I_{SCCR}		10 kA	10 kA
Max. backup fuse with branch wiring		63 A AC (MCB)	63 A (MCB)
General data			
Dimensions W/H/D		121 mm / 90 mm / 76 mm	121 mm / 90 mm / 76 mm
IEC connection data	Solid/stranded/AWG	4 ... 25 mm² / 4 ... 25 mm² / 12 ... 4	4 ... 25 mm² / 4 ... 25 mm² / 12 ... 4
Temperature range		-25 °C ... 40 °C	-25 °C ... 40 °C
Test standards		IEC 61643-11 / EN 61643-11 / EN 61008-1 / IEC 60947-1 / IEC 60947-3	IEC 61643-11 / EN 61643-11 / EN 61008-1 / IEC 60947-1 / IEC 60947-3
RCD data			
Tripping characteristic		A (selective)	A (si type)
Nominal load current I_L		40 A	40 A
Rated residual operating current $I_{\Delta n}$		300 mA	30 mA
Rated making and breaking capacity I_m		1.5 kA	1.5 kA
Rated residual making and breaking capacity $I_{\Delta m}$		2.5 kA	2.5 kA
Rated impulse withstand voltage U_{imp}		6 kV (1.2/50 µs)	6 kV (1.2/50 µs)
Rated conditional short-circuit current I_{nc}		10 kA	10 kA
Tripping time for $I_{\Delta n}$		≤ 300 ms	≤ 300 ms
Tripping time for $5xI_{\Delta n}$		≤ 40 ms	≤ 40 ms
Switching cycles, max.		20000	20000
Utilization category		AC 23 A	AC 23 A

Ordering data

Description	Type	Order No.	Pcs./Pkt.
VALVETRAB compact with RCD			
	VAL-CP-RCD-3S/40/0.3/SEL	2808001	1

Accessories

Replacement plug			
L-N / L-PEN	**VAL-CP-350-ST-GY**	2882718	10
N-PE	**VAL-CP-N/PE-350-ST-GY**	2882734	10

Ordering data

Type	Order No.	Pcs./Pkt.
VAL-CP-RCD-3S/40/0.03	2882802	1

Accessories

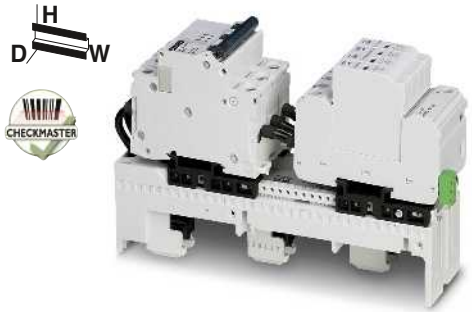
	VAL-CP-350-ST-GY	2882718	10
	VAL-CP-N/PE-350-ST-GY	2882734	10

Type 2 surge protective device VALVETRAB combi MCB

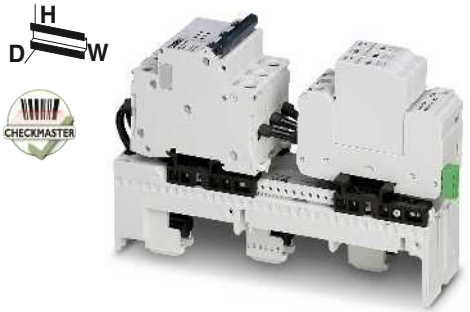
- Combinations of type 2 arresters with integrated arrester backup fuse
- For 60 mm system technology
- Tool-free mounting on 5 and 10 mm busbars
- Signaling to monitoring systems via remote indication contact in the event of an error
- Surge-proof arrester backup fuse tailored to type 2 arresters
-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

Notes:

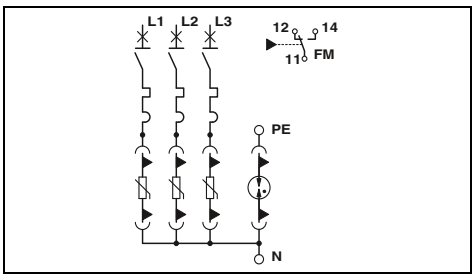
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

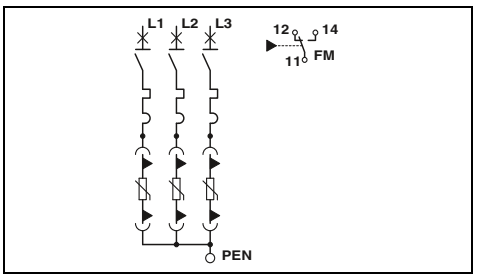


5-conductor system; L1, L2, L3, N, PE
For 60 mm system technology



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





Technical data

Electrical data			
IEC test classification		II , T2	II , T2
Nominal voltage U_N		240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-C) / 240/415 V AC (TT)
Mode of protection		L-N / L-PE / N-PE	L-PEN
Maximum continuous operating voltage U_C		350 V AC / 350 V AC / 264 V AC	350 V AC
Nominal discharge current I_n (8/20) µs		20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		25 kA / 25 kA / 40 kA	25 kA
Protection level U_p		≤ 2.5 kV / - / ≤ 1.5 kV	≤ 2.5 kV
Response time tA		≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
General data			
Dimensions W/H/D		54 mm / 220 mm / 134 mm	54 mm / 220 mm / 134 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-25 °C ... 55 °C	-25 °C ... 55 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

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

Accessories

Replacement plug				
	L-N / L-PEN	**VAL-CP-350-ST-GY**	2882718	10
	N-PE	**VAL-CP-N/PE-350-ST-GY**	2882734	10

Technical data

Electrical data			
IEC test classification		II , T2	II , T2
Nominal voltage U_N		240/415 V AC (TN-S) / 240/415 V AC (TT)	240/415 V AC (TN-C) / 240/415 V AC (TT)
Mode of protection		L-N / L-PE / N-PE	L-PEN
Maximum continuous operating voltage U_C		350 V AC / 350 V AC / 264 V AC	350 V AC
Nominal discharge current I_n (8/20) µs		20 kA	20 kA
Max. discharge current I_{max} (8/20)µs		25 kA / 25 kA / 40 kA	25 kA
Protection level U_p		≤ 2.5 kV / - / ≤ 1.5 kV	≤ 2.5 kV
Response time tA		≤ 25 ns / ≤ 100 ns / ≤ 100 ns	≤ 25 ns
Short-circuit current rating I_{SCCR}		25 kA	25 kA
General data			
Dimensions W/H/D		54 mm / 220 mm / 134 mm	54 mm / 220 mm / 134 mm
IEC connection data	Solid/stranded/AWG	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4	2.5 ... 25 mm² / 2.5 ... 16 mm² / 12 ... 4
Temperature range		-25 °C ... 55 °C	-25 °C ... 55 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11
Remote indication contact		PDT contact	PDT contact
IEC connection data	Solid/stranded/AWG	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16	0.14 ... 1.5 mm² / 0.14 ... 1.5 mm² / 28 ... 16
Max. operating voltage		250 V AC / 125 V DC (200 mA DC)	250 V AC / 125 V DC (200 mA DC)
Max. operating current		1 A AC / 1 A DC (30 V DC)	1 A AC / 1 A DC (30 V DC)

Ordering data

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

Accessories

Replacement plug				
	L-N / L-PEN	**VAL-CP-350-ST-GY**	2882718	10

Type 2 surge protective device for LED applications

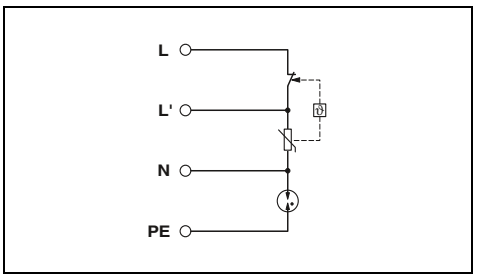
- Universal use for street, tunnel or object lighting
- Flexible installation
- Fixed via integrated elongated holes
- Compact design
- Optical, mechanical status indicator
- Connection in branch or through wiring
- Double or reinforced insulation

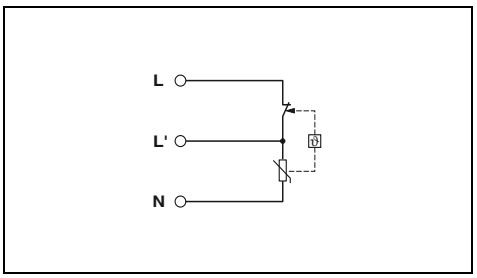
Notes:

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 insulation class I

For insulation class II





Technical data

Electrical data			
IEC test classification		II / III , T2 / T3	II / III , T2 / T3
Nominal voltage U_N		100 V AC ... 277 V AC (TN-S) / 100 V AC ... 277 V AC (TT)	100 V AC ... 277 V AC
Mode of protection		L-N / L-PE / N-PE	L-N
Maximum continuous operating voltage U_C		320 V AC / 305 V AC / 305 V AC	320 V AC
Combination wave U_{OC}	L-N / N-PE	10 kV	10 kV
Nominal discharge current I_n (8/20) µs		5 kA / 5 kA / 10 kA	5 kA
Max. discharge current I_{max} (8/20)µs		10 kA / 10 kA / 20 kA	10 kA
Protection level U_p		≤ 1.3 kV / ≤ 1.5 kV / ≤ 1.4 kV	≤ 1.3 kV
Response time tA		≤ 25 ns / - / ≤ 100 ns	≤ 25 ns
Max. backup fuse with branch wiring		16 A (MCB B/C)	16 A (MCB B/C)
General data			
Dimensions W/H/D		36.5 mm / 56 mm / 34 mm	36.5 mm / 56 mm / 34 mm
IEC connection data	Solid/stranded/AWG	0.2 ... 4 mm² / 0.2 ... 2.5 mm² / -	0.2 ... 4 mm² / 0.2 ... 2.5 mm² / -
Temperature range		-40 °C ... 80 °C	-40 °C ... 80 °C
Test standards		IEC 61643-11 / EN 61643-11	IEC 61643-11 / EN 61643-11

Ordering data

Description	Type	Order No.	Pcs./Pkt.
BLOCKTRAB, for universal mounting	**BLT-T2-1S-320-UT**	2906101	10

Ordering data

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

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
- Optionally available with remote indication contact or visual status indicator
- Safe mechanical disconnection in the event of an overload

Notes:

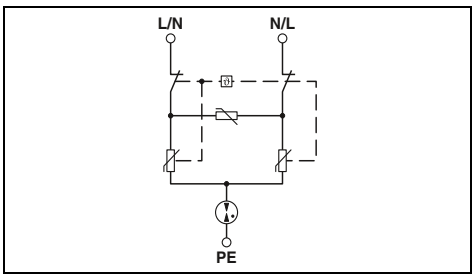
If only one value is specified under mode of protection in the technical data, this value is valid for all modes of protection specified.

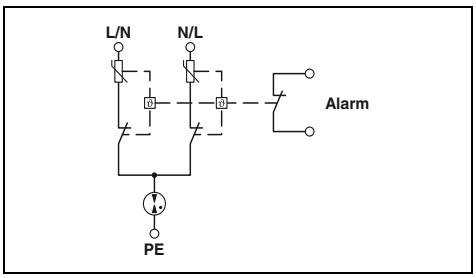
new

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

new

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





Technical data

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) µs	5 kA
Protection level U_p	≤ 1.5 kV
Response time tA	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	1 kA
Max. backup fuse with branch wiring	16 A (MCB C)
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 ... 70 °C
Test standards	IEC 61643-11
Remote indication contact	
Max. operating voltage	- / -
Max. operating current	- / -

Technical data

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) µs	20 kA
Protection level U_p	≤ 2.5 kV / ≤ 1.8 kV / ≤ 1.8 kV
Response time tA	≤ 25 ns / ≤ 100 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	1 kA
Max. backup fuse with 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
N/C contact	
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.
PRINTRAB			
	PRT-1S-350/5S	2908551	1

Ordering data

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

Type 3 device protection
PLUGTRAB SEC

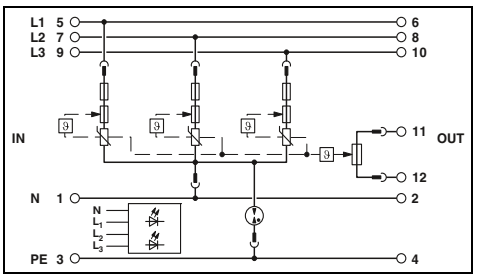
- Varistor-based device protection
- For single and three-phase power supply units
- Pluggable
- Through wiring
- Can be used without separate backup fuse thanks to integrated overcurrent protection
- Optical status indicator via LED
- With floating remote indication contact
- Plugs can be checked with CHECKMASTER

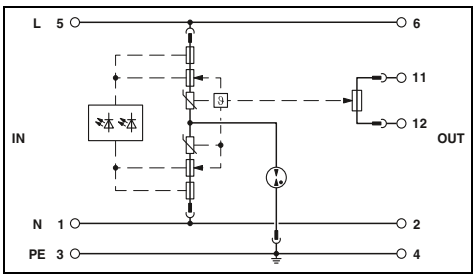
Notes:

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

3-conductor system;
L, N, PE





Technical data

Electrical data		... 230	
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	AC/DC	264 V AC / -	
Rated load current I_L		26 A (30 °C)	
Nominal discharge current I_n (8/20) µs		3 kA	
Combined surge U_{OC}		6 kV	
Protection level U_p	L-N / L(N)-PE	≤ 1.4 kV / ≤ 1.5 kV	
Response time t_A	L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns	
Short-circuit current rating I_{SCCR}		1.5 kA AC	
Max. backup fuse with branch wiring		not required	
General data			
Dimensions W/H/D		35.4 mm / 90 mm / 74.5 mm	
IEC connection data	Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Temperature range		-40 °C ... 70 °C	
Test standards		IEC 61643-11 / EN 61643-11	
Remote indication contact		N/C contact	
IEC connection data	Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Max. operating voltage		250 V AC / 125 V DC	
Max. operating current		3 A AC / 1 A DC (30 V DC)	

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
MAINS-PLUGTRAB, consisting of a plug and base element				
	24 V AC			
	60 V AC			
	120 V AC			
	230 V AC	PLT-SEC-T3-3S-230-FM	2905230	1

Accessories

Replacement plug				
	24 V AC			
	60 V AC			
	120 V AC			
	230 V AC	PLT-SEC-T3-3S-230-P	2905236	1
PLUGTRAB base element, for mounting on NS 35				

Technical data

Electrical data	... 24	... 60	... 120	... 230
IEC test classification	III / T3	III / T3	III / T3	III / T3
Nominal voltage U_N	24 V AC	60 V AC	120 V AC	230 V AC
Mode of protection	L-N / L-PE / N-PE / (L+) - (L-) / (L+/L-) - PE	L-N / L-PE / N-PE / (L+) - (L-) / (L+/L-) - PE	L-N / L-PE / N-PE / (L+) - (L-) / (L+/L-) - PE	L-N / L-PE / N-PE / (L+) - (L-) / (L+/L-) - PE
Maximum continuous operating voltage U_C AC/DC	34 V AC / 34 V DC	100 V AC / 80 V DC	150 V AC / 150 V DC	264 V AC / 230 V DC
Rated load current I_L	26 A (30 °C)	26 A (30 °C)	26 A (30 °C)	26 A (30 °C)
Nominal discharge current I_n (8/20) µs	1 kA	2 kA	3 kA	3 kA
Combined surge U_{OC}	2 kV	4 kV	6 kV	6 kV
Protection level U_p L-N / L(N)-PE	≤ 0.25 kV / ≤ 0.65 kV	≤ 0.48 kV / ≤ 0.9 kV	≤ 0.85 kV / ≤ 0.95 kV	≤ 1.35 kV / ≤ 1.5 kV
Response time t_A L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns	≤ 25 ns / ≤ 100 ns
Short-circuit current rating I_{SCCR}	1.5 kA AC / 1 kA DC	1.5 kA AC / 1 kA DC	1.5 kA AC / 0.25 kA DC	1.5 kA AC / 0.25 kA DC
Max. backup fuse with branch wiring	not required			
General data				
Dimensions W/H/D	17.7 mm / 90 mm / 74.5 mm			
IEC connection data Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12			
Temperature range	-40 °C ... 80 °C			
Test standards	IEC 61643-11 / EN 61643-11			
Remote indication contact	N/C contact			
IEC connection data Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12			
Max. operating voltage	250 V AC / 125 V DC			
Max. operating current	3 A AC / 1 A DC (30 V DC)			

Ordering data

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-24-FM	2905223	1
PLT-SEC-T3-60-FM	2905225	1
PLT-SEC-T3-120-FM	2905228	1
PLT-SEC-T3-230-FM	2905229	1

Accessories

Type	Order No.	Pcs./Pkt.
PLT-SEC-T3-24-P	2905232	1
PLT-SEC-T3-60-P	2905233	1
PLT-SEC-T3-120-P	2905234	1
PLT-SEC-T3-230-P	2905235	1
PLT-SEC-T3-BE	2905557	1

Type 3 device protection PLUGTRAB

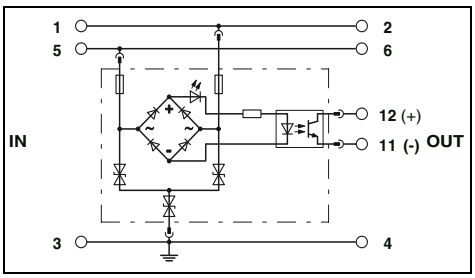
- For 48 V DC or 230 V IT power supply equipment
- Pluggable
- Through wiring
- Optical status indicator via LED
- Tool-free connector replacement
- With floating remote indication contact
- Plugs can be checked with CHECKMASTER

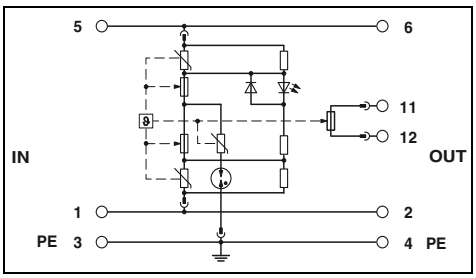
For 48 V DC power supplies

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

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		
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	AC/DC	- / 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) µs		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	L-N / L(N)-PE	≤ 1 ns / ≤ 1 ns
Backup fuse max. in acc. with IEC		-
General data		
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range		-40 °C ... 80 °C
Test standards		EN 61643-11 / IEC 61643-11

Ordering data

Description	Type	Order No.	Pcs./Pkt.
MAINS-PLUGTRAB, consisting of a plug and base element	**PT 2+1-S-48DC/FM**	2817958	10

Accessories

Replacement plug 1L-N & N-PE	**PT 2+1-S-48DC-ST**	2839648	10
PLUGTRAB base element, for mounting on NS 35	**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	AC/DC	- / -
Maximum continuous operating voltage U_C	L-N / L-PE	275 V AC / 440 V AC
Rated load current I_L		16 A (60°C)
Nominal discharge current I_n (8/20) µs		3 kA
Combined surge U_{OC}		6 kV
Protection level U_p		-
Protection level U_p	L-N / L(N)-PE	≤ 1.2 kV / ≤ 1.5 kV
Response time t_A	L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns
Backup fuse max. in acc. with IEC		16 A (MCB-B)
General data		
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm
IEC connection data	Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range		-40 °C ... 70 °C
Test standards		IEC 61643-11 / EN 61643-11

Ordering data

Type	Order No.	Pcs./Pkt.
PLT-T3-IT-230-FM	2906450	1

Accessories

PLT-T3-IT-230-P	2906451	1
PT-BE/FM	2839282	10

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 terminal devices.

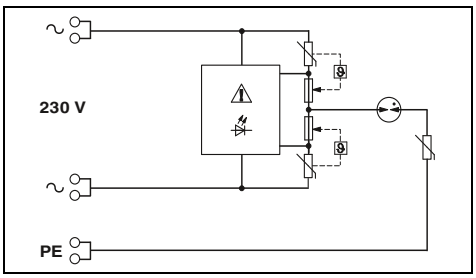
– With double spring-cage terminal blocks for tool-free conductor connection
– Side latches for easy fixing
– Optical/acoustic signaling of disconnection

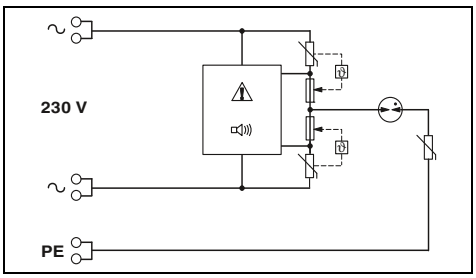
For universal mounting, optical signaling

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

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	275 V AC / 440 V AC
Rated load current I_L		16 A (30 °C)
Nominal discharge current I_n (8/20) µs		3 kA
Combined surge U_{OC}		6 kV
Protection level U_p	L-N / L(N)-PE	≤ 1.3 kV / ≤ 1.5 kV
Response time t_A	L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns
Backup fuse max. in acc. with IEC		16 A (MCB-B)
General data		
Dimensions W/H/D		22.5 mm / 43 mm / 27.4 mm
IEC connection data	Solid/stranded/AWG	0.2...2.5 mm² / 0.2...2.5 mm² / 24 ... 14
Temperature range		-30 °C ... 75 °C
Test standards		IEC 61643-11 / EN 61643-11

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
BLOCKTRAB, for universal mounting	230 V AC	**BT-1S-230AC/O**	2800625	1

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	275 V AC / 440 V AC
Rated load current I_L		16 A (30 °C)
Nominal discharge current I_n (8/20) µs		3 kA
Combined surge U_{OC}		6 kV
Protection level U_p	L-N / L(N)-PE	≤ 1.3 kV / ≤ 1.5 kV
Response time t_A	L-N / L(N)-PE	≤ 25 ns / ≤ 100 ns
Backup fuse max. in acc. with IEC		16 A (MCB-B)
General data		
Dimensions W/H/D		22.5 mm / 43 mm / 26.2 mm
IEC connection data	Solid/stranded/AWG	0.2...2.5 mm² / 0.2...2.5 mm² / 24 ... 14
Temperature range		-30 °C ... 75 °C
Test standards		IEC 61643-11 / EN 61643-11

Ordering data

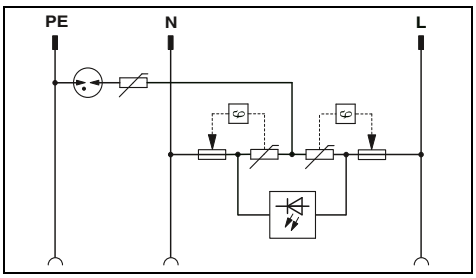
Type	Order No.	Pcs./Pkt.
BT-1S-230AC/A	2803409	10

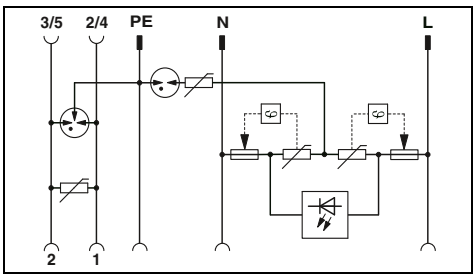
Type 3 device protection MAINTRAB

- Attachment plug in black or white
- For individual terminal 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

Electrical data		
IEC test classification/EN type		III / T3
Nominal voltage U_N		230 V AC
Maximum continuous operating voltage U_C		
	L-N / L-PE	275 V AC / 360 V AC
	without reference direction	-
Combined surge U_{OC}		4 kV
Nominal load current I_L		16 A (30 °C)
Rated current		-
Nominal discharge current I_n (8/20) µs		
	without reference direction	3 kA (> 5x)
	Core-Core / Core-Ground / Core-Shield	-
Protection level U_p		
	L-N / N-PE / L-PE	≤ 1.2 kV / ≤ 1.5 kV / ≤ 1.5 kV
	Core-Core / Core-Ground / Core-Shield	- / - / -
Response time t_A		
	L-N / L-PE	≤ 25 ns / ≤ 100 ns
	Core-Ground / Core-Shield / Shield-Ground	- / - / -
Cut-off frequency fg (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

Technical data

Mains protection	Data protection
III / T3	C1
230 V AC	
275 V AC / 360 V AC	
-	200 V DC
4 kV	-
16 A (30 °C)	
-	150 mA (25 °C)
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
-	-
63 mm / 103 mm / 78 mm	
-25 °C ... 75 °C	
IEC 61643-11 / EN 61643-11 / EN 61643-21 /	

Ordering data

Description	can be used in the following:	Type	Order No.	Pcs./Pkt.
MAINTRAB, attachment plug with signal lamp for plugging into a socket, for device protection				
black	D, A, NL, E, S, FIN, TR	**MNT-1 D**	2882200	1
white	D, A, NL, E, S, FIN, TR	**MNT-1 D/WH**	2882213	1
black	D			
white	D			
black	NL, E, I, S, FIN, TR			
white	NL, E, I, S, FIN, TR			
black	B, F, CZ, SVK, PL	**MNT-NET B/F**	2882226	1
black	CH	**MNT-1 CH II**	2882255	1

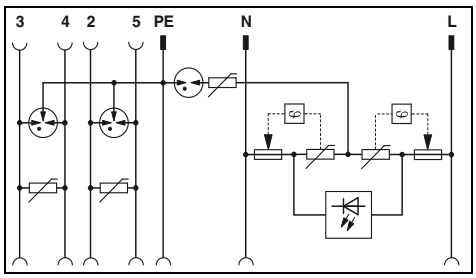
Ordering data

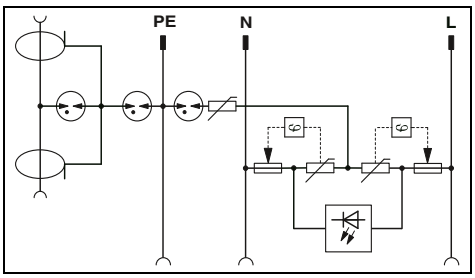
Type	Order No.	Pcs./Pkt.
MNT-TAE D	2882381	1
MNT-TAE D/WH	2882394	1

DSL

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
III / T3	C1
230 V AC	
275 V AC / 360 V AC	
-	200 V DC
4 kV	-
16 A (30 °C)	
-	150 mA (25 °C)
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
-	-
63 mm / 103 mm / 78 mm	
-25 °C ... 75 °C	
IEC 61643-11 / EN 61643-11 / EN 61643-21 /	

Technical data

Mains protection	Data protection
III / 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)
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 / 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-TELE S/WH	**2880901**	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 for the power supply

Set solution for building installation

- Surge protection set for powerful basic protection
- Coordinated protective devices
- VAL-MS-T1/T2 lightning current arrester for installation in the distribution
- Three device protection adapters (type 3) for protecting the power supply
- Two of these are equipped with additional signal line protection (TV/SAT or TAE)
- Cables and adapters are supplied as standard

Set solution with surge protection for TAE and TV-SAT

EAC

	Ordering data		
Description	**Type**	**Order No.**	Pcs./Pkt.
Building set, consisting of: 1 x VAL-MS-T1/T2 (surge protective device), 1 x MNT-1D (device protection adapter), 1 x MNT-TV-SAT D (device and TV-SAT protective adapter), 1 x MNT-TAE D (device and TAE protective adapter), 2 x adapter F to TV (IEC) connector 1 x KBL TV-SAT/150, 1 x KBL TV/150, 1 x KBL TAE/150 (connecting cable)	**GEB-SET-T1/T2 TAE/TV-SAT**	**2801022**	1

Feed-through terminal block and equipotential bonding strip

Feed-through terminal block

– For wiring mixed combinations of lightning current arresters and surge protective devices

Equipotential bonding strip

– For main equipotential bonding according to DIN VDE 0100

– As well as for lightning protection equipotential bonding in acc. with DIN EN 62305

Feed-through terminal block

Equipotential bonding strip

	Technical data	Technical data
Electrical data		
Maximum continuous operating voltage U_C	500 V AC	-
Nominal current I_N	-	-
Impulse discharge curr. I_{imp} (10/350) µs		
Peak value	100 kA	-
General data		
Dimensions W/H/D	17.7 mm / 89.8 mm / 65.5 mm	
Connection data solid/stranded/AWG	0.5...35 mm² / - mm² / 20 ... 2	2,5...95 mm² / - mm² / -
Temperature range	-40 °C ... 85 °C	-
Inflammability class in acc. with UL 94	V-0	-
Test standards	IEC 60947-7-1 / DIN EN 61643-11 / IEC 61643-1	-

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Feed-through terminal block with biconnect connecting terminal blocks as wiring aid for lightning current arrester and surge protective device applications.	**DK-BIC-35**	2749880	1			
Equipotential bonding strip				**PAS-1**	2765615	1

Wiring bridges and marking materials

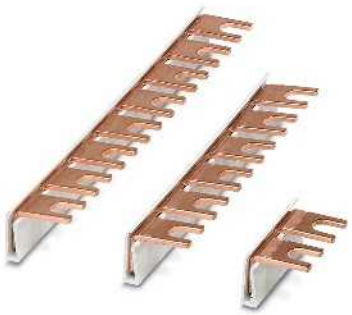
Marking material

– For clear and logical identification

– Can be marked with CMS computer 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

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Wiring bridge, for wiring applications with lightning current arresters and surge protective devices; 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 mm²						
6-pos.	**MPB 18/1-6/35**	2908705	10			
8-pos.	**MPB 18/1-8/35**	2908704	10			
Continuous roll, width: 20 mm						
Color: white				**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

Ex:

Technical data

Electrical data	
Lightning protection class	H
Lightning surge current I_{imp} (10/350) µs	100 kA
Nominal discharge current I_n (8/20) µs	100 kA
Rated power-frequency withstand voltage U_{wAC}	≤ 250 V AC
Rated DC withstand voltage U_{wDC}	≤ 354 V DC
Rated impulse sparkover voltage $U_{r\,imp}$	≤ 1.25 kV
General data	
Dimensions: length/housing diameter	+2 mm / 45.50 mm
Temperature range	-20 °C ... 60 °C
Test standards	IEC 62561-3 / EN 62561-3
Approvals	
EC-type examination certificate according to ATEX	DEKRA 14ATEX0050 X
ATEX	II 2 G Ex d IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db IP 66/67
IECEx	Ex d IIC T6 Gb Ex tb IIIC T80 °C Db IP66/67

Ordering data

Description	Drill hole diameter	Type	Order No.	Pcs./Pkt.
Isolating spark gap for the hazardous area		FLT-ISG-100-EX	2905579	1
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 mm², conductor designation: H01 N2-D				
Cable length: 100 mm				
Cable length: 200 mm				
Cable length: 300 mm				

Fixing bracket

Mounting rail

Connecting cable

Ordering data

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

Ordering data

Type	Order No.	Pcs./Pkt.
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

Ordering data

Type	Order No.	Pcs./Pkt.
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

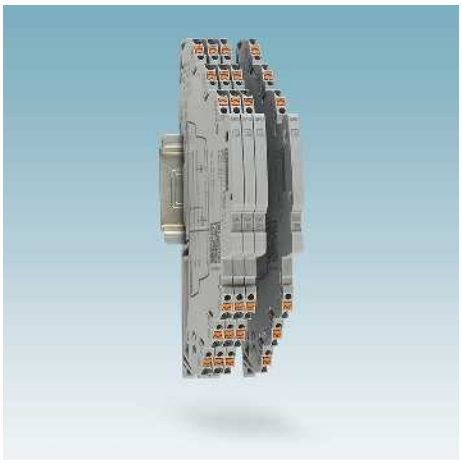
Thanks to the remote signaling modules that are available as an option, you can decide whether and when you require this feature. To monitor retrospectively, you can easily align remote signaling modules to protective devices that are already installed. If a protective element is disconnected in the 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 at 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.

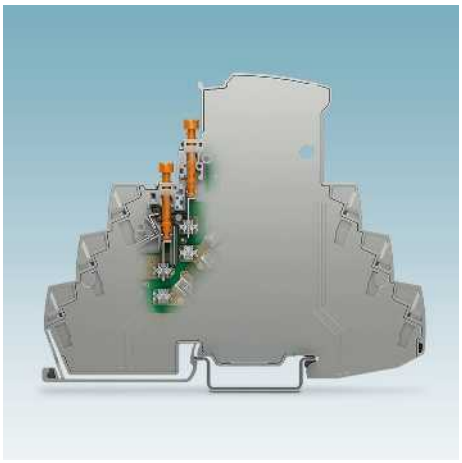
Quick wiring

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.



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

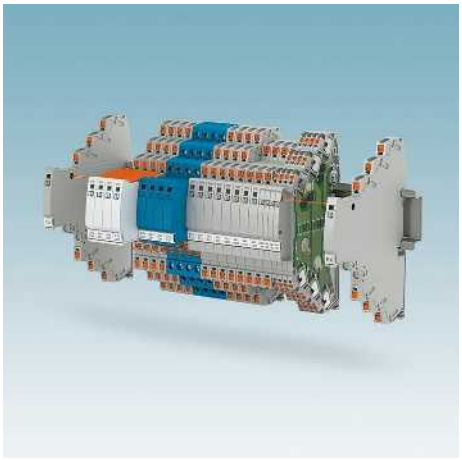
The integrated knife disconnection enables the signal path to be broken up, e.g., to carry out isolation measurements. An open signal path is easy to detect from the projecting function screws. The screws are equipped with overwind protection.

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 connectors 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 connector 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 – at any time and from any location.

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.

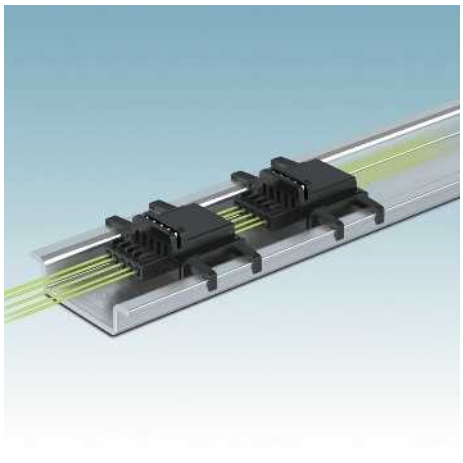
As they are installed directly on measuring sensors, the SURGETRAB screw connection modules are able to provide reliable protection against transients even in Ex i and Ex d applications.

The products in the COMTRAB modular range have been designed specifically for use in marshalling distributors.

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.



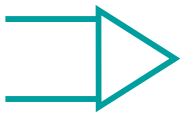
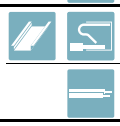
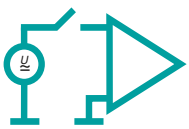
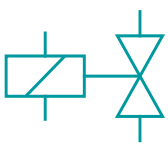
TBUS DIN rail connector
The DIN rail connector (TBUS) supplies voltage to the protection modules and forwards the status of each individual arrester to the controller. You benefit from the reduced wiring costs and can implement surge protection quickly without errors.

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.

Selection guide

Explanation of the IEC categories		
LPZ zone	Test category for SPD corresponds to IEC 61643-21	Test class for SPD corresponds to IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

Application		Installation properties
	**Current loops 0(4) mA ... 20 mA**	
	Current loops 0(4) mA ... 20 mA with power supply cable	
	Analog signal 0 V ... 10 V	
	Resistance-dependent measurement e.g., with Pt 100	
	**Digital input/ digital output**	Common reference conductor: isolated from ground
		Common reference conductor: directly grounded
	**Digital output > 600 mA**	Common reference conductor: isolated from ground
		Common reference conductor: directly grounded

DIN rail mounting

Push-in connection

Screw connection

Cables

[1] Also available with screw connection technology

SIL evaluated IEC 61508

Data for fault analysis according to IEC 61508 is available on the Internet.

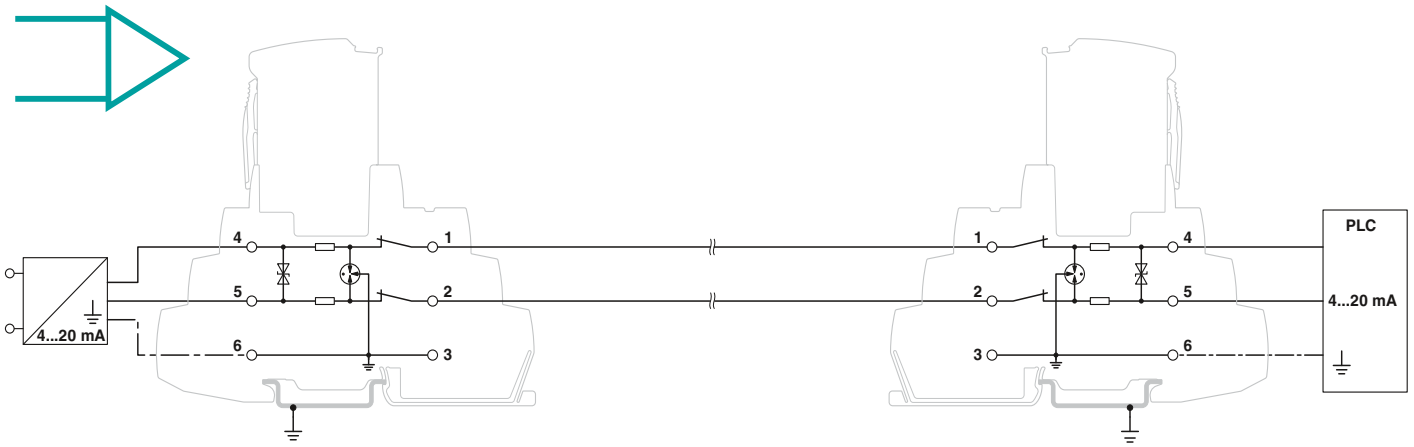
CHECKMASTER

Note

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

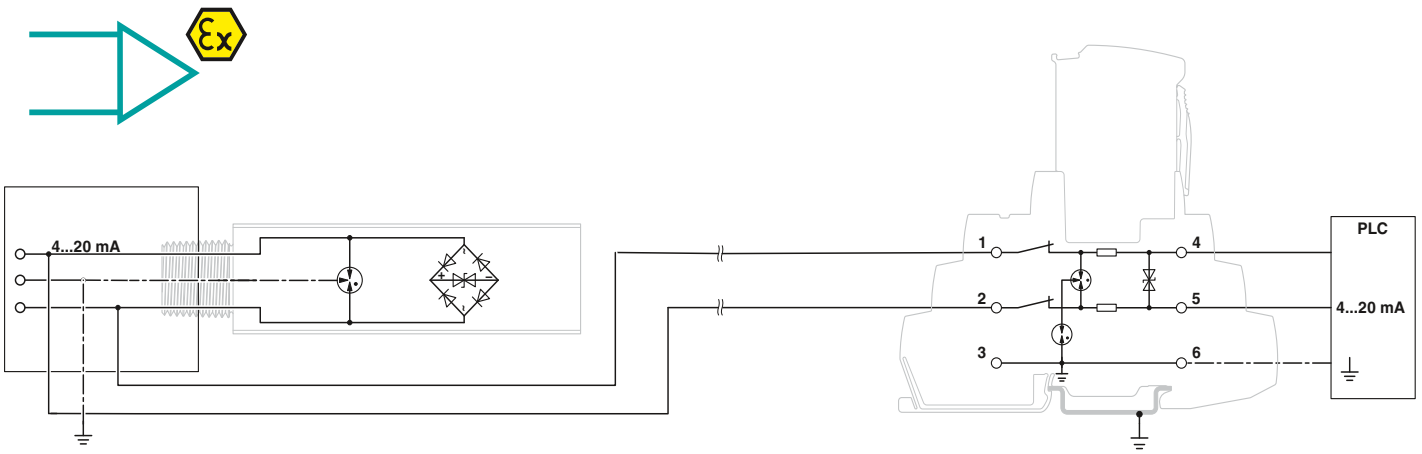
Overall width in mm	IEC category	Status display	Pluggable	Knife disconnection	IQ function monitoring	Protected wires	Surge protective device (SPD)	Order No.	Page
3.5	D1/C2/C1					2	TTC-3-1X2-24DC-PT	2907325	95
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-1X2-M-24DC-PT-I	2906750	92
17.5	D1/C2/C1	✓	✓		✓	3	PT-IQ-1X2-24DC-PT	2801255	96
> 17.5	D1/C2/C1					2	S-PT-1X2-24DC	2880668	101
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-1X2-M-EX-24DC-UT-I	2906824	128
17.5	D1/C2/C1	✓	✓		✓	4	PT-IQ-2X2-EX-24DC-UT	2801513	129
> 17.5	D1/C2/C1					2	S-PT-EX(I)-24DC	2880671	130
3.5	D1/C2/C1					3	TTC-3-2X1-24DC-PT	2907326	109
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-M-24DC-PT-I	2906753	104
17.5	D1/C2/C1	✓	✓		✓	3	PT-IQ-2X1-24DC-PT	2801247	110
> 17.5	D1/C2/C1					4	S-PT-4-EX-24DC	2800036	118
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-M-EX-24DC-UT-I	2906825	133
> 17.5	D1/C2/C1					4	S-PT-4-EX-24DC	2800036	118
3.5	D1/C2/C1					2	TTC-3-1X2-24DC-PT	2907325	95
6.2	D1/C2/C1	✓	✓			2	TTC-6P-1X2-12DC-PT-I	2908193	92
17.5	D1/C2/C1	✓	✓		✓	2	PT-IQ-1X2-12DC-PT	2801253	96
> 17.5	D1/C2/C1					2	S-PT-1X2-24DC	2880668	101
6.2	D1/C2/C1	✓	✓	✓		2	TTC-6P-2-HC-M-24DC-PT-I	2906755	106
> 17.5	D1/C2/C1					2	S-PT-EX-24DC	2800034	130
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-F-M-24DC-PT-I	2906794	105
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1+F-24DC-PT	2801272	111
> 17.5	D1/C2/C1					5	S-PT-4-EX-24DC	2800036	118
3.5	D1/C2/C1					3	TTC-3-2X1-24DC-PT	2907326	109
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2X1-M-24DC-PT-I	2906753	104
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1-24DC-PT	2801271	111
> 17.5	D1/C2/C1					5	S-PT-4-EX-24DC	2800036	118
6.2	D1/C2/C1	✓	✓	✓		3	TTC-6P-2-HC-M-24DC-PT-I	2906755	106
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1+F-24DC-PT	2801272	111
> 17.5	D1/C2/C1					2	S-PT-EX-24DC	2800034	130
17.5	D1/C2/C1	✓	✓		✓	5	PT-IQ-4X1-24DC-PT	2801271	111

Protection of a 0(4) ... 20 mA current loop



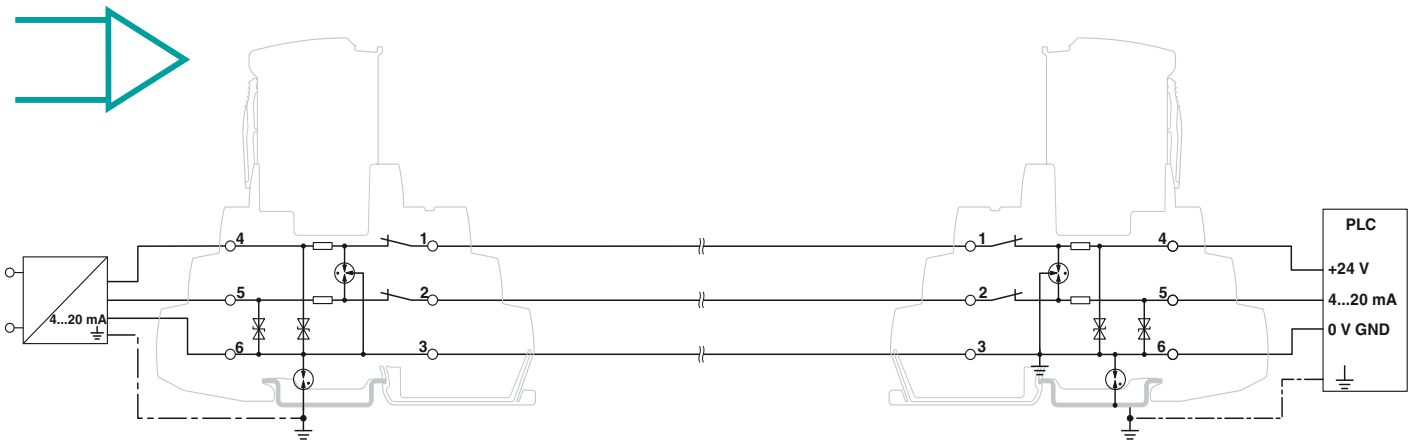
Suitable products	TTC-6P-1X2-M-24DC-PT-I 2906750 Page 92	Suitable products	TTC-6P-1X2-M-24DC-PT-I 2906750 Page 92

Protection of a 0(4) ... 20 mA current loop, intrinsically safe circuits



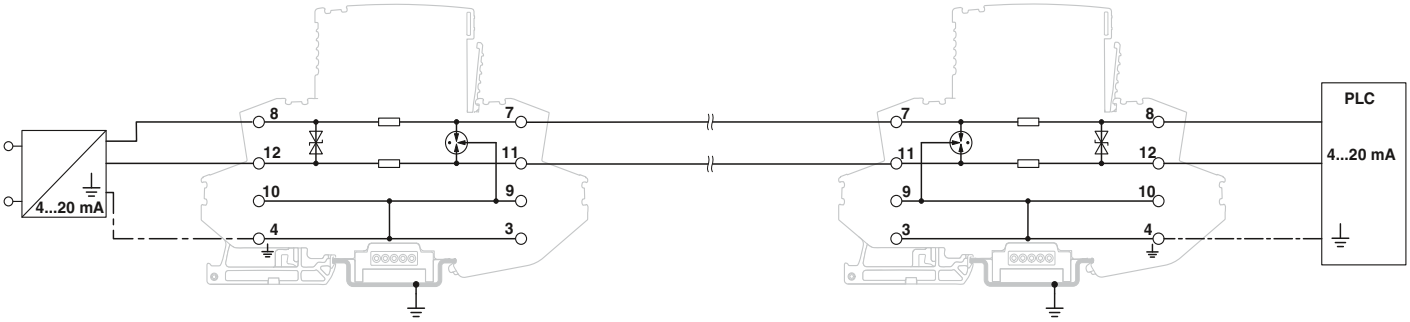
Suitable products	S-PT-EX-24DC 2800034 Page 130	Suitable products	TTC-6P-1x2-M-EX-24DC-UT-I 2906824 Page 128

Protection of a 0(4) ... 20 mA current loop and additional power supply



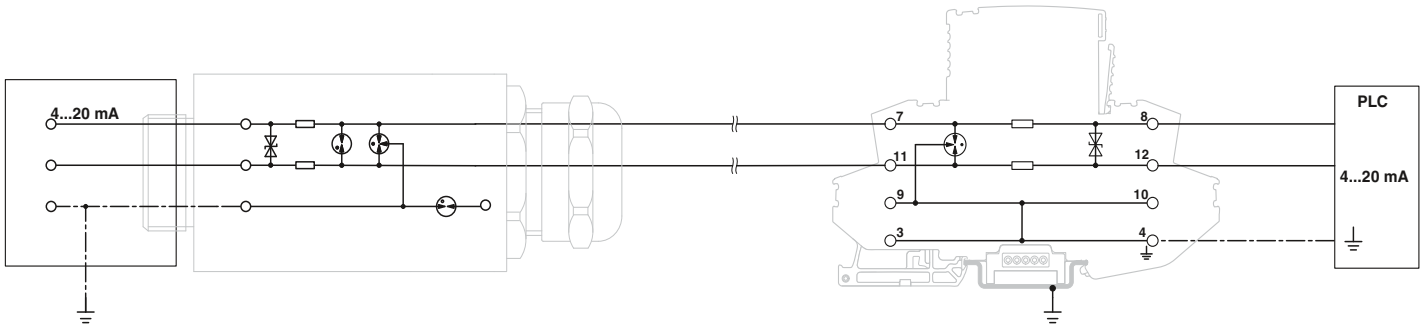
Suitable products	TTC-6P-2X1-F-M-24DC-PT-I 2906794 Page 105	Suitable products	TTC-6P-2X1-F-M-24DC-PT-I 2906794 Page 105

Protection of a 0(4) ... 20 mA current loop



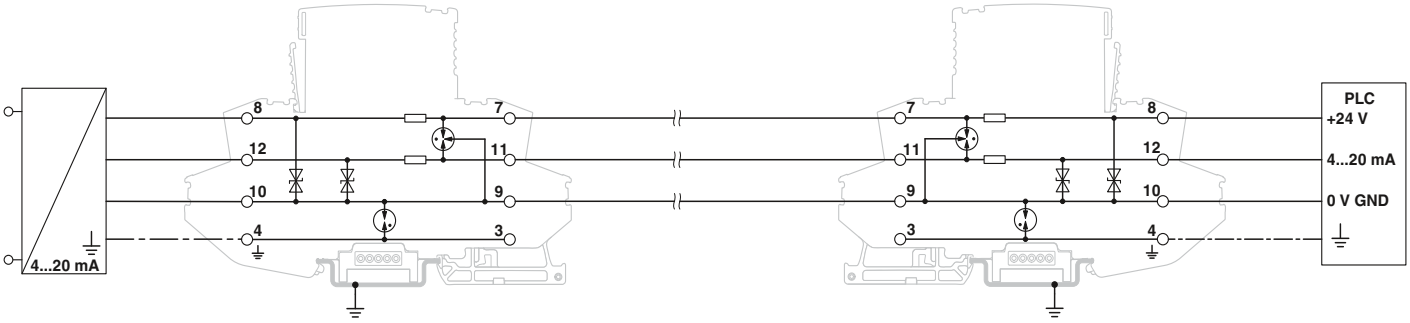
Suitable products	PT-IQ-1X2-24DC-PT 2801255 Page 96	Suitable products	PT-IQ-1X2-24DC-PT 2801255 Page 96

Protection of a 0(4) ... 20 mA current loop, intrinsically safe circuits



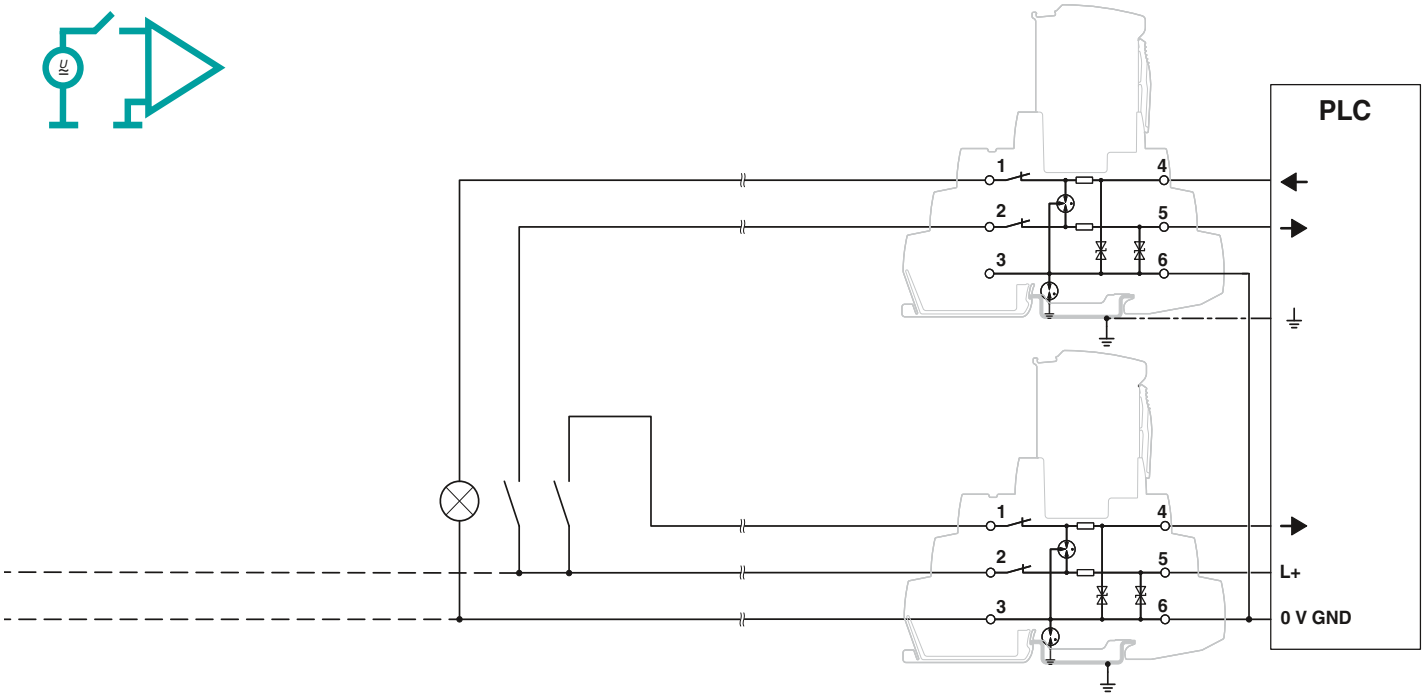
Suitable products	S-PT-EX(I)-24DC 2880671 Page 130	Suitable products	PT-IQ-1X2-EX-24DC-UT 2801512 Page 129

Protection of a 0(4) ... 20 mA current loop and additional power supply



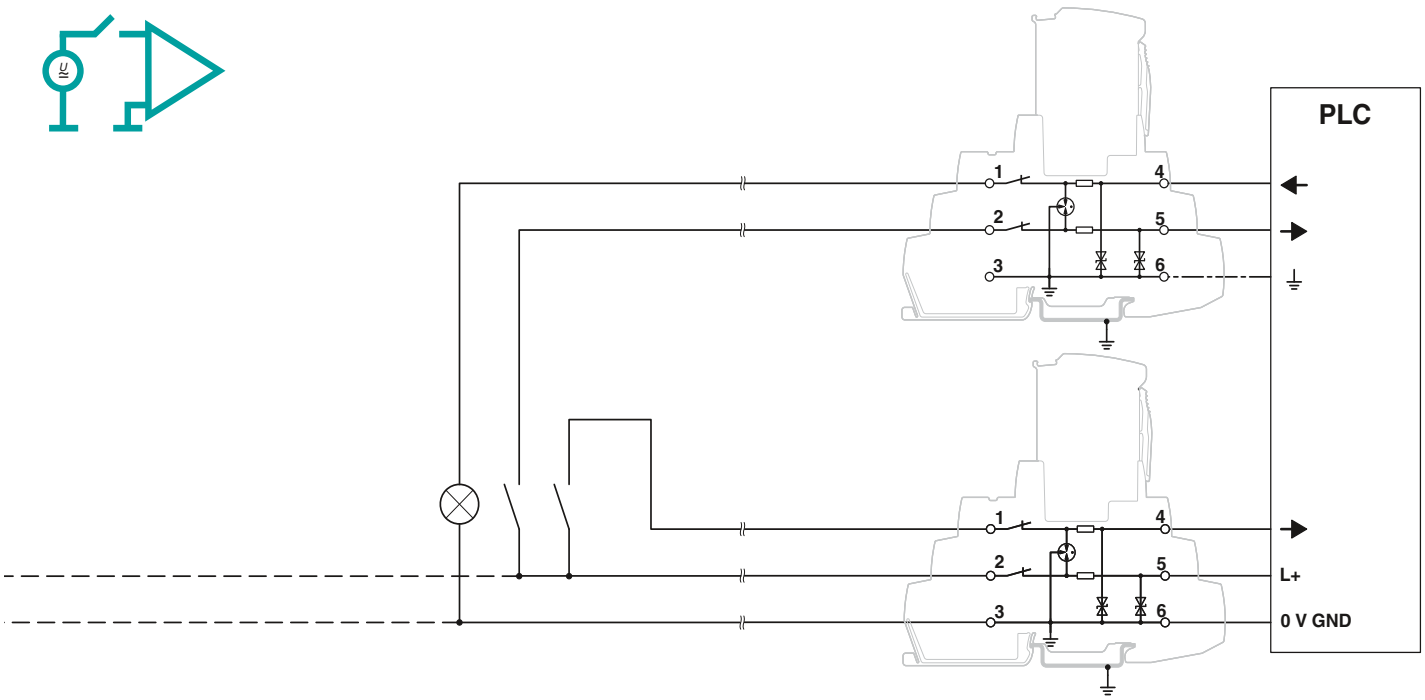
Suitable products	PT-IQ-2X1+F-24DC-PT 2801248 Page 111	Suitable products	PT-IQ-2X1-24DC-PT 2801247 Page 110

Protection of a digital I/O (24 V), reference conductor not grounded



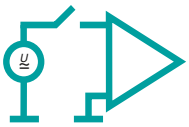
Suitable products	TTC-6P-2X1-F-M-24DC-PT-I 2906794 Page 105

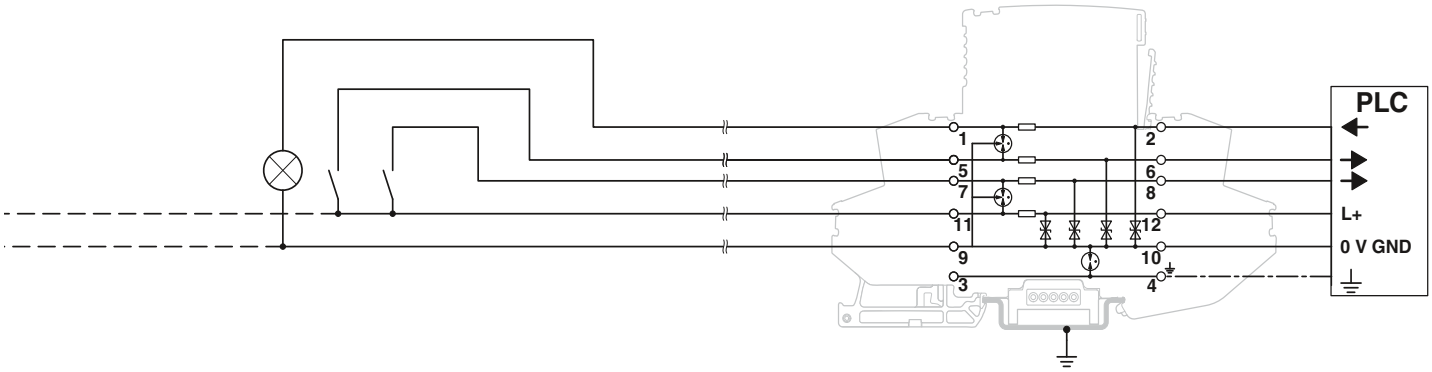
Protection of a digital I/O (24 V), reference conductor not grounded



Suitable products	TTC-6P-2X1-M-24DC-I 2906753 Page 104

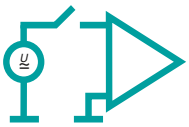
Protection of a digital I/O (24 V), reference conductor not grounded

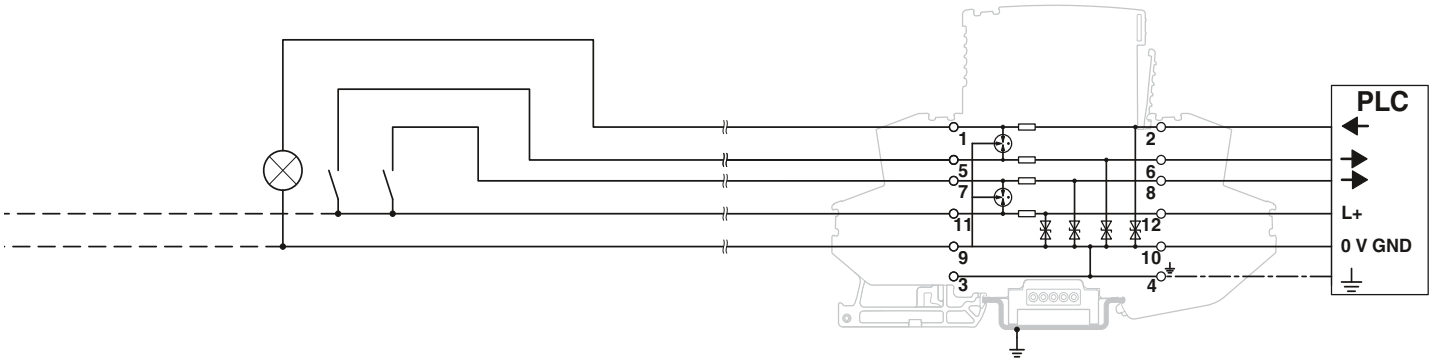




Suitable products	PT-IQ-4X1+F-24DC-PT 2801272 Page 111

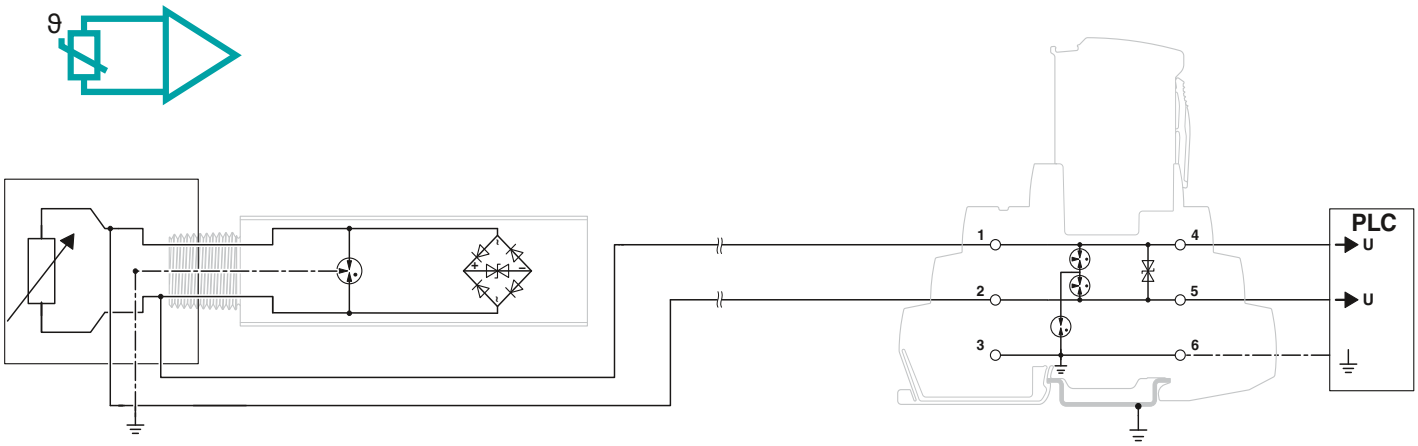
Protection of a digital I/O (24 V), reference conductor not grounded





Suitable products	PT-IQ-4X1-24DC-PT 2801271 Page 111

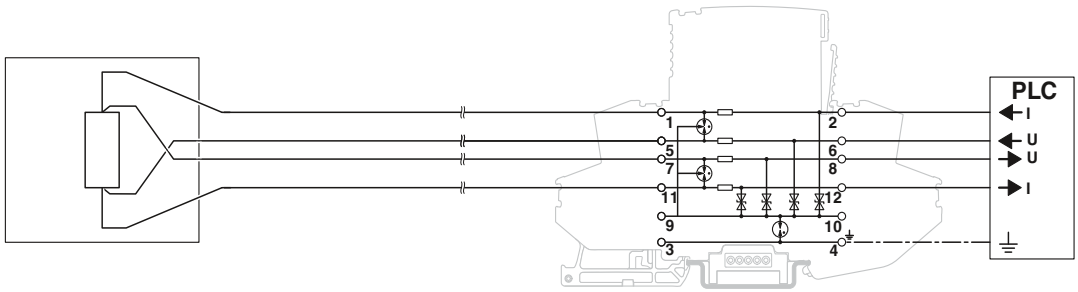
Protection of a two-wire temperature measurement



Suitable products	S-PT-EX-24DC 2800034 Page 130

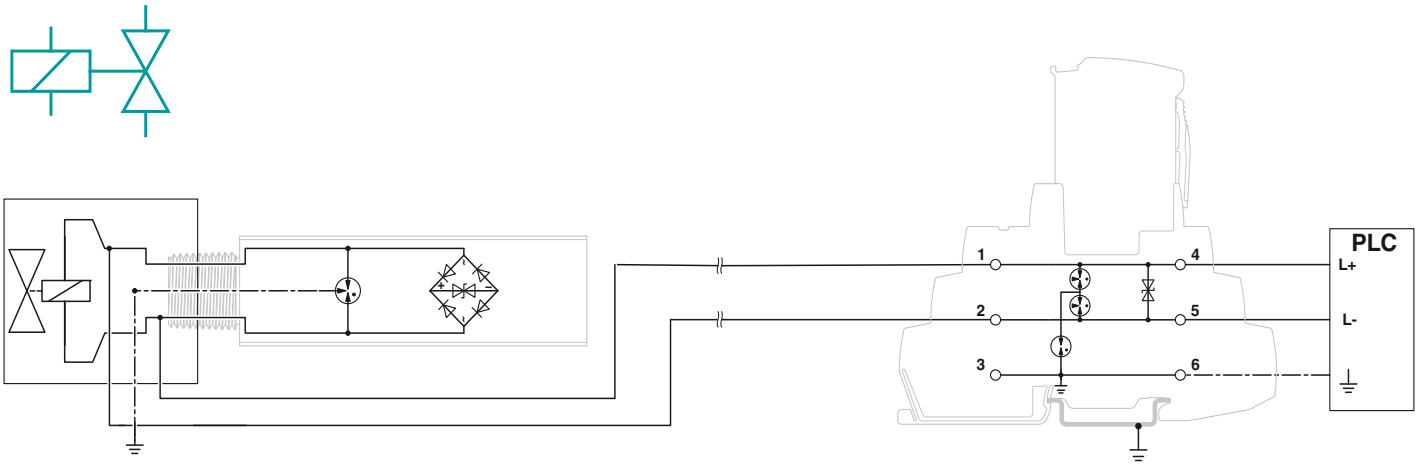
Suitable products	TTC-6P-2-HC-M-24DC-PT-I 2906755 Page 106

Protection of a four-wire temperature measurement



Suitable products	PT-IQ-4X1+F-12DC-PT 2801272 Page 111

Protection of a digital output (actuator)



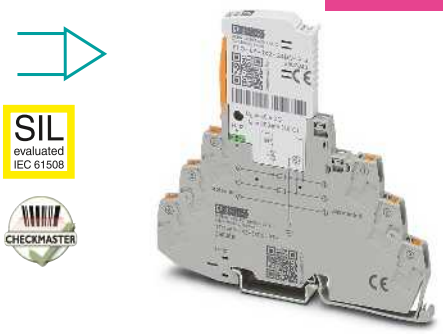
Suitable products	S-PT-EX-24DC 2800034 Page 130

Suitable products	TTC-6P-2-HC-M-24DC-PT-I 2906755 Page 106

Current loops and analog signals TERMITRAB complete

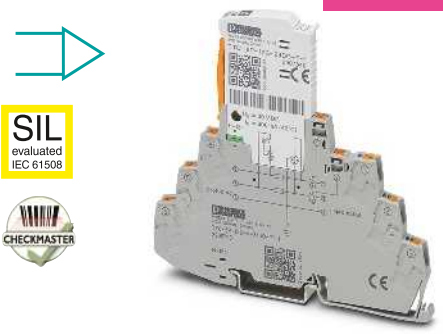
- Pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Impedance-neutral insertion and removal
- Coded connector versions
- With knife disconnection as an option
- Integrated mechanical status indicator
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2

new

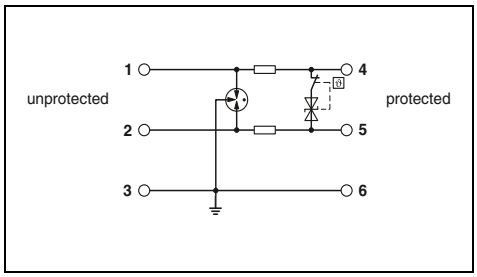


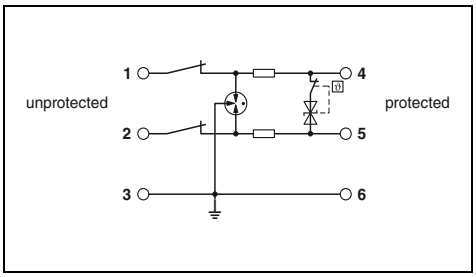
Double wire (loop), floating, 3/6 connection grounded directly, e.g., for 4 ... 20 mA current loop

new



Double wire (loop), floating, 3/6 connection grounded directly, with knife disconnection, 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	30 V DC	55.2 V DC
Rated current	600 mA (40°C)	600 mA (40°C)	160 mA (75°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
Core-Core / Core-Ground	5 kA / 5 kA	5 kA / 5 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA	10 kA	10 kA
Protection level U_p			
Core-Core	≤ 25 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)	≤ 85 V (C3 - 25 A)
Core-Ground	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)
Cut-off frequency fg (3 dB)			
Symmetrical in the 150 Ω system	typ. 420 kHz	typ. 940 kHz	typ. 1.8 MHz
Resistance per path	1.65 Ω	1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm		
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 50 V (C3 - 25 A)
Core-Ground	≤ 700 V (C3 - 25 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 940 kHz
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
	12 V DC	TTC-6P-1X2-12DC-UT-I	2908192	1
	24 V DC	TTC-6P-1X2-24DC-UT-I	2906809	1
	48 V DC	TTC-6P-1X2-48DC-UT-I	2908194	1
TERMITRAB complete, with Push-in connection technology				
	12 V DC	TTC-6P-1X2-12DC-PT-I	2908193	1
	24 V DC	TTC-6P-1X2-24DC-PT-I	2906815	1
	48 V DC	TTC-6P-1X2-48DC-PT-I	2908195	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-M-24DC-UT-I	2906738	1
TTC-6P-1X2-M-24DC-PT-I	2906750	1

Accessories

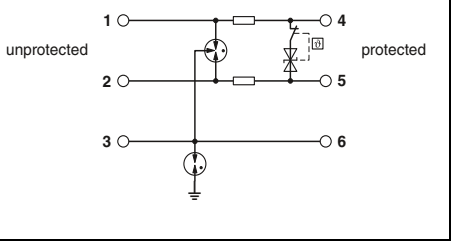
Remote signaling set			
Screw connection technology	TTC-6-FMRS-UT	2907810	1
Push-in connection technology	TTC-6-FMRS-PT	2907811	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new

Double wire (loop), floating, 3/6 connection grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop



Technical data

... 12DC	... 48DC	
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	
15 V DC	55.2 V DC	
600 mA (40°C)	160 mA (75°C)	
0.5 kA	0.5 kA	
5 kA / 5 kA	5 kA / 5 kA	
10 kA	10 kA	
≤ 25 V (C3 - 25 A)	≤ 85 V (C3 - 25 A)	
≤ 1.3 kV (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)	
typ. 420 kHz	typ. 1.8 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

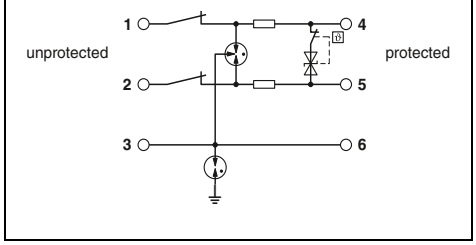
Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-F-12DC-UT-I	2908196	1
TTC-6P-1X2-F-48DC-UT-I	2908199	1
TTC-6P-1X2-F-12DC-PT-I	2908198	1
TTC-6P-1X2-F-48DC-PT-I	2908200	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new

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

... 24DC	
C1 / C2 / C3 / D1	
30 V DC	
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	
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-6P-1X2-F-M-24DC-UT-I	2906781	1
TTC-6P-1X2-F-M-24DC-PT-I	2906790	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

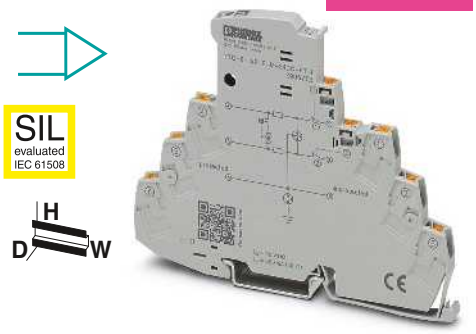
Current loops and analog signals TERMITRAB complete

- 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

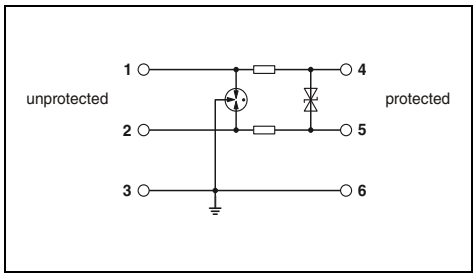
new

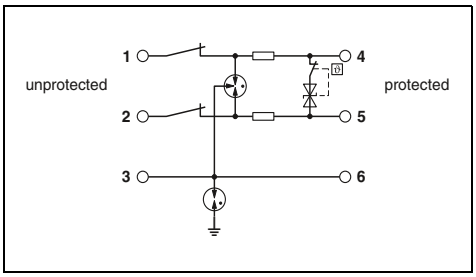
Double wire (loop), floating, 3/6 connection grounded directly, e.g., for 4 ... 20 mA current loop

new



Double wire (loop), floating, 3/6 connection grounded via gas-filled surge arrester, with knife disconnection, e.g., for 4 ... 20 m A current loop





Technical data

Electrical data			
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		30 V DC	30 V DC
Rated current		600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs		0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	5 kA / 5 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core	≤ 50 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)
	Core-Ground	≤ 700 V (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)
Cut-off frequency fg (3 dB)			
	Symmetrical in the 150 Ω system	typ. 940 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 / 69.5 mm	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
Without status indicator	24 V DC	**TTC-6-1X2-24DC-UT**	2906798	1
With status indicator	24 V DC	**TTC-6-1X2-M-24DC-UT-I**	2906713	1
TERMITRAB complete, with Push-in connection technology				
Without status indicator	24 V DC	**TTC-6-1X2-24DC-PT**	2906804	1
With status indicator	24 V DC	**TTC-6-1X2-M-24DC-PT-I**	2906726	1

Accessories

	Type	Order No.	Pcs./Pkt.
Remote signaling set			
Screw connection technology	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology	**TTC-6-FMRS-PT**	2907811	1

Technical data

Electrical data			
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		30 V DC	30 V DC
Rated current		600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs		0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	5 kA / 5 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core	≤ 50 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)
	Core-Ground	≤ 700 V (C3 - 25 A)	≤ 1.3 kV (C3 - 25 A)
Cut-off frequency fg (3 dB)			
	Symmetrical in the 150 Ω system	typ. 940 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 / 69.5 mm	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
With status indicator	24 V DC	**TTC-6-1X2-F-M-24DC-UT-I**	2906764	1
TERMITRAB complete, with Push-in connection technology				
With status indicator	24 V DC	**TTC-6-1X2-F-M-24DC-PT-I**	2906772	1

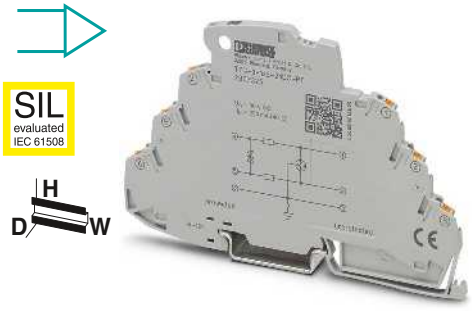
Accessories

	Type	Order No.	Pcs./Pkt.
Remote signaling set			
Screw connection technology	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology	**TTC-6-FMRS-PT**	2907811	1

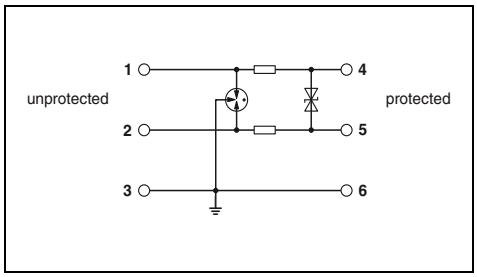
Current loops and analog signals
TERMITRAB complete

– Overall width of just 3.5 mm
– With Push-in connection technology

new



**Double wire (loop), floating,
e.g., for 4 ... 20 mA current loops**



Technical data

Electrical data	
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC
Rated current	250 mA (70°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 45 V (C3 - 30 A)
Core-Ground	≤ 1000 V (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	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 solid/stranded/AWG	0.2...1.5 mm² / 0.2...1.5 mm² / 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

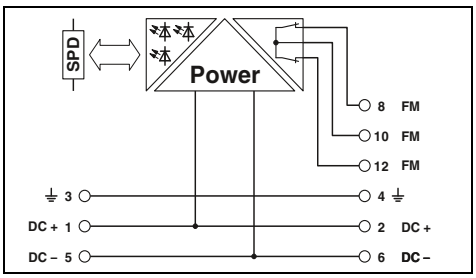
End cover			
	TTC-3-LCP	2908843	1

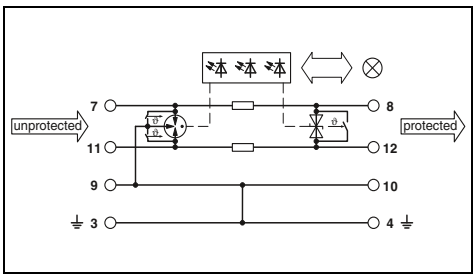
Current loops and analog signals
PLUGTRAB PT-IQ

- 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			... 5DC	... 12DC	... 24DC	... 48DC
IEC test classification/EN type			C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	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	30 V DC / 21 V AC	53 V DC / 37 V AC
Rated current		-	1000 mA (40°C)	1000 mA (40°C)	1000 mA (40°C)	300 mA
Pulse discharge current I_{imp} (10/350) µs		-	2.5 kA	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs						
	Core-Core / Core-Ground	- / -	10 kA / 10 kA	10 kA / 10 kA	10 kA / 10 kA	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		-	20 kA	20 kA	20 kA	20 kA
Protection level U_p						
	Core-Core	-	≤ 25 V (C3 - 25 A)	≤ 35 V (C3 - 25 A)	≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
	Core-Ground	-	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)
Resistance per path		-	1.2 Ω	1.2 Ω	1.2 Ω	1.2 Ω
General data						
PT-IQ...UT dimensions W/H/D		17.7 mm / 91.1 mm / 77.5 mm	17.7 mm / 91.1 mm / 77.5 mm			
PT-IQ...PT dimensions W/H/D		17.7 mm / 109.3 mm / 77.5 mm	17.7 mm / 109.3 mm / 77.5 mm			
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12			
Temperature range		-40 °C ... 70 °C	-40 °C ... 70 °C			
Test standards		EN 61000-6-2 / EN 61000-6-3 / EN 60950-1 / EN 60079-0 / EN 60079-11 / EN 60079-15	IEC 61643-21 / EN 61643-21 / EN 61000-6-3 / EN 61000-6-2			
Remote indication contact		2x N/C contacts	Via TBUS			
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 14	- mm² / - mm² / -			
Max. operating voltage		30 V AC (50/60 Hz, non-Ex) / 50 V DC (non-Ex)	-			
Max. operating current		1 A (up to 50°C, non-Ex)	-			

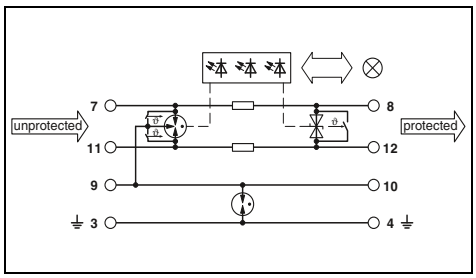
Ordering data

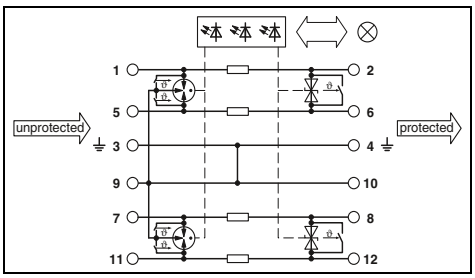
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
PLUGTRAB, supply and remote signaling module							
Screw connection technology		**PT-IQ-PTB-UT**	2800768	1			
Push-in connection technology		**PT-IQ-PTB-PT**	2801296	1			
PLUGTRAB, with screw connection technology							
	5 V DC				**PT-IQ-1X2-5DC-UT**	2800791	1
	12 V DC				**PT-IQ-1X2-12DC-UT**	2800793	1
	24 V DC				**PT-IQ-1X2-24DC-UT**	2800976	1
	48 V DC				**PT-IQ-1X2-48DC-UT**	2800978	1
PLUGTRAB, with Push-in connection technology							
	5 V DC				**PT-IQ-1X2-5DC-PT**	2801251	1
	12 V DC				**PT-IQ-1X2-12DC-PT**	2801253	1
	24 V DC				**PT-IQ-1X2-24DC-PT**	2801255	1
	48 V DC				**PT-IQ-1X2-48DC-PT**	2801257	1

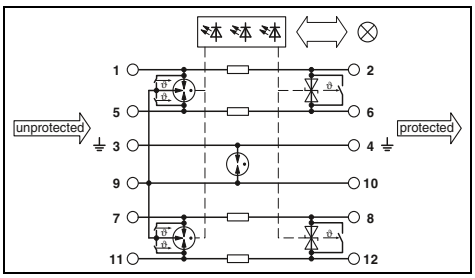
Double wire (loop), floating, connection 9/10 grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop

2 double wires (loops), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

2 double wires (loops), floating, connection 9/10 grounded via gas-filled surge arrester, e.g., for 4 ... 20 mA current loop







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	15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 37 V AC
1000 mA (40°C)	1000 mA (40°C)	1000 mA (40°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 (C3 - 25 A)	≤ 35 V (C3 - 25 A)	≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)
1.2 Ω	1.2 Ω	1.2 Ω	1.2 Ω
17.7 mm / 91.1 mm / 77.5 mm 17.7 mm / 109.3 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 TBUS			
- mm² / - mm² / -			
-			
-			

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	15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 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 (C3 - 25 A)	≤ 35 V (C3 - 25 A)	≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)	≤ 700 V (C3 - 25 A)
1.2 Ω	1.2 Ω	1.2 Ω	1.2 Ω
17.7 mm / 91.1 mm / 77.5 mm 17.7 mm / 109.3 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 TBUS			
- mm² / - mm² / -			
-			
-			

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	15 V DC / 10 V AC	30 V DC / 21 V AC	53 V DC / 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 (C3 - 25 A)	≤ 35 V (C3 - 25 A)	≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)	≤ 1000 V (C3 - 25 A)
1.2 Ω	1.2 Ω	1.2 Ω	1.2 Ω
17.7 mm / 91.1 mm / 77.5 mm 17.7 mm / 109.3 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 TBUS			
- mm² / - mm² / -			
-			
-			

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-1X2+F-5DC-UT	2800792	1
PT-IQ-1X2+F-12DC-UT	2800975	1
PT-IQ-1X2+F-24DC-UT	2800977	1
PT-IQ-1X2+F-48DC-UT	2800979	1
PT-IQ-1X2+F-5DC-PT	2801252	1
PT-IQ-1X2+F-12DC-PT	2801254	1
PT-IQ-1X2+F-24DC-PT	2801256	1
PT-IQ-1X2+F-48DC-PT	2801258	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2-5DC-UT	2800807	1
PT-IQ-2X2-12DC-UT	2800984	1
PT-IQ-2X2-24DC-UT	2800980	1
PT-IQ-2X2-48DC-UT	2800986	1
PT-IQ-2X2-5DC-PT	2801259	1
PT-IQ-2X2-12DC-PT	2801261	1
PT-IQ-2X2-24DC-PT	2801263	1
PT-IQ-2X2-48DC-PT	2801265	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2+F-5DC-UT	2800809	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
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

Current loops and analog signals
PLUGTRAB PT

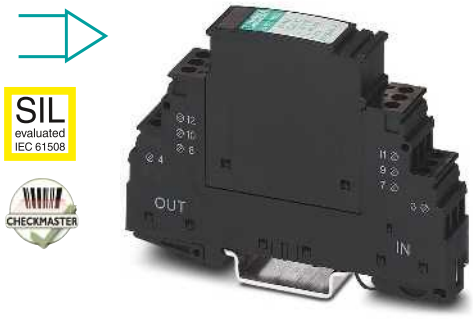
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be checked with CHECKMASTER

*** Note:**

Various grounding options for the base elements:

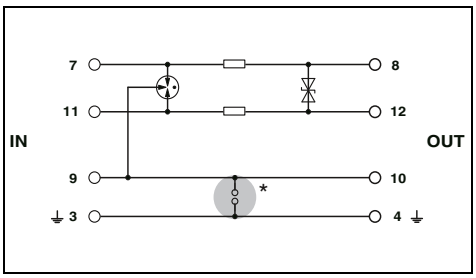
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.

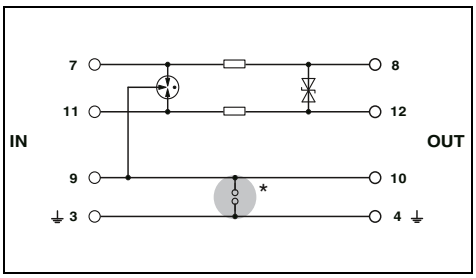
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.



Double wire (loop), floating, e.g., for 4 ... 20 mA current loops

Double wire (loop), floating, e.g., for 4 ... 20 mA current loops





Technical data

Electrical data	... 5DC	... 12DC	... 24DC	... 48DC
IEC test classification/EN type	C1 / C2 / C3 / D1	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	53 V DC / 37 V AC
Rated current	450 mA (45°C)	450 mA (45°C)	450 mA (45°C)	450 mA (45°C)
Pulse discharge current I_{imp} (10/350) µs	2.5 kA	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs				
Core-Core / Core-Ground	10 kA / 10 kA	10 kA / 10 kA	10 kA / 10 kA	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA	20 kA	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	10 kA	10 kA	20 kA (in total)
Protection level U_p				
Core-Core	≤ 40 V	≤ 50 V	≤ 50 V (C3 - 25 A)	≤ 80 V (C1 - 1 kV/500 A)
Core-Ground	≤ 450 V	≤ 450 V	≤ 450 V (C1 - 1 kV/500 A)	≤ 550 V (C2 - 2 kV / 1 kA with PT 1X2-BE)
Output voltage limitation at 1 kV/µs				
Core-Core	≤ 10 V	≤ 18 V	≤ 40 V	≤ 70 V
Core-Ground	≤ 450 V	≤ 450 V	≤ 450 V	≤ 450 V (with PT 1X2-BE)
Cut-off frequency fg (3 dB)				
Symmetrical in the 50 Ω system	typ. 1 MHz	typ. 3 MHz	typ. 4.5 MHz	typ. 10 MHz
Resistance per path	2.2 Ω	2.2 Ω	2.2 Ω	2.2 Ω
General data				
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm			
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12			
Temperature range	-40 °C ... 85 °C			
Test standards	IEC 61643-21			

Ordering data

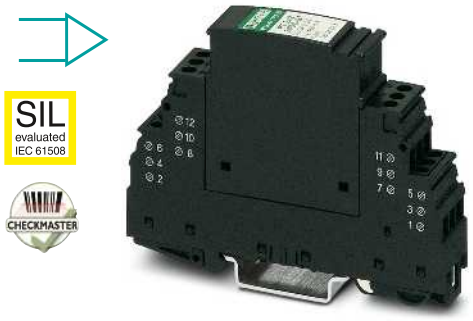
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
	5 V DC	**PT 1X2- 5DC-ST**	2856016	10
	12 V DC	**PT 1X2-12DC-ST**	2856029	10
	24 V DC	**PT 1X2-24DC-ST**	2856032	10
	48 V DC	**PT 1X2-48DC-ST**	2803658	10
PLUGTRAB base element, for mounting on NS 35				
Bridge between 3/4 (⏚) and 9/10		**PT 1X2-BE**	2856113	10
Gas-filled surge arrester between 3/4 (⏚) and 9/10		**PT 1X2+F-BE**	2856126	10

Technical data

Electrical data	... 12AC	... 24AC
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	40 V DC / 28 V AC
Rated current	450 mA (45°C)	450 mA (45°C)
Pulse discharge current I_{imp} (10/350) µs	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	10 kA / 10 kA	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	10 kA
Protection level U_p		
Core-Core	≤ 55 V	≤ 80 V
Core-Ground	≤ 450 V	≤ 450 V
Output voltage limitation at 1 kV/µs		
Core-Core	≤ 25 V	≤ 55 V
Core-Ground	≤ 450 V	≤ 450 V
Cut-off frequency fg (3 dB)		
Symmetrical in the 50 Ω system	typ. 4 MHz	typ. 8 MHz
Resistance per path	2.2 Ω	2.2 Ω
General data		
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Temperature range	-40 °C ... 85 °C	
Test standards	IEC 61643-21	

Ordering data

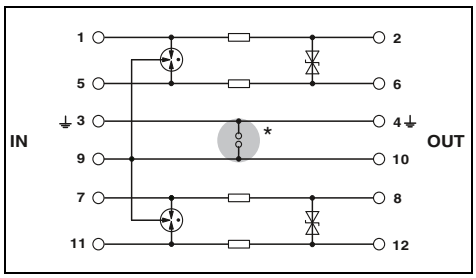
Type	Order No.	Pcs./Pkt.
PT 1X2-12AC-ST	2856045	10
PT 1X2-24AC-ST	2856058	10
PT 1X2-BE	2856113	10
PT 1X2+F-BE	2856126	10

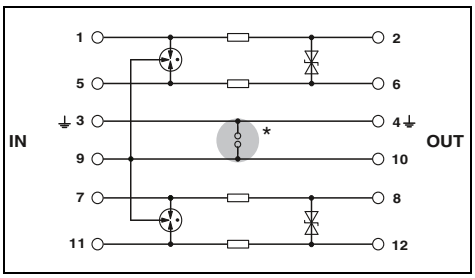


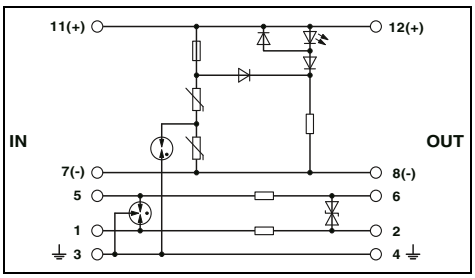
2 double wires (loops), floating,
e.g., for 4 ... 20 mA current loops

2 double wires (loops), floating,
e.g., for 4 ... 20 mA current loops

Combination of double wire protection
(floating) and single-phase power supply







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	20 kA (in total)
-	-	≤ 50 V (C3 - 25 A)
-	-	≤ 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
17.7 mm / 90 mm / 65.5 mm		
0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12		
-40 °C ... 85 °C		
IEC 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

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 (in total)	
≤ 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	
17.7 mm / 90 mm / 65.5 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.
PT 2X2-24AC-ST	2838283	10
PT 2X2-BE	2839208	10
PT 2X2+F-BE	2839224	10

Technical data

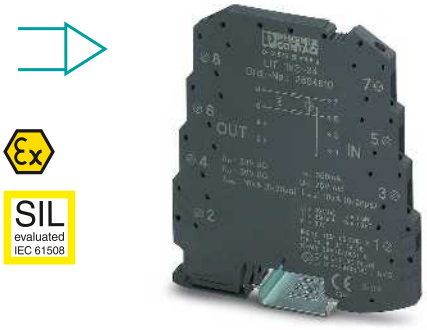
Mains protection	Data protection
III / T3	C1 / C2 / C3 / D1
44 V DC / 34 V AC	40 V DC / 28 V AC
6 A (30 °C)	450 mA (45°C)
-	2.5 kA
700 A	10 kA / 10 kA
-	20 kA
2 kA	20 kA (in total)
≤ 0.18 kV	≤ 80 V (C2 - 10 kV / 5 kA)
≤ 0.55 kV	≤ 450 V (C2 - 10 kV / 5 kA)
-	≤ 55 V
-	≤ 25 V
-	typ. 8 MHz
-	2.2 Ω
17.7 mm / 90 mm / 65.5 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

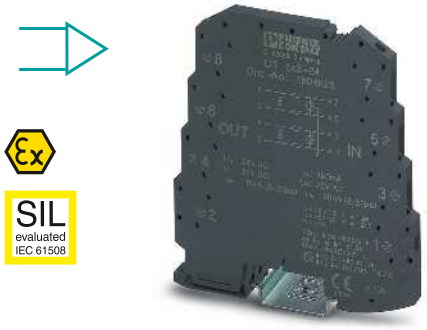
Type	Order No.	Pcs./Pkt.
PT PE/S+1X2-24-ST	2819008	10
PT PE/S+1X2-BE	2856265	10

Current loops and analog signals
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

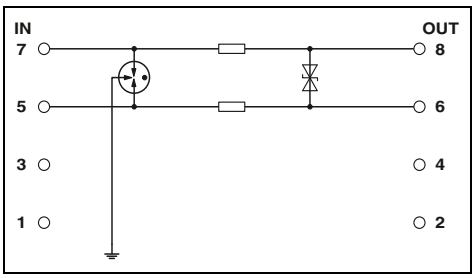


Double wire (loop), floating, e.g., for 4 ... 20 mA current loops

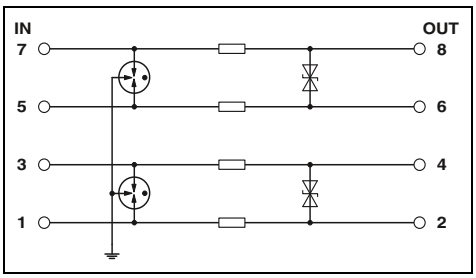


2 double wires (loops), floating, e.g., for 4 ... 20 mA current loops

Ex:



Ex:



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) µs	500 A
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core / Core-Ground	≤ 50 V (C3 - 10 A) / ≤ 650 V (C1 - 500 V / 250 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 50 Ω system	typ. 6 MHz
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	6.2 mm / 93.1 mm / 102.5 mm
Connection data solid/stranded/AWG	0.14...2.5 mm² / 0.2...2.5 mm² / 24 ... 12
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 according to ATEX	KEMA 09ATEX0051 X
Identification according to ATEX	Ex II 1 G Ex ia IIC T4...T6 Ex II 1 D Ex iaD 20 T85°C...135°C
Maximum internal capacitance C_i	typ. 1.3 nF
Maximum internal inductance L_i	< 1 µH
Maximum input current I_i	350 mA (T4 / ≤ 80°C)
Maximum input voltage U_i	36 V DC
Maximum input power P_i	3 W

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) µs	500 A
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	20 kA
Protection level U_p	
Core-Core / Core-Ground	≤ 50 V (C3 - 10 A) / ≤ 650 V (C1 - 500 V / 250 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 50 Ω system	typ. 6 MHz
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	6.2 mm / 93 mm / 102.5 mm
Connection data solid/stranded/AWG	0.14...2.5 mm² / 0.2...2.5 mm² / 26 ... 12
Temperature range	-40 °C ... 80 °C
Test standards	EN 61643-21/A2 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11
Safety data	
EC-type examination certificate according to ATEX	KEMA 09ATEX0051 X
Identification according to ATEX	Ex II 1 G Ex ia IIC T4...T6 Ex II 1 D Ex iaD 20 T85°C...135°C
Maximum internal capacitance C_i	1.3 nF
Maximum internal inductance L_i	< 1 µH
Maximum input current I_i	350 mA (T4 / ≤ 80°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

Ordering data

Type	Order No.	Pcs./Pkt.
LIT 2X2-24	2804623	10

Accessories

System adapter, for MINI Analog modules with screw connection			
	MINI MCR-SL-V8-FLK 16-A	2811268	1
VARIOFACE system cable for connecting LIT and MINI Analog via system adapter			
Cable length: 2 m	**VIP-CAB-FLK16/FR/FR/0,14/2,0M**	2900156	1
Cable length: 1 m	**VIP-CAB-FLK16/FR/FR/0,14/1,0M**	2900155	1
Cable length: 0.5 m	**VIP-CAB-FLK16/FR/FR/0,14/0,5M**	2900154	1

Accessories

Current loops and analog signals
SURGETRAB S-PT

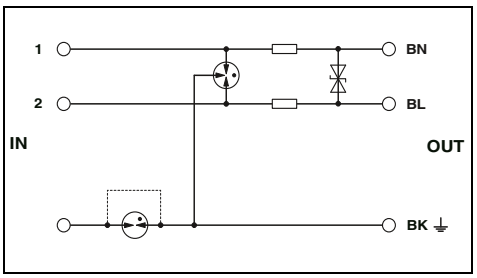
– Easy assembly, directly on the field device
– Arresters in hexagonal tube with various outer threads
– **S-PT-1x2...** installation in the signal path feed-through

Notes:
For more information about EX approvals, visit phoenixcontact.com
For additional safety data, visit phoenixcontact.net/products

SIL evaluated IEC 61508

Double wire (loop), floating, e.g., for 4 ... 20 mA current loops

EAC



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) µs	1 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	10 kA / 10 kA
Maximum permitted short-circuit current at installation location	1 A
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 80 V (C2 - 5 kA)
Core-Ground	≤ 450 V (C2 - 5 kA / direct grounding)
Output voltage limitation at 1 kV/µs	
Core-Core / Core-Ground	≤ 55 V / ≤ 450 V (Direct grounding)
Resistance per path	2.2 Ω
General data	
Dimensions W/H/D	34 mm / 34 mm / 137 mm
Temperature range	-40 °C ... 85 °C
Test standards	IEC 61643-21

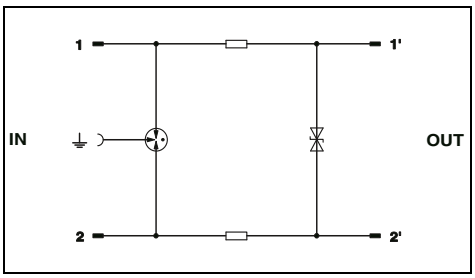
Ordering data

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

Current loops and analog signals
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



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) µs		1 kA	1 kA	1 kA
Nominal discharge current I_n (8/20) µs				
	Core-Core / Core-Ground	5 kA / 5 kA	5 kA / 5 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA	10 kA
Protection level U_p				
	Core-Core	≤ 25 V (C3, 7.5 kV/100 A)	≤ 45 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, 7.5 kV/100 A)	≤ 700 V (C3 - 100 A)
Cut-off frequency fg (3 dB)				
	Symmetrical/asymmetrical in the 100 Ω system	1.2 MHz / -	2.7 MHz / -	typ. 2 MHz / -
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

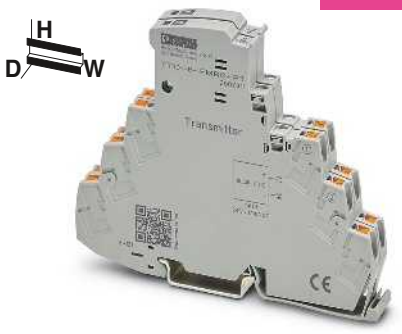
Accessories

Magazine, with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	**CTM 10-MAG**	2838610	5
Grounding connector	**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

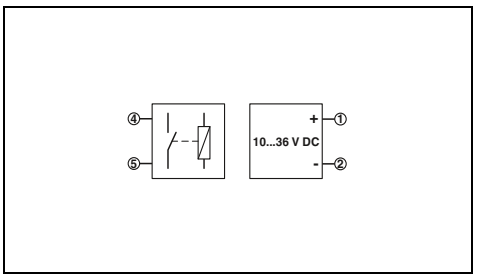
Remote signaling set TERMITRAB complete

new

- 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



Technical data

Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_C	-
Rated current	-
General 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 solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Max. operating voltage	24 V AC / 36 V DC
Max. operating current	500 mA AC (peak) / 500 mA DC

Ordering data

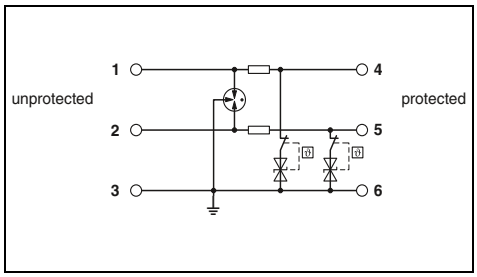
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
Remote signaling set				
Screw connection technology		**TTC-6-FMRS-UT**	**2907810**	1
Push-in connection technology		**TTC-6-FMRS-PT**	**2907811**	1

Digital signals and switching contacts 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 connector 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

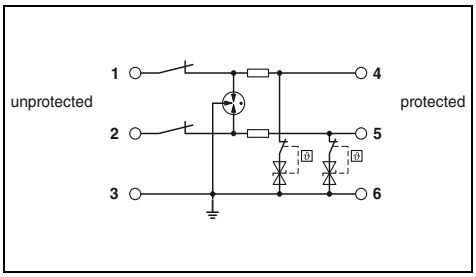
new

2-conductor with common reference potential, 3/6 connection grounded directly, e.g., for binary signals



new

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	30 V DC	53 V DC
Rated current	600 mA (40°C)	600 mA (40°C)	220 mA (75°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
Core-Core / Core-Ground	- / 5 kA	- / 5 kA	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA	10 kA	10 kA
Protection level U_p			
Core-Core	-	-	-
Core-Ground	≤ 25 V (C3 - 25 A)	≤ 45 V (C3 - 25 A)	≤ 80 V (C3 - 25 A)
Cut-off frequency fg (3 dB)			
Asymmetrical in the 150 Ω system	typ. 440 kHz	typ. 960 kHz	typ. 1.7 MHz
Resistance per path	1.65 Ω	1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm		
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	-
Core-Ground	≤ 45 V (C3 - 25 A)
Cut-off frequency fg (3 dB)	
Asymmetrical in the 150 Ω system	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 solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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 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
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

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-M-24DC-UT-I	2906741	1
TTC-6P-2X1-M-24DC-PT-I	2906753	1

Accessories

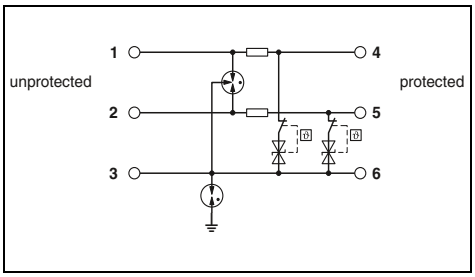
	Type	Order No.	Pcs./Pkt.
Remote signaling set			
Screw connection technology	TTC-6-FMRS-UT	2907810	1
Push-in connection technology	TTC-6-FMRS-PT	2907811	1

Accessories

Type	Order No.	Pcs./Pkt.
TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new

2-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, e.g., for binary signals



Technical data

... 12DC	... 48DC	
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	
15 V DC	53 V DC	
600 mA (40°C)	220 mA (75°C)	
0.5 kA	0.5 kA	
- / 5 kA	- / 5 kA	
10 kA	10 kA	
-	-	
≤ 1.2 kV (C3 - 25 A)	≤ 800 V (C3 - 25 A)	
-	-	
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

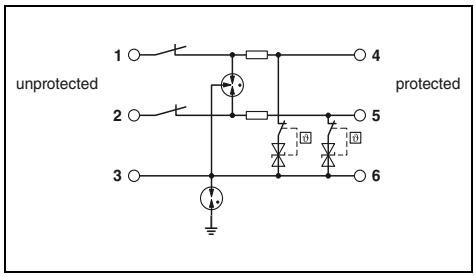
Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-F-12DC-UT-I	2908205	1
TTC-6P-2X1-F-48DC-UT-I	2908208	1
TTC-6P-2X1-F-12DC-PT-I	2908206	1
TTC-6P-2X1-F-48DC-PT-I	2908209	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new

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

... 24DC	
C1 / C2 / C3 / D1	
30 V DC	
600 mA (40°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 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-6P-2X1-F-M-24DC-UT-I	2906784	1
TTC-6P-2X1-F-M-24DC-PT-I	2906794	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

Digital signals and switching contacts TERMITRAB complete

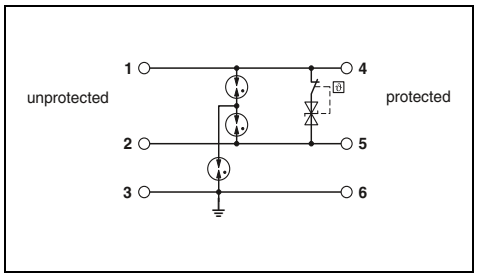
- One-piece or pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded connector versions
- With knife disconnection as an option
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2

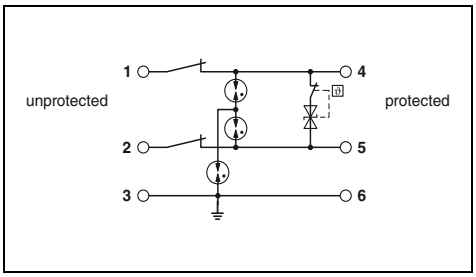
new

2-conductor, floating, pluggable, e.g., for actuator circuits

new

2-conductor, floating, pluggable, with knife disconnection, e.g., for actuator circuits

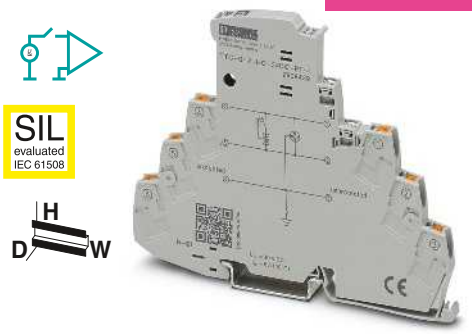




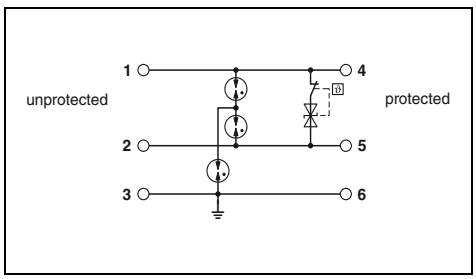
	Technical data	Technical data
Electrical data	... 24DC	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC	30 V DC
Rated current	6 A (40°C)	6 A (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	0.5 kA / 5 kA	0.5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	5 kA	5 kA
Protection level U_p		
Core-Core	≤ 45 V (C3 - 25 A)	≤ 45 V (C3 - 25 A)
Core-Ground	≤ 850 V (C3 - 25 A)	≤ 850 V (C3 - 25 A)
Cut-off frequency fg (3 dB)		
Symmetrical in the 150 Ω system	typ. 1 MHz	typ. 1 MHz
Resistance per path	100 mΩ	100 mΩ
General data		
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm	6.2 mm / 105.8 mm / 100 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 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			Ordering data		
Description / Voltage U_N	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology						
24 V DC	TTC-6P-2-HC-24DC-UT-I	2906811	1	TTC-6P-2-HC-M-24DC-UT-I	2906743	1
TERMITRAB complete, with Push-in connection technology						
24 V DC	TTC-6P-2-HC-24DC-PT-I	2906817	1	TTC-6P-2-HC-M-24DC-PT-I	2906755	1
	Accessories			**Accessories**		
Remote signaling set						
Screw connection technology	TTC-6-FMRS-UT	2907810	1	TTC-6-FMRS-UT	2907810	1
Push-in connection technology	TTC-6-FMRS-PT	2907811	1	TTC-6-FMRS-PT	2907811	1

new



2-conductor, floating, one-piece,
e.g., for actuator circuits



Technical data

	... 24DC
	C1 / C2 / C3 / D1
	30 V DC
	6 A (40°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

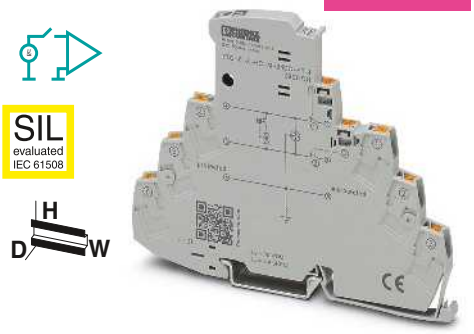
Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-2-HC-24DC-UT-I	2908438	1
TTC-6-2-HC-24DC-PT-I	2908439	1

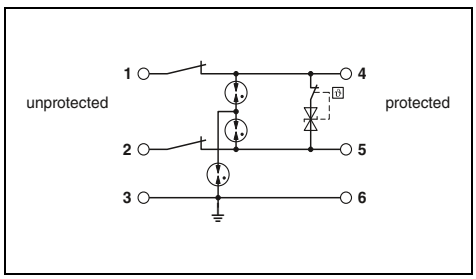
Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new



2-conductor, floating, one-piece, with knife
disconnection, e.g., for actuator circuits



Technical data

	... 24DC
	C1 / C2 / C3 / D1
	30 V DC
	6 A (40°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-M-24DC-UT-I	2906719	1
TTC-6-2-HC-M-24DC-PT-I	2906731	1

Accessories

TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

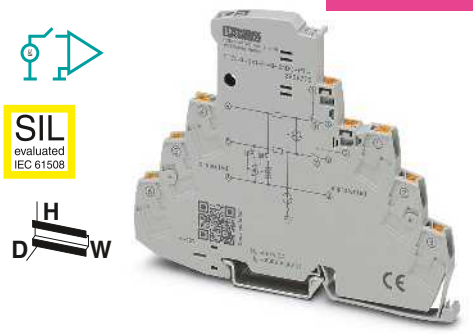
Digital signals and switching contacts TERMITRAB complete

- 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

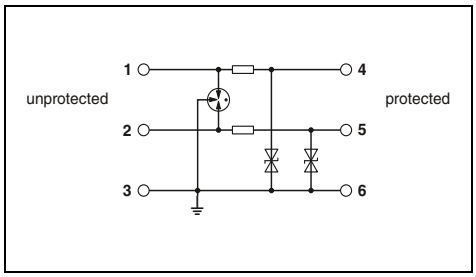
new

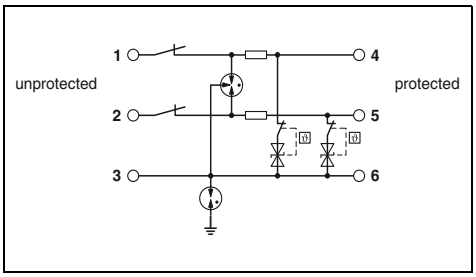
2-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, with or without status indicator and knife disconnection, e.g., for binary signals

new



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	... 24DC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		30 V DC	30 V DC
Rated current		600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs		0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	- / 5 kA	- / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core	-	-
	Core-Ground	≤ 45 V (C3 - 25 A)	≤ 1.1 kV (C3 - 25 A)
Cut-off frequency fg (3 dB)			
	Asymmetrical in the 150 Ω system	typ. 960 kHz	-
Resistance per path		1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D		6.2 mm / 105.8 mm / 69.5 mm	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
Without status indicator	24 V DC	**TTC-6-2X1-24DC-UT**	2906799	1
With status indicator	24 V DC	**TTC-6-2X1-M-24DC-UT-I**	2906716	1
TERMITRAB complete, with Push-in connection technology				
Without status indicator	24 V DC	**TTC-6-2X1-24DC-PT**	2906805	1
With status indicator	24 V DC	**TTC-6-2X1-M-24DC-PT-I**	2906729	1

Accessories

Remote signaling set			
Screw connection technology	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology	**TTC-6-FMRS-PT**	2907811	1

Technical data

Electrical data		... 24DC	... 24DC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		30 V DC	30 V DC
Rated current		600 mA (40°C)	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs		0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	- / 5 kA	- / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core	-	-
	Core-Ground	≤ 45 V (C3 - 25 A)	≤ 1.1 kV (C3 - 25 A)
Cut-off frequency fg (3 dB)			
	Asymmetrical in the 150 Ω system	typ. 960 kHz	-
Resistance per path		1.65 Ω	1.65 Ω
General data			
Dimensions W/H/D		6.2 mm / 105.8 mm / 69.5 mm	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
Without status indicator	24 V DC	**TTC-6-2X1-F-24DC-UT**	2906798	1
With status indicator	24 V DC	**TTC-6-2X1-F-M-24DC-UT-I**	2906767	1
TERMITRAB complete, with Push-in connection technology				
Without status indicator	24 V DC	**TTC-6-2X1-F-24DC-PT**	2906804	1
With status indicator	24 V DC	**TTC-6-2X1-F-M-24DC-PT-I**	2906776	1

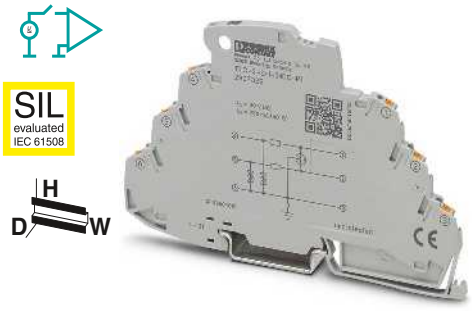
Accessories

Remote signaling set			
Screw connection technology	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology	**TTC-6-FMRS-PT**	2907811	1

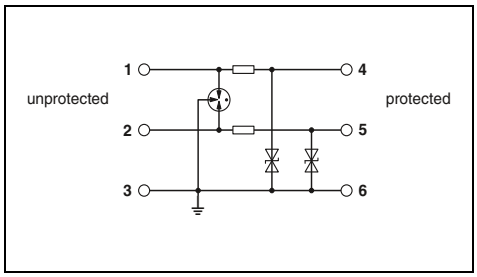
Digital signals and switching contacts TERMITRAB complete

new

– Overall width of just 3.5 mm
– With Push-in connection technology



2-conductor with common reference potential, 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
Rated current	250 mA (70°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	-
Core-Ground	≤ 50 V (C3 - 30 A)
Cut-off frequency fg (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 solid/stranded/AWG	0.2...1.5 mm² / 0.2...1.5 mm² / 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-3-2X1-24DC-PT**	2907326	1

Accessories

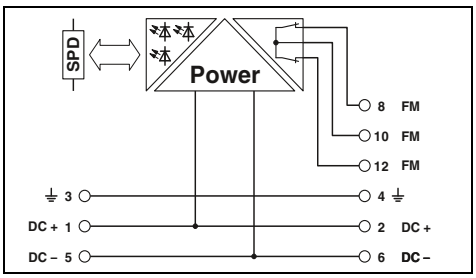
End cover			
	TTC-3-LCP	2908843	1

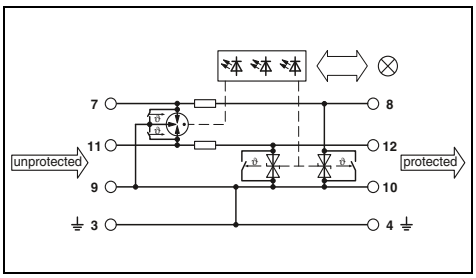
Digital signals and switching contacts
PLUGTRAB PT-IQ

- 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

2-wire with common reference potential, connection 9/10 grounded directly, e.g., for binary signals





Technical data

Electrical data		
IEC test classification/EN type	-	
Maximum continuous operating voltage U_C	-	
Rated current	-	
Pulse discharge current I_{imp} (10/350) µs	-	
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	- / -	
Total discharge current I_{total} (8/20) µs	-	
Protection level U_p		
Core-Ground	-	
Resistance per path	-	
General data		
PT-IQ...UT dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm	
PT-IQ...PT dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Temperature range	-40 °C ... 70 °C	
Test standards	EN 61000-6-2 / EN 61000-6-3 / EN 60950-1 / EN 60079-0 / EN 60079-11 / EN 60079-15	
Remote indication contact	2x N/C contacts	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 14	
Max. operating voltage	30 V AC (50/60 Hz, non-Ex) / 50 V DC (non-Ex)	
Max. operating current	1 A (up to 50°C, non-Ex)	

Technical data

Electrical data	... 24DC	... 48DC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC / 21 V AC	53 V DC / 37 V AC
Rated current	1000 mA (40°C)	300 mA
Pulse discharge current I_{imp} (10/350) µs	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	- / 10 kA	- / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA	20 kA
Protection level U_p		
Core-Ground	≤ 55 V (C3 - 25 A)	≤ 90 V (C3 - 25 A)
Resistance per path	1.2 Ω	1.2 Ω
General data		
PT-IQ...UT dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm	
PT-IQ...PT dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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 TBUS	
Connection data solid/stranded/AWG	- mm² / - mm² / -	
Max. operating voltage	-	
Max. operating current	-	

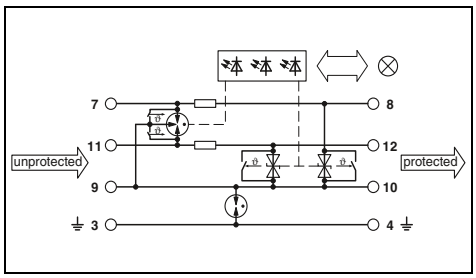
Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
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
PLUGTRAB, with screw connection technology				
	24 V DC			
	48 V DC			
PLUGTRAB, with Push-in connection technology				
	24 V DC			
	48 V DC			

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X1-24DC-UT	2800787	1
PT-IQ-2X1-48DC-UT	2800789	1
PT-IQ-2X1-24DC-PT	2801247	1
PT-IQ-2X1-48DC-PT	2801249	1

2-wire with common reference potential, connection 9/10 grounded via gas-filled surge arrester, e.g., for binary signals



Technical data

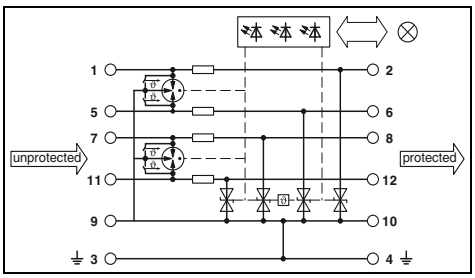
... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
1000 mA (40°C)	300 mA
2.5 kA	2.5 kA
- / 10 kA	- / 10 kA
20 kA	20 kA
≤ 780 V (C3 - 25 A)	≤ 850 V (C3 - 25 A)
1.2 Ω	1.2 Ω

17.7 mm / 91.1 mm / 77.5 mm
17.7 mm / 109.3 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 TBUS
- mm² / - mm² / -
-
-

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X1+F-24DC-UT	**2800788**	1
PT-IQ-2X1+F-48DC-UT	**2800790**	1
PT-IQ-2X1+F-24DC-PT	**2801248**	1
PT-IQ-2X1+F-48DC-PT	**2801250**	1

4-wire with common reference potential, connection 9/10 grounded directly, e.g., for binary signals



Technical data

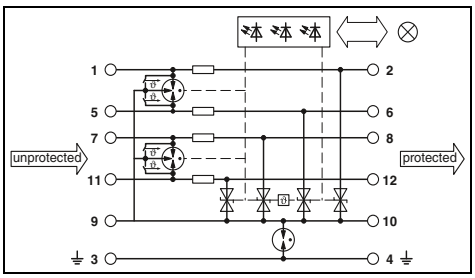
... 24DC	... 48DC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
30 V DC / 21 V AC	53 V DC / 37 V AC
700 mA (50 °C)	300 mA
2.5 kA	2.5 kA
- / 10 kA	- / 10 kA
20 kA	20 kA
≤ 180 V (C2 - 10 kA)	≤ 90 V (C3 - 25 A)
1.2 Ω	1.2 Ω

17.7 mm / 91.1 mm / 77.5 mm
17.7 mm / 109.3 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 TBUS
- mm² / - mm² / -
-
-

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-4X1-24DC-UT	**2800982**	1
PT-IQ-4X1-48DC-UT	**2801219**	1
PT-IQ-4X1-24DC-PT	**2801271**	1
PT-IQ-4X1-48DC-PT	**2801273**	1

4-wire 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
700 mA (50 °C)	300 mA
2.5 kA	2.5 kA
- / 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 / 91.1 mm / 77.5 mm
17.7 mm / 109.3 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 TBUS
- mm² / - mm² / -
-
-

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-4X1+F-24DC-UT	**2800983**	1
PT-IQ-4X1+F-48DC-UT	**2801220**	1
PT-IQ-4X1+F-24DC-PT	**2801272**	1
PT-IQ-4X1+F-48DC-PT	**2801274**	1

Digital signals and switching contacts PLUGTRAB PT

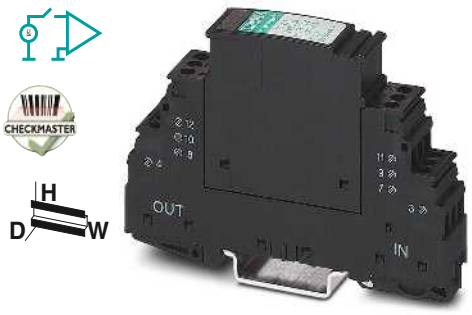
– Consistently pluggable signal circuit protection
– Maximum ease of maintenance thanks to the two-piece design
– Base element remains an integral part of the installation
– Impedance-neutral disconnection of plug for test and maintenance purposes
– Plugs can be checked with CHECKMASTER

*** Note:**

Various grounding options for the base elements:
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.

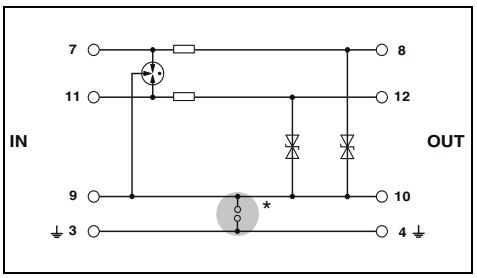
Notes:

For approvals and dimensional drawing, visit phoenixcontact.net/products



2-wire, with common reference potential, e.g., for binary signals

Ex:



Technical data

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) µs	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs			
Core-Core / Core-Ground	- / 10 kA	- / 10 kA	- / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	10 kA	10 kA
Output voltage limitation at 1 kV/µs			
Core-Ground	≤ 10 V	≤ 18 V	≤ 40 V
Cut-off frequency fg (3 dB)			
Symmetrical/asymmetrical in the 50 Ω system	- / typ. 1 MHz	- / typ. 3 MHz	- / typ. 4.5 MHz
Resistance per path	4.7 Ω	4.7 Ω	4.7 Ω

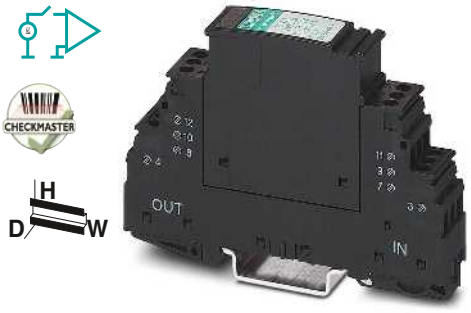
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °C
Test standards	IEC 61643-21

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
	5 V DC	**PT 2X1- 5DC-ST**	2856061	10
	12 V DC	**PT 2X1-12DC-ST**	2856074	10
	24 V DC	**PT 2X1-24DC-ST**	2856087	10
	48 V DC			
	12 V AC			
	24 V AC			
	48 V AC			
PLUGTRAB base element, for mounting on NS 35				
with bridge between the connections 3/4 (⏚) and 9/10		**PT 2X1-BE**	2856139	10
with gas-filled surge arrester between the connections 3/4 (⏚) and 9/10		**PT 2X1+F-BE**	2856142	10

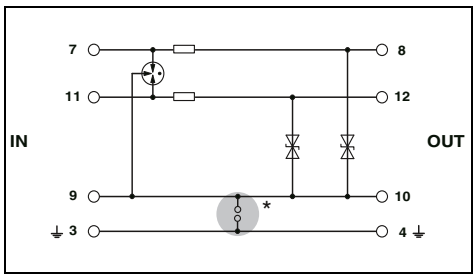
Accessories

Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10



2-wire, with common reference potential, e.g., for binary signals

Ex:



Technical data

... 12AC	... 24AC
C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
18 V DC / 13 V AC	40 V DC / 28 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
≤ 25 V	≤ 55 V (with PT 2x1-BE)
- / typ. 4 MHz	- / typ. 8 MHz
4.7 Ω	4.7 Ω

17.7 mm / 90 mm / 65.5 mm
0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
-40 °C ... 85 °C
IEC 61643-21

Ordering data

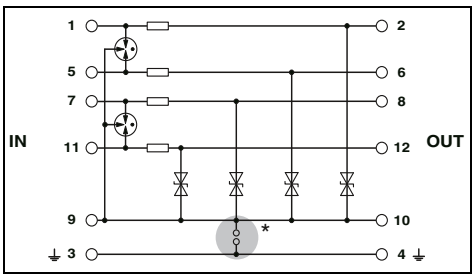
Type	Order No.	Pcs./Pkt.
PT 2X1-12AC-ST	2856090	10
PT 2X1-24AC-ST	2856100	10
PT 2X1-BE	2856139	10
PT 2X1+F-BE	2856142	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

4-wire with common reference potential, connection 9/10 grounded directly, e.g., for binary signals

Ex:



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 / 90 mm / 65.5 mm
0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
-40 °C ... 85 °C
IEC 61643-21

Ordering data

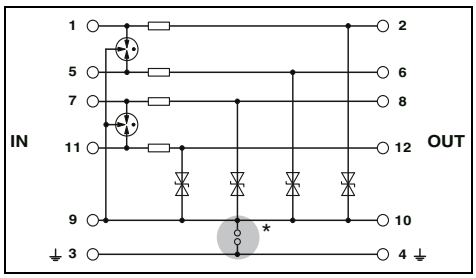
Type	Order No.	Pcs./Pkt.
PT 4X1- 5DC-ST	2838306	10
PT 4X1-12DC-ST	2838319	10
PT 4X1-24DC-ST	2838322	10
PT 4X1-48DC-ST	2858014	10
PT 4X1-BE	2839363	10
PT 4X1+F-BE	2839376	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

4-wire with common reference potential, connection 9/10 grounded via gas-filled surge arrester, e.g., for binary signals

Ex:



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	-
- / typ. 8 MHz	- / typ. 10 MHz
4.7 Ω	4.7 Ω

17.7 mm / 90 mm / 65.5 mm
- mm² / - mm² / -
-40 °C ... 85 °C
IEC 61643-21

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

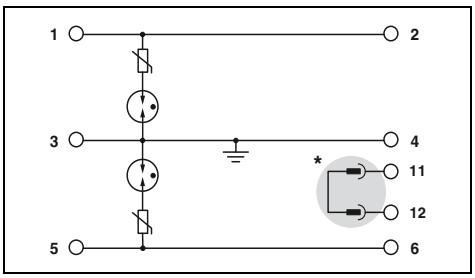
Digital signals and switching contacts PLUGTRAB PT

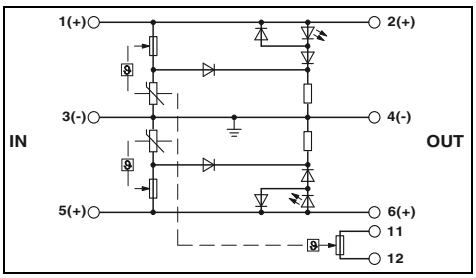
- Protective devices for higher nominal power
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be checked with CHECKMASTER
- FM types with permanent and independent monitoring by a diagnostics unit

*** Note:** If no protective plug is inserted, there is no electrical connection.

2-wire, floating, free of leakage current, e.g., for actuator circuits

2-wire, with common reference potential, remote signaling, e.g., for actuator circuits





Technical data

Electrical data	... 120AC	... 230AC
IEC test classification/EN type	C1 / C2 / C3	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	- / 175 V AC	- / 250 V AC
Rated current	6 A	6 A
Pulse discharge current I_{imp} (10/350) µs	300 A	500 A
Nominal discharge current I_n (8/20) µs		
Core-Ground	3 kA	3 kA
Total discharge current I_{total} (8/20) µs	8 kA	8 kA
Output voltage limitation at 1 kV/µs		
Core-Ground	≤ 800 V	≤ 1.4 kV
General data		
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Temperature range	-40 °C ... 80 °C	
Test standards	EN 61643-21	

Technical data

Electrical data	... 60AC	... 120AC	... 230AC
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	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	26 A AC (30 °C)	26 A AC (30 °C)	26 A AC (30 °C)
Pulse discharge current I_{imp} (10/350) µs	500 A	500 A	500 A
Nominal discharge current I_n (8/20) µs			
Core-Ground	2 kA	2.5 kA	2.5 kA
Total discharge current I_{total} (8/20) µs	4 kA	5 kA	5 kA
Output voltage limitation at 1 kV/µs			
Core-Ground	≤ 200 V	≤ 380 V	≤ 650 V
General data			
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm		
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12		
Temperature range	-40 °C ... 85 °C		
Test standards	IEC 61643-21/A2 / EN 61643-21/A2		

Ordering data

Description	Voltage U_N	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 the PT base element				
	60 V AC			
	120 V AC	**PT 2X1-VF-120AC-ST**	2856799	10
	230 V AC	**PT 2X1-VF-230AC-ST**	2921365	10
PLUGTRAB base element, for mounting on NS 35				
		PT-BE/FM	2839282	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT 2X1VA- 60AC-ST	2839172	10
PT 2X1VA-120AC-ST	2839185	10
PT 2X1VA-230AC-ST	2839198	10
PT-BE/FM	2839282	10

Accessories

Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10

Accessories

SSA 3-6	2839295	10
SSA 5-10	2839512	10

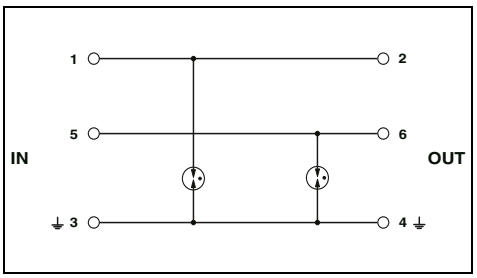
Digital signals and switching contacts
PLUGTRAB PT

- For systems with high dielectric strength or fine protection installed
- Installation location - 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 checked with CHECKMASTER

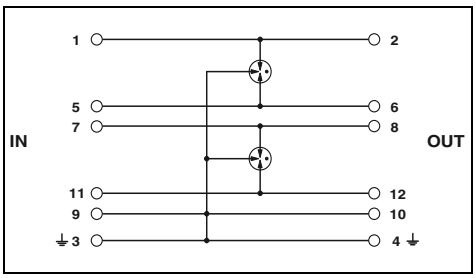
2-wire, coarse protection, e.g., for actuator circuits

4-wire, coarse protection, e.g., for actuator circuits

EAC



EAC



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) µs	5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 20 kA
Total discharge current I_{total} (8/20) µs	20 kA
Protection level U_p	
Core-Ground	≤ 600 V (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/µs	
Core-Ground	≤ 600 V
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
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	60 V DC / 120 V AC
Rated current	2 A AC (80 °C)
Pulse discharge current I_{imp} (10/350) µs	2.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA
Protection level U_p	
Core-Ground	≤ 450 V (C2 - 10 kV / 5 kA with PT 4-BE)
Output voltage limitation at 1 kV/µs	
Core-Ground	≤ 450 V (with PT 4-BE)
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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.
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
	48 V AC 110 V AC	**PT 2-F-ST**	2859000	10
PLUGTRAB base element, for mounting on NS 35				
Bridge between 3/4 (⏚) and 9/10		**PT-BE/FM**	2839282	10

Accessories

Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10

Ordering data

Type	Order No.	Pcs./Pkt.
PT 4-F-ST	2858441	10
PT 4-BE	2839402	10

Accessories

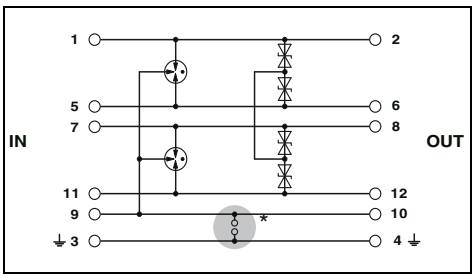
SSA 3-6	2839295	10
SSA 5-10	2839512	10

Digital signals and switching contacts
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 checked with CHECKMASTER

*** Note:**
Various grounding options for the base elements:
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.

**4-wire, floating, impedance-free,
e.g., for temperature measurement**



Technical data

Electrical data		... 5DC	... 12DC	... 24DC	... 24AC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
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) µs		2.5 kA	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs	Core-Core / Core-Ground	720 A / 10 kA	690 A / 10 kA	365 A / 10 kA	187 A / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA	20 kA	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs		10 kA	10 kA	10 kA	10 kA
Output voltage limitation at 1 kV/µs					
	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					
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm			
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12			
Temperature range		-40 °C ... 85 °C			
Test standards		IEC 61643-21			

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
	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 (⏚) and 9/10		**PT 4-BE**	2839402	10
Gas-filled surge arrester between 3/4 (⏚) and 9/10		**PT 4+F-BE**	2839415	10

Accessories

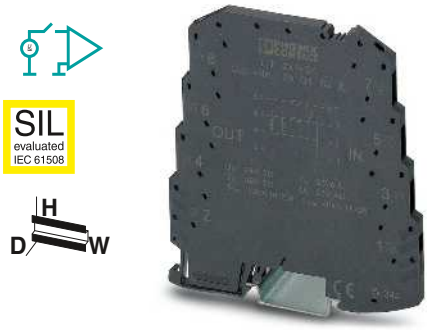
Shield fast connection				
For Ø 3-6 mm		**SSA 3-6**	2839295	10
For Ø 5-10 mm		**SSA 5-10**	2839512	10

Digital signals and switching contacts
LINETRAB LIT

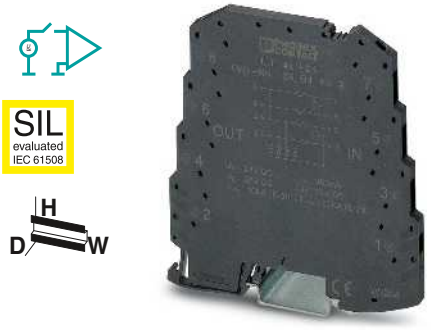
– Protection of up to four signal wires with an overall width of 6.2 mm
– Can be used in binary, analog, and intrinsically safe circuits

Notes:

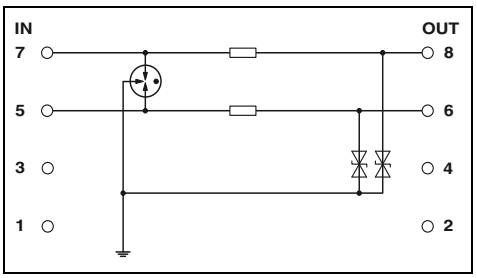
For approvals and dimensional drawing, visit phoenixcontact.net/products

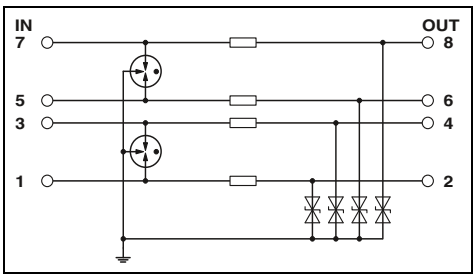


Protection for two conductors with a common reference potential



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) µs	500 A
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Max. discharge current $I_{max.}$ (8/20) µs	20 kA (Total)
Protection level U_p	
Core-Core / Core-Ground	- / ≤ 60 V (C1 - 500 V / 250 A)
Cut-off frequency fg (3 dB)	
Asymmetrical in the 50 Ω system	typ. 6 MHz
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	6.2 mm / 93 mm / 102.5 mm
Connection data solid/stranded/AWG	0.14...2.5 mm² / 0.2...2.5 mm² / 26 ... 12
Temperature range	-40 °C ... 80 °C
Test standards	IEC 61643-21 / DIN 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

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) µs	500 A
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA
Protection level U_p	
Core-Core / Core-Ground	- / ≤ 60 V (C1 - 500 V / 250 A)
Cut-off frequency fg (3 dB)	
Asymmetrical in the 50 Ω system	typ. 6 MHz
Resistance per path	3.3 Ω
General data	
Dimensions W/H/D	6.2 mm / 93 mm / 102.5 mm
Connection data solid/stranded/AWG	0.14...2.5 mm² / 0.2...2.5 mm² / 26 ... 12
Temperature range	-40 °C ... 80 °C
Test standards	IEC 61643-21 / DIN EN 61643-21

Ordering data

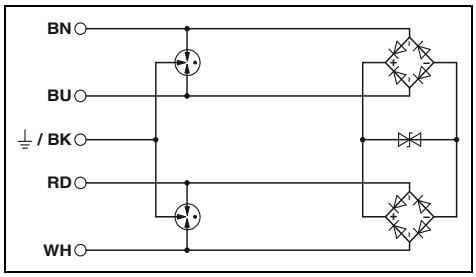
Type	Order No.	Pcs./Pkt.
LIT 4X1-24	2804649	10

Digital signals and switching contacts
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-wire with common reference potential, intrinsically safe, encapsulated, without decoupling resistance

Ex:



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) µs	1 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	260 A / 10 kA
Maximum permitted short-circuit current at installation location	1 A (non-Ex)
Total discharge current I_{total} (8/20) µs	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/µs	
Core-Core / Core-Ground	≤ 60 V / -
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/A2 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-26 / EN 60079-31
Safety data	
EC-type examination certificate according to ATEX	KEMA 09ATEX0028 X
Identification according to ATEX	II 1 G Ex ia IIC T4...T6 II 2 G Ex d IIC T4...T6
Maximum internal capacitance C_i	1.65 nF
Maximum internal inductance L_i	1 µH
Maximum input current I_i	500 mA (T4 / ≤ 75 °C)
Maximum input voltage U_i	36 V DC
Maximum input power P_i	3 W

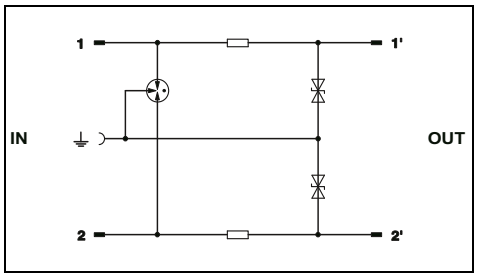
Ordering data

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

Digital signals and switching contacts
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-wire, with common reference potential



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) µs	1 kA	1 kA	1 kA
Nominal discharge current I_n (8/20) µs			
Core-Core / Core-Ground	- / 5 kA	- / 5 kA	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA	10 kA	10 kA
Output voltage limitation at 1 kV/µs			
Core-Core	-	-	-
Core-Ground	≤ 22 V	≤ 45 V	≤ 160 V
Cut-off frequency fg (3 dB)			
Symmetrical/asymmetrical in the 100 Ω system	- / 1.5 MHz	- / 2.7 MHz	- / typ. 2 MHz
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, 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

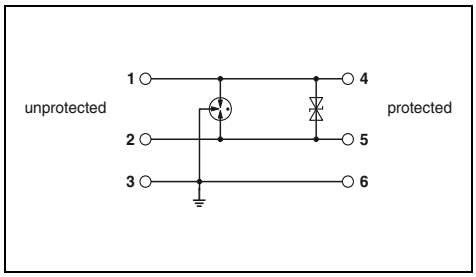
Magazine, with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	**CTM 10-MAG**	**2838610**	5
Grounding connector	**CTM EST**	**2838649**	10
Screw terminal block, with disconnect contacts for accommodating the CT and CTM protective plugs, design: 10 double wires	**CT-TERMIBLOCK 10 DA**	**0441711**	10

Resistance-dependent measurements TERMITRAB complete

new

- Overall width of just 6.2 mm
- With Push-in or screw connection technology

2-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
Rated current	450 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	0.5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 45 V (C3 - 25 A)
Core-Ground	≤ 600 V (C3 - 25 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 1.1 MHz
Resistance per path	100 mΩ
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °C
Test standards	IEC 61643-21 / EN 61643-21

Ordering data

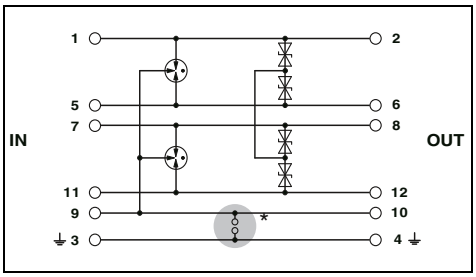
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology				
	24 V DC	**TTC-6-2-24DC-UT**	2906800	1
TERMITRAB complete, with Push-in connection technology				
	24 V DC	**TTC-6-2-24DC-PT**	2906806	1

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 checked with CHECKMASTER

*** Note:**
Various grounding options for the base elements:
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.

4-wire, floating, impedance-free, e.g., for temperature measurement



Technical data

Electrical data		... 5DC	... 12DC	... 24DC	... 24AC
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
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
Pulse discharge current I_{imp} (10/350) µs		2.5 kA	2.5 kA	2.5 kA	2.5 kA
Rated current		2 A (80 °C)	2 A (80 °C)	2 A (80 °C)	2 A AC (80 °C)
Nominal discharge current I_n (8/20) µs					
	Core-Core / Core-Ground	720 A / 10 kA	690 A / 10 kA	365 A / 10 kA	187 A / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA	20 kA	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs		10 kA	10 kA	10 kA	10 kA
Output voltage limitation at 1 kV/µs					
	Core-Core	≤ 10 V	≤ 18 V	≤ 40 V	≤ 75 V
	Core-Ground	≤ 450 V	≤ 450 V	≤ 450 V (with PT 4-BE)	-

General data		
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm
Connection data	Solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range		-40 °C ... 85 °C
Test standards		IEC 61643-21 / DIN EN 61643-21 / UL 497B

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
	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 (⏚) and 9/10	110 V AC	**PT 4-BE**	2839402	10
Gas-filled surge arrester between 3/4 (⏚) and 9/10	24 V AC	**PT 4+F-BE**	2839415	10

Accessories

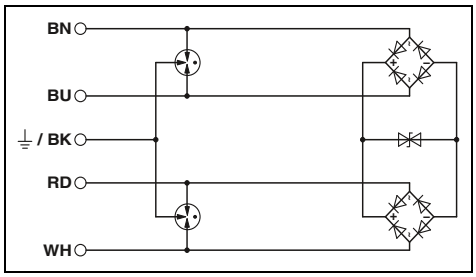
Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10

Resistance-dependent measurements SURGETRAB

- 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-wire with common reference potential, intrinsically safe, encapsulated, without decoupling resistance

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) µs	1 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	260 A / 10 kA
Maximum permitted short-circuit current at installation location	1 A (non-Ex)
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	-
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/µs	
Core-Core / Core-Ground	≤ 60 V / -
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/A2 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-26 / EN 60079-31
Safety data	
EC-type examination certificate according to ATEX	KEMA 09ATEX0028 X
Identification according to ATEX	II 1 G Ex ia IIC T4...T6 II 2 G Ex d IIC T4...T6
Maximum internal capacitance C_i	1.65 nF
Maximum internal inductance L_i	1 µH
Maximum input current I_i	500 mA (T4 / ≤ 75 °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

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

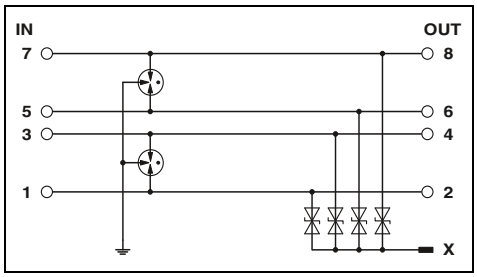
Notes:

For approvals and dimensional drawing, visit phoenixcontact.net/products

For additional safety data, visit phoenixcontact.net/products

4-wire, floating, impedance-free, e.g., for temperature measurement

Ex:



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	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) µs	500 A	500 A
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	350 A / 5 kA	250 A / 5 kA
Total discharge current I_{total} (8/20) µs	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	10 kA
Protection level U_p		
Core-Core / Core-Ground	≤ 50 V (C3 - 10 A) / ≤ 650 V (C2 - 10 kV / 5 kA)	≤ 60 V (C3 - 10 A) / ≤ 650 V (C2 - 10 kV / 5 kA)
Cut-off frequency fg (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 mm / 102.5 mm	
Connection data solid/stranded/AWG	0.14...2.5 mm² / 0.2...2.5 mm² / 26 ... 12	
Temperature range	-40 °C ... 80 °C	
Test standards	EN 61643-21/A2 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11	
Safety data		
EC-type examination certificate according to ATEX	KEMA 09ATEX0051 X	KEMA 09ATEX0051 X
Identification according to ATEX	Ex II 1 G Ex ia IIC T4...T6 Ex II 1 D Ex iaD 20 T85°C...135°C	Ex II 1 G Ex ia IIC T4...T6 Ex II 1 D Ex iaD 20 T85°C...135°C
Maximum internal capacitance C_i	6 nF	2.5 nF
Maximum internal inductance L_i	< 1 µH	< 1 µH
Maximum input current I_i	500 mA (T4 / -40...+80°C)	500 mA (T4 / -40...+80°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			
	ME 6,2 TBUS-2 1,5/5-ST-3,81KMGY	2969401	10

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

new

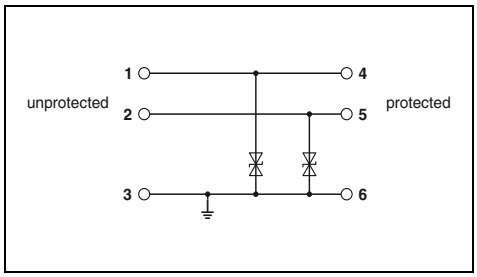
SIL evaluated IEC 61508

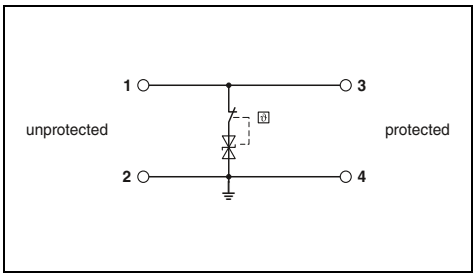
2-conductor with common reference potential, e.g., for binary signals

new

SIL evaluated IEC 61508

1-conductor with grounded reference potential





Technical data

Electrical data	... 24DC
IEC test classification/EN type	C1 / C3
Maximum continuous operating voltage U_C	30 V DC
Rated current	6 A (40°C)
Protection level U_p	
Core-Ground	≤ 45 V (C3 - 25 A)
Core-GND	-
Cut-off frequency fg (3 dB)	
Asymmetrical in the 150 Ω system	typ. 960 kHz
Resistance per path	100 mΩ
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 69.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °C
Test standards	IEC 61643-21 / EN 61643-21

Technical data

Electrical data	... 12DC	... 24DC	... 48DC	... 60DC
IEC test classification/EN type	C1 / C3	C3	C3	C3
Maximum continuous operating voltage U_C	15 V DC	30 V DC	53 V DC	75 V DC
Rated current	10 A (60°C)	10 A (60°C)	10 A (60°C)	10 A (60°C)
Protection level U_p				
Core-Ground	≤ 22 V (C3 - 25 A)	≤ 50 V (C3 - 25 A)	≤ 80 V (C3 - 18 A)	≤ 110 V (C3 - 12 A)
Core-GND	-	-	-	-
Cut-off frequency fg (3 dB)				
Asymmetrical in the 150 Ω system	typ. 1.1 MHz	typ. 1.7 MHz	typ. 3.5 MHz	typ. 4 MHz
Resistance per path	100 mΩ	100 mΩ	100 mΩ	100 mΩ
General data				
Dimensions W/H/D	6.2 mm / 92 mm / 69.5 mm			
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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-6-2XTVSD-24DC-PT**	2906808	1
TERMITRAB complete, with screw connection technology				
	12 V DC			
	24 V DC			
	48 V DC			
	60 V DC			
TERMITRAB complete, with Push-in 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-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
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

Accessories

End cover			
Remote signaling set			
Screw connection technology			
Push-in connection technology			

Accessories

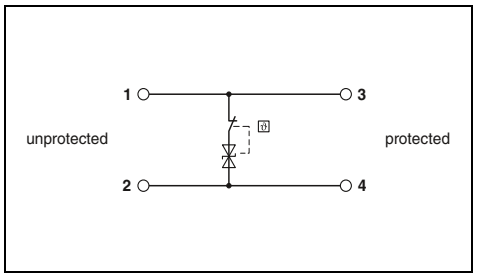
TTC-6-LCP	2908729	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

new

SIL
evaluated
IEC 61508

H
D W

2-conductor, floating



Technical data

... 24DC	... 48DC	... 60DC
C3	C3	C3
30 V DC	53 V DC	75 V DC
10 A (60°C)	10 A (60°C)	10 A (60°C)
-	-	-
≤ 50 V (C3 - 25 A)	≤ 80 V (C3 - 18 A)	≤ 110 V (C3 - 12 A)
-	-	-
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-UT-I	2906834	1
TTC-6-TVSD-D-48DC-UT-I	2906835	1
TTC-6-TVSD-D-60DC-UT-I	2906836	1
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

Accessories

TTC-6-LCP	2908729	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

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

new

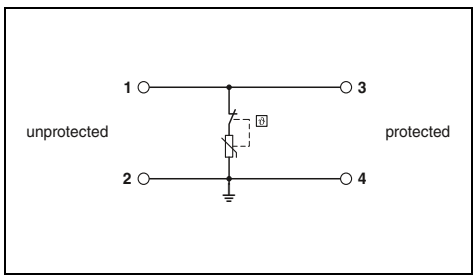
SIL evaluated IEC 61508

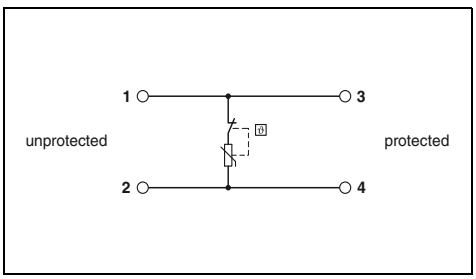
1-conductor with grounded reference potential

new

SIL evaluated IEC 61508

2-conductor, floating





Technical data

Electrical data	... 24DC	... 48DC	... 60DC	... 120AC	... 24DC
IEC test classification/EN type	C1 / C2 / C3	C1 / C2 / C3	C1 / C2 / C3	C1 / C2 / C3	C1 / C2 / C3
Maximum continuous operating voltage U_C	30 V DC	60 V DC	75 V DC	/ 150 V AC	30 V DC
Rated current	10 A (60°C)	10 A (60°C)	10 A (60°C)	10 A (60°C)	10 A (60°C)
Nominal discharge current I_n (8/20) µs					
Core-Ground / Core-GND	2 kA / -	2 kA / -	2 kA / -	2.5 kA / -	- / 2 kA
Protection level U_p					
Core-Ground	≤ 80 V (C3 - 25 A)	≤ 150 V (C3 - 25 A)	≤ 190 V (C3 - 25 A)	≤ 380 V (C3 - 25 A)	-
Core-GND	-	-	-	-	≤ 80 V (C3 - 25 A)
Cut-off frequency fg (3 dB)					
Asymmetrical in the 150 Ω system	typ. 200 kHz	typ. 650 kHz	typ. 650 kHz	typ. 1 MHz	-
Resistance per path	100 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ
General data					
Dimensions W/H/D	6.2 mm / 92 mm / 69.5 mm				6.2 mm / 92 mm / 69.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12				0.2...4 mm² / 0.2...2.5 mm² / 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.	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology							
	24 V DC	**TTC-6-MOV-C-24DC-UT-I**	2906837	1	**TTC-6-MOV-D-24DC-UT-I**	2906841	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			
TERMITRAB complete, with Push-in connection technology							
	24 V DC	**TTC-6-MOV-C-24DC-PT-I**	2906854	1	**TTC-6-MOV-D-24DC-PT-I**	2906859	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			

Accessories

End cover							
		TTC-6-LCP	2908729	1	**TTC-6-LCP**	2908729	1
Remote signaling set							
Screw connection technology		**TTC-6-FMRS-UT**	2907810	1	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology		**TTC-6-FMRS-PT**	2907811	1	**TTC-6-FMRS-PT**	2907811	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

new

SIL evaluated IEC 61508

H D W

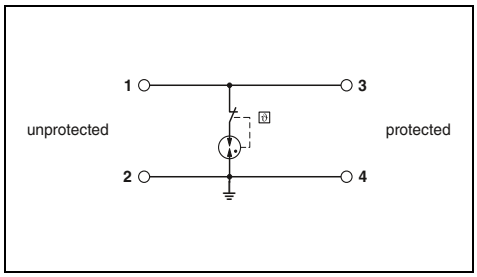
1-conductor with grounded reference potential

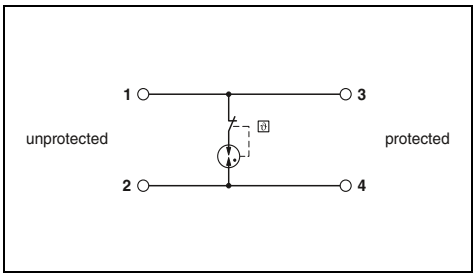
new

SIL evaluated IEC 61508

H D W

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	- / 36 V AC	- / 130 V AC
Rated current	2 A (60°C)	2 A (60°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs		
Core-Ground / Core-GND	5 kA / -	5 kA / -
Protection level U_p		
Core-Ground	≤ 900 V (C3 - 100 A)	≤ 900 V (C3 - 100 A)
Core-GND	-	-
Cut-off frequency fg (3 dB)		
Asymmetrical in the 150 Ω system	typ. 25 MHz	typ. 25 MHz
Resistance per path	100 mΩ	100 mΩ
General data		
Dimensions W/H/D	6.2 mm / 92 mm / 69.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
	24 V AC	**TTC-6-GDT-C-24AC-UT-I**	2906842	1
	60 V AC			
	110 V AC	**TTC-6-GDT-C-110AC-UT-I**	2906844	1
TERMITRAB complete, with Push-in connection technology				
	24 V AC	**TTC-6-GDT-C-24AC-PT-I**	2906860	1
	60 V AC			
	110 V AC	**TTC-6-GDT-C-110AC-PT-I**	2906861	1

Accessories

End cover			
TTC-6-LCP	2908729	1	
Remote signaling set			
Screw connection technology	**TTC-6-FMRS-UT**	2907810	1
Push-in connection technology	**TTC-6-FMRS-PT**	2907811	1

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	- / 30 V AC	- / 75 V AC
Rated current	2 A (60°C)	2 A (60°C)
Pulse discharge current I_{imp} (10/350) µs	-	-
Nominal discharge current I_n (8/20) µs		
Core-Ground / Core-GND	- / 5 kA	- / 5 kA
Protection level U_p		
Core-Ground	-	-
Core-GND	≤ 800 V (C3 - 25 A)	≤ 800 V (C3 - 25 A)
Cut-off frequency fg (3 dB)		
Asymmetrical in the 150 Ω system	-	-
Resistance per path	100 mΩ	100 mΩ
General data		
Dimensions W/H/D	6.2 mm / 92 mm / 69.5 mm	
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12	
Temperature range	-40 °C ... 85 °C	
Test standards	IEC 61643-21 / EN 61643-21	

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-GDT-D-24AC-UT-I	2906845	1
TTC-6-GDT-D-60AC-UT-I	2906846	1
TTC-6-GDT-D-24AC-PT-I	2906862	1
TTC-6-GDT-D-60AC-PT-I	2906863	1

Accessories

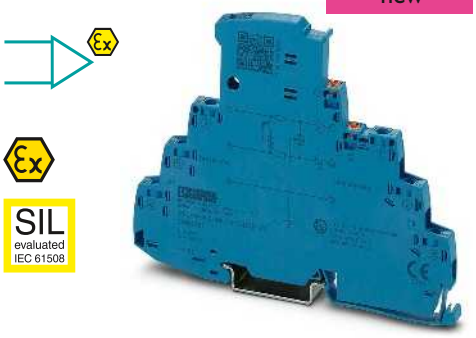
TTC-6-LCP	2908729	1
TTC-6-FMRS-UT	2907810	1
TTC-6-FMRS-PT	2907811	1

Surge protection for MCR technology

Potentially explosive applications TERMITRAB complete

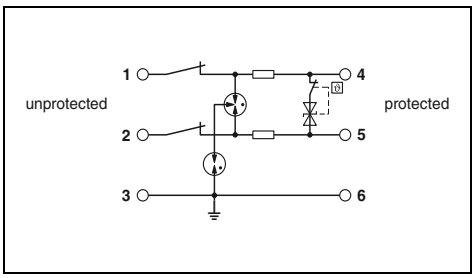
- One-piece or pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- With screw connection technology
- Integrated mechanical status indicator
- With knife disconnection
- Impedance-neutral insertion and removal
- Coded connector versions
- Plugs can be tested with CHECKMASTER 2

new

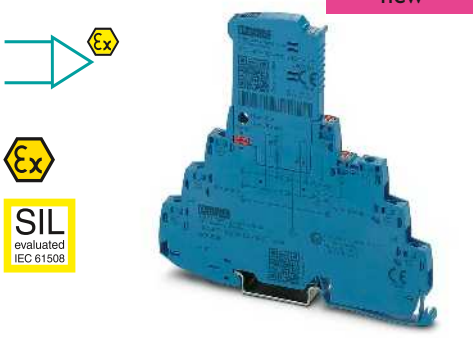


Double wire (loop), floating, intrinsically safe, one-piece e.g., for 4 ... 20 mA current loop

Ex:

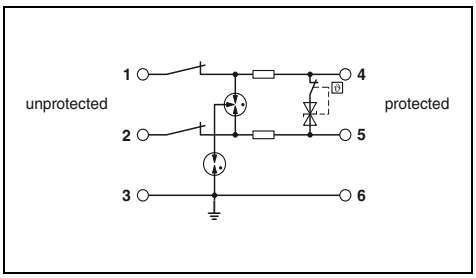


new



Double wire (loop), floating, intrinsically safe, pluggable, e.g., for 4 ... 20 mA current loop

Ex:



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) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 55 V (C3 - 100 A)
Core-Ground	≤ 1.4 kV (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 940 kHz
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology				
	24 V DC	**TTC-6-1X2-M-EX-24DC-UT-I**	2906820	1

Technical data

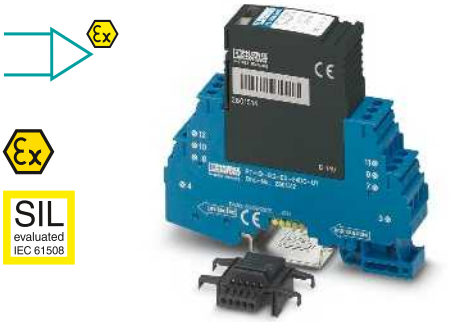
Electrical data	... 24DC
IEC test classification/EN type	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	30 V DC
Rated current	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	≤ 55 V (C3 - 100 A)
Core-Ground	≤ 1.4 kV (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 940 kHz
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-1X2-M-EX-24DC-UT-I	2906824	1

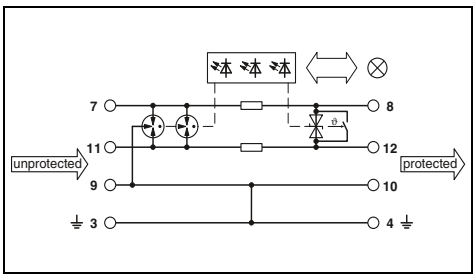
Potentially explosive applications PLUGTRAB PT-IQ

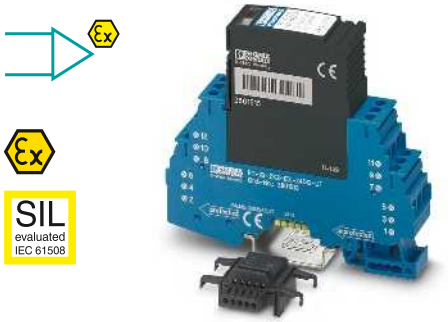
- Tailored to the special requirements of intrinsically safe circuits
- Multi-stage status monitoring
- Group message via supply and remote signaling module
- Multi-stage, floating remote signaling
- System supplied via DIN rail bus
- Up to 10 protection modules per supply module
- Maximum ease of maintenance 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

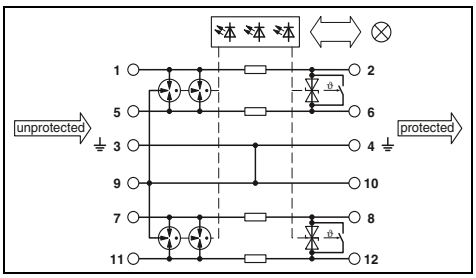
Ex:





2 double wires (loops), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

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) µs	2 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA
Protection level U_p	
Core-Core	≤ 50 V (C3 - 25 A)
Core-Ground	≤ 1.3 kV (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 1.1 MHz
Resistance per path	1.2 Ω
General data	
Dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
MCR-PLUGTRAB, with screw connection technology	24 V DC	**PT-IQ-1X2-EX-24DC-UT**	2801512	1

Accessories

Replacement plug 24 V DC	**PT-IQ-1X2-EX-24DC-P**	2801514	1
PLUGTRAB, supply and remote signaling module Screw connection technology	**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) µs	2 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA
Protection level U_p	
Core-Core	≤ 50 V (C3 - 25 A)
Core-Ground	≤ 1.3 kV (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	typ. 1.1 MHz
Resistance per path	1.2 Ω
General data	
Dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-2X2-EX-24DC-UT	2801513	1

Accessories

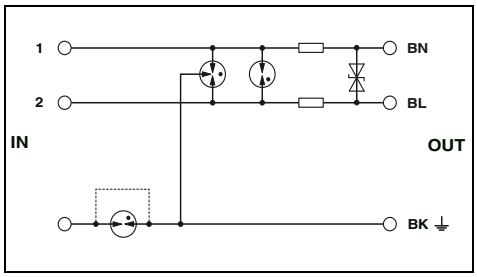
PT-IQ-2X2-EX-24DC-P	2801515	1
PT-IQ-PTB-UT	2800768	1

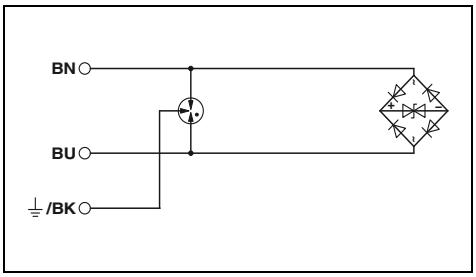
Potentially explosive applications SURGETRAB S-PT

– 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) µs	1 kA	
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	10 kA / 10 kA	
Maximum permitted short-circuit current at installation location	350 mA	
Total discharge current I_{total} (8/20) µs	-	
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	
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/µs		
Core-Core / Core-Ground	≤ 50 V / ≤ 1.4 kV (Direct grounding)	
Resistance per path	2.2 Ω	
General data		
Dimensions W/H/D	34 mm / 34 mm / 137 mm	
Temperature range	-40 °C ... 50 °C	
Test standards	EN 61643-21/A2 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11	
Safety data		
EC-type examination certificate according to ATEX	KEMA 06ATEX0002	
Identification according to ATEX	Ex II 1G Ex ia IIC T4...T6 Ga	
Maximum internal capacitance C_i	2 nF	
Maximum internal inductance L_i	1 µH	
Maximum input current I_i	350 mA (T4,T5,T6/≤ 50°C)	
Maximum input voltage U_i	30 V	
Maximum input power P_i	3 W	

Technical data

	... 24DC	... 48DC
Electrical data		
IEC test classification/EN type	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	36 V DC / 25 V AC	53 V DC / 37 V AC
Rated current	-	-
Pulse discharge current I_{imp} (10/350) µs	1 kA	1 kA
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	260 A / 10 kA	170 A / 10 kA
Maximum permitted short-circuit current at installation location	1 A (non-Ex)	1 A (non-Ex)
Total discharge current I_{total} (8/20) µs	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	-	-
Protection level U_p		
Core-Core	≤ 65 V (C3 - 10 A)	≤ 90 V (C3 - 10 A)
Core-Ground	≤ 1.1 kV (C3 - 100 A)	≤ 1.1 kV (C3 - 100 A)
Output voltage limitation at 1 kV/µs		
Core-Core / Core-Ground	≤ 60 V / -	≤ 80 V / -
Resistance per path	-	-
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/A2 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-26 / EN 60079-31	
Safety data		
EC-type examination certificate according to ATEX	KEMA 09ATEX0028 X	KEMA 09ATEX0028 X
Identification according to ATEX	Ex II 1 G Ex ia IIC T4...T6 Ex II 2 G Ex d IIC T4...T6	Ex II 1 G Ex ia IIC T4...T6 Ex II 2 G Ex d IIC T4...T6
Maximum internal capacitance C_i	1.65 nF	1.14 nF
Maximum internal inductance L_i	1 µH	1 µH
Maximum input current I_i	500 mA (T4 / ≤ 75 °C)	500 mA (T4 / ≤ 75 °C)
Maximum input voltage U_i	36 V DC	53 V DC
Maximum input power P_i	3 W	3 W

Ordering data

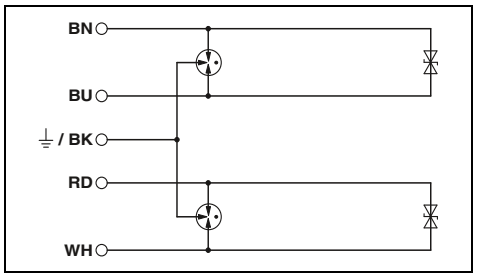
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SURGETRAB protective adapter for installation on measuring sensors for Ex protection zones				
Outer thread: M20 x 1.5	24 V DC	**S-PT-EX(I)-24DC**	2880671	1
Outer thread: 1/2" 14 NPT	24 V DC	**S-PT-EX(I)-24DC-1/2"**	2882572	1
Outer thread: 3/4" 14 NPT	24 V DC	**S-PT-EX(I)-24DC-3/4"**	2882585	1
Outer thread: M20 x 1.5	48 V DC			
Outer thread: 1/2" 14 NPT	48 V DC			

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

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 / 10 kA	170 A / 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/A2 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-26 / EN 60079-31

KEMA 09ATEX0028 X	KEMA 09ATEX0028 X
II 1 G Ex ia IIC T4...T6	II 1 G Ex ia IIC T4...T6
II 2 G Ex d IIC T4...T6	II 2 G Ex d IIC T4...T6
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

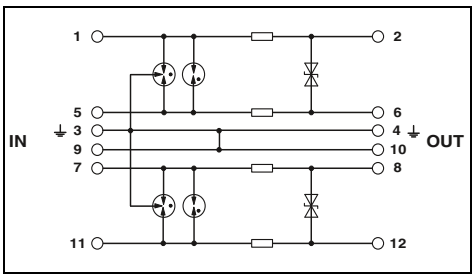
Ordering data

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

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 checked with CHECKMASTER

2 double wires (loops), intrinsically safe, e.g., for 4 ... 20 mA current loops



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	325 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	2 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	20 kA (in total)
Protection level U_p	
Core-Core	≤ 50 V (C3 - 25 A)
Core-Ground	≤ 1 kV (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/µs	
Core-Core / Core-Ground	≤ 45 V / ≤ 1 kV
Cut-off frequency fg (3 dB)	
Symmetrical in the 50 Ω system	typ. 4.5 MHz
Resistance per path	2.2 Ω
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °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 according to ATEX	KEMA 00ATEX1099 X
Identification according to ATEX	Ex II 1G Ex ia IIC T4...T6 Ga Ex II 1D Ex ia IIIC T135°C...T85°C Da
Maximum internal capacitance C_i	1.3 nF
Maximum internal inductance L_i	1 µH
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

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element	24 V DC	**PT 2XEX(I)-24DC-ST**	2838225	10
PLUGTRAB base element, for mounting on NS 35	24 V DC	**PT 2XEX(I)-BE**	2839279	10

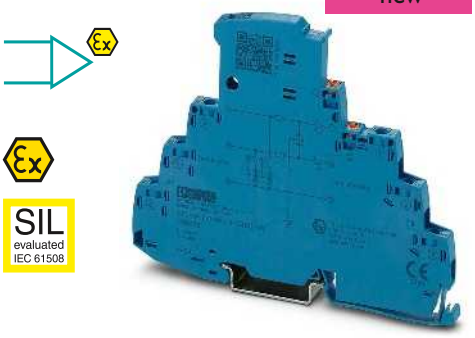
Accessories

Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10

Potentially explosive applications TERMITRAB complete

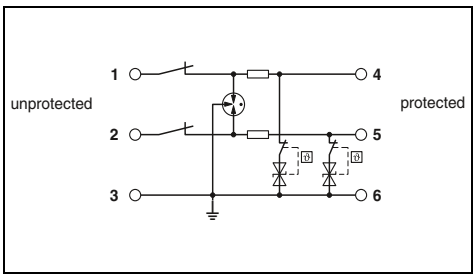
- One-piece or pluggable surge protection
- Tailored to the special requirements of intrinsically safe circuits
- Overall width of just 6.2 mm
- With screw connection technology
- Integrated mechanical status indicator
- With knife disconnection
- Impedance-neutral insertion and removal
- Coded connector versions
- Plugs can be tested with CHECKMASTER 2

new

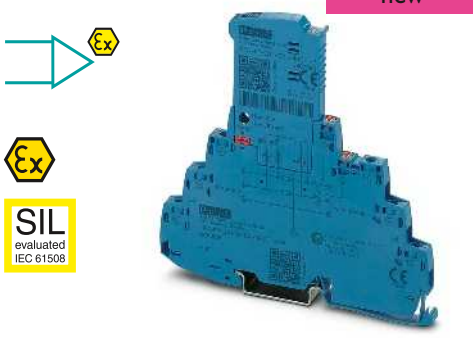


2-conductor with common reference potential, intrinsically safe, one-piece, e.g., for binary signals

Ex:

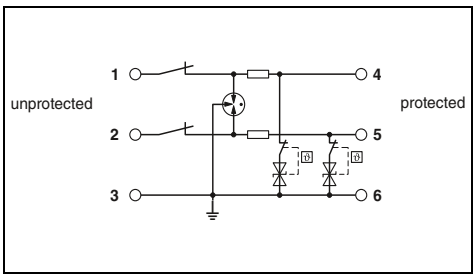


new



2-conductor with common reference potential, intrinsically safe, pluggable, e.g., for binary signals

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	600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	-
Core-Ground	≤ 50 V (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	-
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

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) µs	0.5 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA
Protection level U_p	
Core-Core	-
Core-Ground	≤ 50 V (C3 - 100 A)
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	-
Resistance per path	1.65 Ω
General data	
Dimensions W/H/D	6.2 mm / 105.8 mm / 100 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 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

Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
TERMITRAB complete, with screw connection technology				
	24 V DC	**TTC-6-2X1-M-EX-24DC-UT-I**	2906821	1

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-2X1-M-EX-24DC-UT-I	2906825	1

Potentially explosive applications PLUGTRAB PT

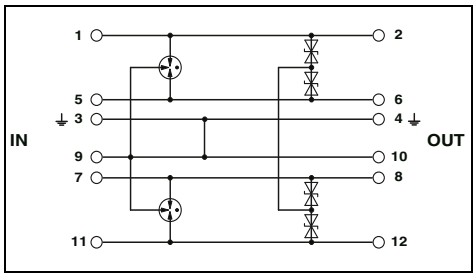
- Tailored to the special requirements of intrinsically safe circuits
- Consistently pluggable signal circuit protection
- Maximum ease of maintenance thanks to the two-piece design
- Base element remains an integral part of the installation
- Impedance-neutral disconnection of plug for test and maintenance purposes
- Plugs can be checked with CHECKMASTER

Notes:

For approvals and dimensional drawing, visit phoenixcontact.net/products

4-wire, 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 / 21 V AC
Rated current	500 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs	1 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	308 A / 10 kA
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	20 kA (in total)
Protection level U_p	
Core-Core	≤ 50 V (C3 - 25 A)
Core-Ground	≤ 1 kV (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/µs	
Core-Core / Core-Ground	≤ 45 V / ≤ 1 kV
Cut-off frequency fg (3 dB)	
Symmetrical in the 50 Ω system	typ. 7 MHz
Resistance per path	0 Ω
General data	
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °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 according to ATEX	KEMA 00ATEX1099 X
Identification according to ATEX	Ex II 1G Ex ia IIC T4...T6 Ga Ex II 1D Ex ia IIIC T135°C...T85°C Da
Maximum internal capacitance C_i	1.1 nF
Maximum internal inductance L_i	1 µH
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

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for plugging into the PT base element	24 V DC	**PT 4-EX(I)-24DC-ST**	2839253	10
PLUGTRAB base element, for mounting on NS 35	24 V DC	**PT 4-EX(I)-BE**	2839486	10

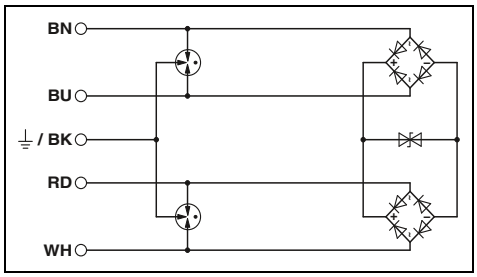
Accessories

Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	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-wire with common reference potential, intrinsically safe, encapsulated, without decoupling resistance



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) µs	1 kA
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	260 A / 10 kA
Maximum permitted short-circuit current at installation location	1 A (non-Ex)
Total discharge current I_{total} (8/20) µs	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	-
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/µs	
Core-Core / Core-Ground	≤ 60 V / -
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/A2 / EN 60079-0 / EN 60079-1 / EN 60079-11 / EN 60079-26 / EN 60079-31
Safety data	
EC-type examination certificate according to ATEX	KEMA 09ATEX0028 X
Identification according to ATEX	Ex II 1 G Ex ia IIC T4...T6 Ex II 2 G Ex d IIC T4...T6
Maximum internal capacitance C_i	1.65 nF
Maximum internal inductance L_i	1 µH
Maximum input current I_i	500 mA (T4 / ≤ 75 °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.

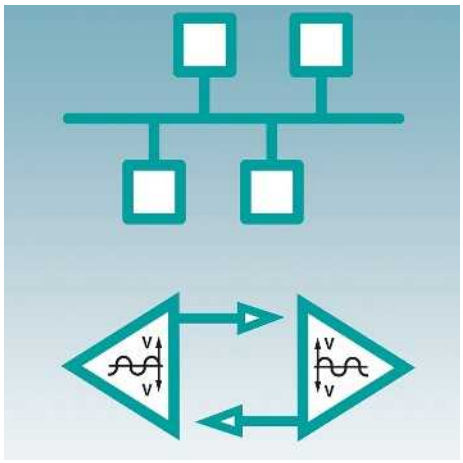
Your web code: #0145

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 E_a) 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 marshalling 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

Selection guide

Explanation of the IEC categories		
LPZ zone	Test category for SPD corresponds to IEC 61643-21	Test class for SPD corresponds to IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

	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

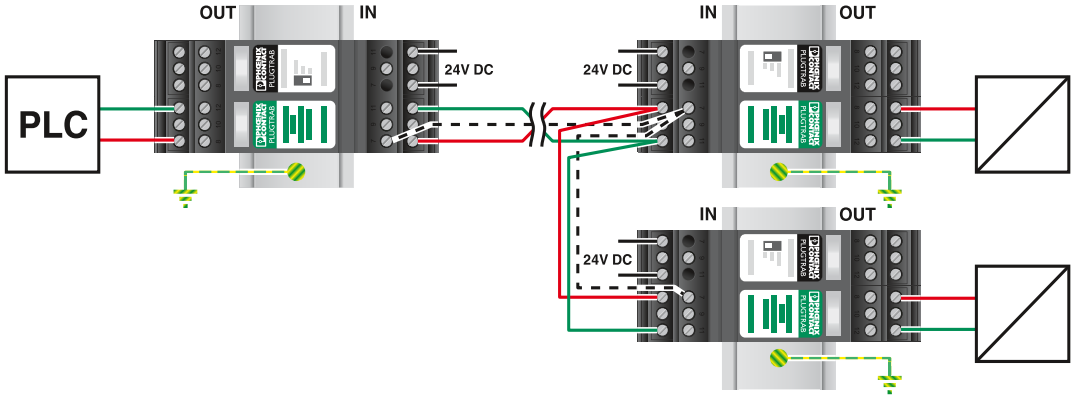
Note

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

Technology	Interface	Mounting / 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 & S_{2M} bus)		LSA
	ISDN (U_{k0})		/
			LSA
			/
	SHDSL		/

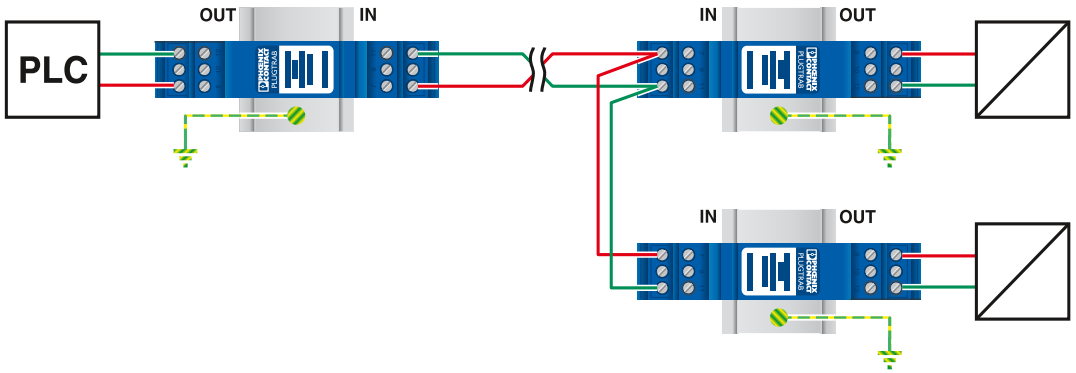
IEC category	Protected wires	Surge protective device (SPD)	Order No.	Page
D1/C2/C1	3	PT-IQ-3-HF-12DC-UT	2800786	153
T3	2	PLT-SEC-T3-24-FM	2905223	71
D1/C2/C1	3	PT-IQ-3-HF-12DC-UT	2800786	153
T3	2	PLT-SEC-T3-24-FM	2905223	71
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	142
C2/C1	24 x 8	D-LAN-19"-24	2838791	143
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	142
D1/C2/C1	4	PT 2X2-FF-ST + PT 4-BE	2800755 + 2839402	161
D1/C2/C1	2	TTC-6P-1X2-M-EX-24DC-UT-I	2906824	128
T3	2	PLT-SEC-T3-24-FM	2905223	71
D1/C2/C1	4	PT-IQ-2X2-24DC-PT	2801263	97
D1/C2/C1	5	PT-IQ-4X1-24DC-PT	2801271	111
D1/C2/C1	5	DT-UFB-IB-RBI	2800055	159
	5	DT-UFB-IB-RB0	2800056	159
D1/C2/C1	2	PT-IQ-1X2-48DC-PT	2801257	96
D1/C2/C1	3	TTC-6P-3-HF-M-12DC-PT-I	2906756	151
		PT-IQ-3-PB-PT	2801286	146
C1	2	D-UFB-PB	2880642	155
D1/C2/C1	2	TTC-6P-3-HF-F-M-EX-24DC-UT-I	2906828	157
	4	PT 4-EX(I)-24DC-ST + PT 4-EX(I)-BE	2839253 + 2839486	134
D1/C2/C1	8	DT-LAN-CAT.6+	2881007	142
D1/C2/C1	5	PT-IQ-5-HF+F-12DC-PT	2801295	147
D1/C2/C1	3	TTC-6P-3-HF-F-M-12DC-PT-I	2906796	151
	5	PT-IQ-5-HF+F-12DC-PT	2801295	147
D1/C2/C1	5	DT-UFB-485/BS	2920612	147
C2/C1	9	DT-UFB-V24/S-9-SB	2803069	144
D1/C2/C1	3	TTC-6P-3-HF-F-M-12DC-PT-I	2906796	151
D1/C2/C1	4	PT-IQ-2X2-24DC-PT	2801263	97
D1/C2/C1	4	DT-TELE-RJ45	2882925	162
D1/C2/C1	2	PT-IQ-1X2-TELE-PT	2801290	163
D1/C2/C1	2	CTM 1X2-110AC + CTM 10-MAG	2838539 + 2838610	166
D1/C2/C1	4	TAE-TRAB FM-NFN-AP	2749628	165
D1/C2/C1 & T3	2	MNT-TEL... / MNT-TAE	2882404 / 2882394	75
D1/C2/C1	2	C-TV-SAT	2856993	181
D1/C2/C1 & T3	2	MNT-TV-SAT D/WH	2882297	75
D1/C2/C1	2 x 2	CTM ISDN (2x) + CTM 10-MAG	2838555 + 2838610	167
D1/C2/C1	4	DT-LAN-CAT.6+	2881007	142
D1/C2/C1	4	DT-TELE-RJ45	2882925	162
D1/C2/C1	2	PT 2-TELE	2882828	164
D1/C2/C1	2	CTM 1X2-110AC + CTM 10-MAG	2838539 + 2838610	166
D1/C2/C1 & T3	2	MNT-TEL... / MNT-TAE	2882404 / 2882394	75
D1/C2/C1	4	DT-TELE-SHDSL	2801593	162

Protection of PROFIBUS DP



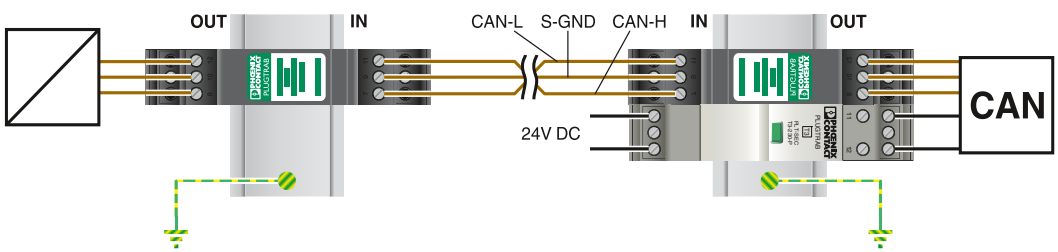
PT-IQ-PTB-PT + PT-IQ-3-PB-PT	Optional	PT 5-HF-12DC-ST + PT 2X2-BE
2800768 + 2801286		2838775 + 2839208
Page 153		Page 147

Protection of PROFIBUS PA



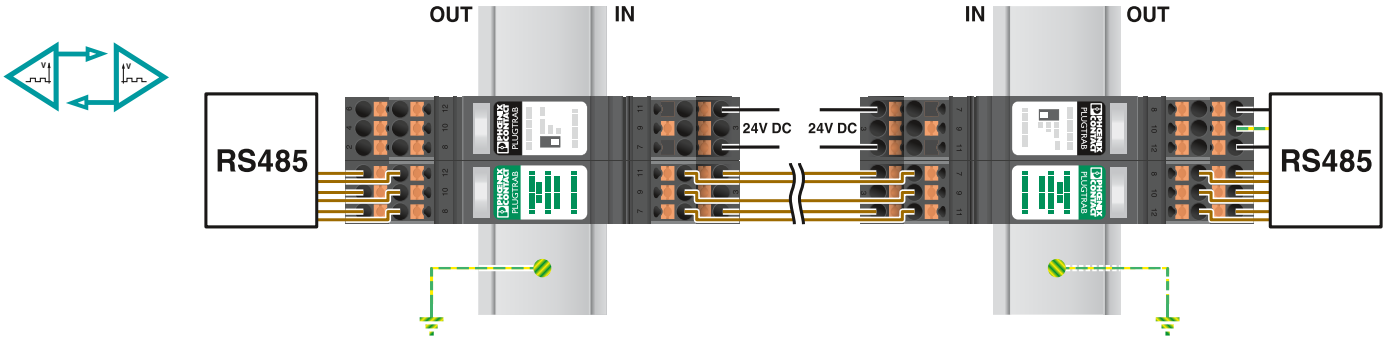
PT 2XEX(I)-24DC + PT 2XEX(I)-BE
2838225 + 2839279
Page 132

Protection of CANopen®/DeviceNet™



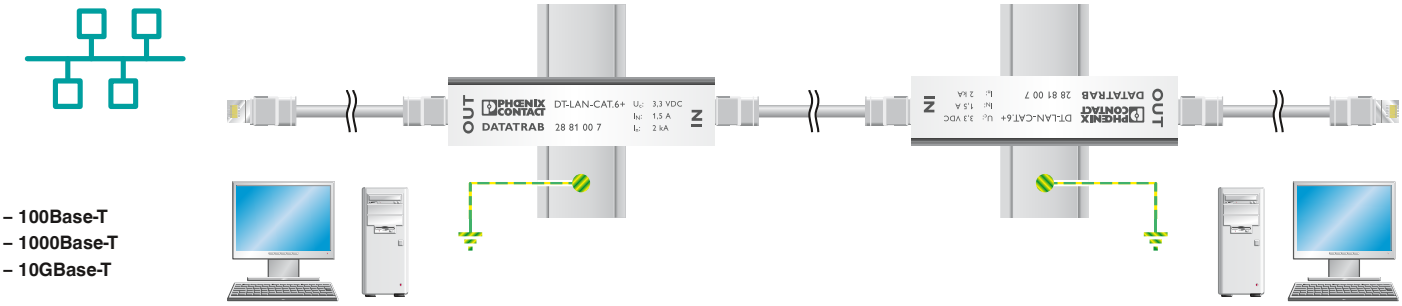
PT 3-HF-12DC-ST + PT 1X2-BE	PLT-SEC-T3-24-FM	PT 3-HF-12DC-ST + PT 1X2-BE
2858043 + 2856113	2905223	2858043 + 2856113
Page 145	Page 71	Page 145

Protection of an RS-485 interface



PT-IQ-PTB-PT + PT-IQ-5-HF+F-12DC-PT	Optional	PT 5-HF-12DC-ST + PT 2X2+F-BE
2801296 + 2801295		2838775 + 2839224
Page 147		Page 147

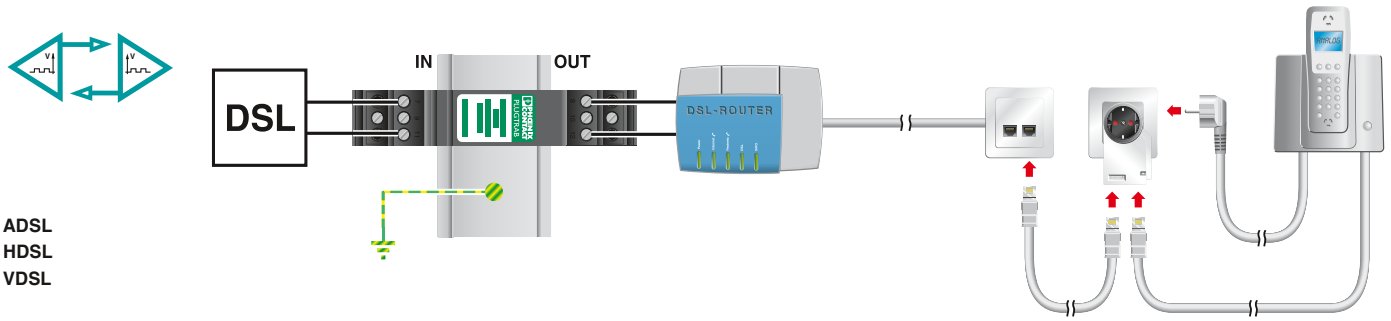
Protection of an Ethernet interface (including PoE)



- 100Base-T
- 1000Base-T
- 10GBase-T

DT-LAN-CAT.6+
2881007
Page 142

Protection of a DSL interface



- ADSL
- HDSL
- VDSL

PT 2-TELE	MNT-TAE D/WH
2882828	2882394
Page 164	Page 74

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

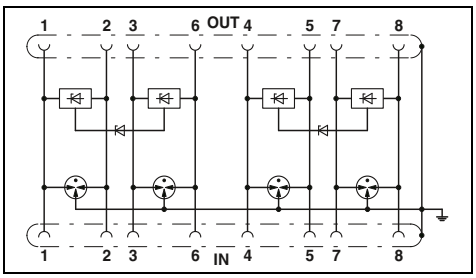
D-LAN-CAT.5-FP

– 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 S_0 protection



Technical data

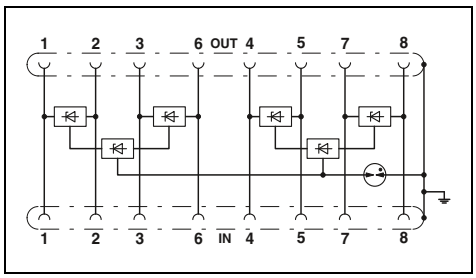
Electrical data		
IEC test classification/EN type		B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		≤ 3.3 V DC
Rated current		≤ 1.5 A (25 °C)
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	100 A / 2 kA (per signal pair)
Total discharge current I_{total} (8/20) µs		10 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 9 V (B2 - 1 kV/25 A) / ≤ 900 V (B2 - 4 kV/100 A)
Output voltage limitation at 1 kV/µs		
	Core-Core / Core-Ground	≤ 9 V / ≤ 700 V
Input attenuation aE (typical)		≤ 1 dB (up to100 MHz/direct measuring)
Cut-off frequency fg (3 dB)		
In a 100 Ω system	Symmetrical	> 500 MHz
General data		
Dimensions W/H/D		25 mm / 102 mm / 63.5 mm
Temperature range		-40 °C ... 70 °C
Connection method		RJ45
Test standards		IEC 61643-21 / EN 50173-1 / ISO/IEC 11801-Am.1

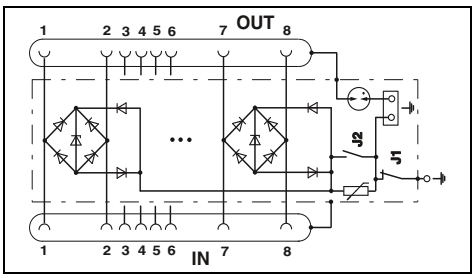
Ordering data

Description	Type	Order No.	Pcs./Pkt.
DATATRAB adapter, protective adapter to be inserted into the data line	**DT-LAN-CAT.6+**	**2881007**	1
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 sockets			
4 ports			

For LAN interfaces (Class D/CAT 5) including PoE and ISDN S_0 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	
28 mm / 110 mm / 60 mm	
-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	
483 mm / 44 mm / 160 mm	
-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

V.24/RS-232 interfaces

Protective adapter with 9-pos. D-SUB

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 checked with CHECKMASTER

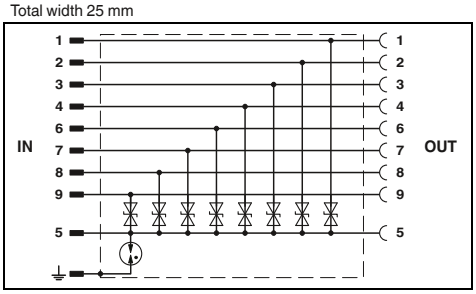
Pin assignment PT 3-HF-12DC:
– 7,11 Data lines
– 9 Signal ground (Ground)
– 3 ⏚

*** Note:PT .x.+F-BE** connections 9/10 (GND) are linked 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 line pair 2 R(A)/R(B)
– 9 Signal ground (Ground)
– 3 ⏚

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) µs		
	Core-Ground / Core-GND	≤ 250 A / ≤ 250 A
Total discharge current I_{total} (8/20) µs		5 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 55 V (C1 - 250 A) / ≤ 450 V (C1 - 250 A)
Cut-off frequency fg (3 dB)		
In a 100 Ω system	Symmetrical / Asymmetrical	typ. 2.5 MHz / typ. 1.3 MHz
In a 150 Ω system	Symmetrical / Asymmetrical	typ. 2.5 MHz / typ. 1.3 MHz
In a 100 Ω system	Symmetrical / Asymmetrical	typ. 2.5 MHz / -
In a 150 Ω system	Symmetrical / Asymmetrical	typ. 2.5 MHz / -
General data		
Dimensions W/H/D		25 mm / 108 mm / 63 mm
Temperature range		-40 °C ... 85 °C
Connection method		D-SUB-9
Test standards		DIN EN 61643-21 / IEC 61643-21

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DATATRAB adapter, protective adapter for inserting into the data line for protecting the V.24 / RS-232 interface with D-SUB-9 connector	**DT-UFB-V24/S-9-SB**	2803069	1
PLUGTRAB plug, with protective circuit for plugging into the PT base element			
PLUGTRAB base element, for mounting on NS 35			
with a gas-filled surge arrester between the 3/4 (⏚) and the 9/10 connections			
PLUGTRAB, consisting of a plug, base element, and DIN rail bus			
Screw connection technology			
Push-in connection technology			

Accessories

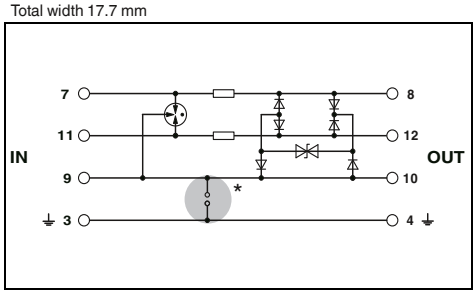
PLUGTRAB, supply and remote signaling module			
Screw connection technology			
Push-in connection technology			

Marking material

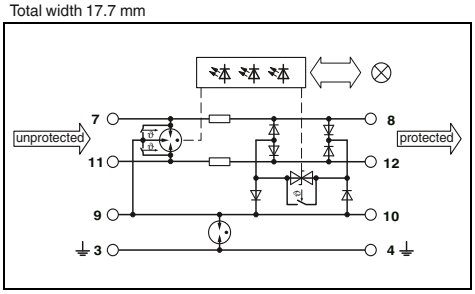
Pluggable arrester with screw connection, for three conductors, with common reference potential

3-wire protection for fieldbus and serial interface, connection 9/10 grounded via gas-filled surge arrester

Total width 17.7 mm



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 / 90 mm / 65.5 mm
-40 °C ... 85 °C
Screw connection (in connection with the base element)

EN 61643-21/A1 / IEC 61643-21/A1

Ordering data

Type	Order No.	Pcs./Pkt.
PT 3-HF-12DC-ST	2858043	10
PT 1X2+F-BE	2856126	10

Accessories

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 /

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-3-HF+F-12DC-UT	2800995	1
PT-IQ-3-HF+F-12DC-PT	2801289	1

Accessories

PT-IQ-PTB-UT	2800768	1
PT-IQ-PTB-PT	2801296	1

ZBF ..., see page 197

RS-485 interfaces

Notes:

Attenuation characteristics at phoenixcontact.net/products

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 1T(A)/T(B)
– 7,11 Data line pair 2 R(A)/R(B)
– 9 Signal ground (Ground)
– 3 ⏚

PLUGTRAB PT 5-HF

– High transmission speed
– Fast response time
– High discharge capacity
– Plugs can be checked with CHECKMASTER

Pin assignment PT 5-HF...:

– 1,5 Data line pair 1T(A)/T(B)
– 7,11 Data line pair 2 R(A)/R(B)
– 9 Signal ground (Ground)
– 3 ⏚

*** Note:**

Various grounding options for the base elements:
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.

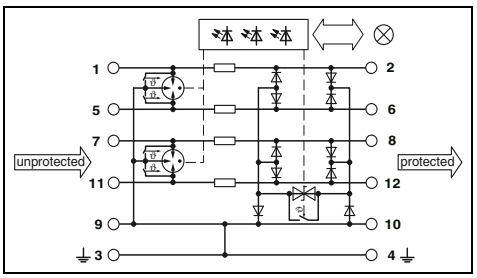
DATATRAB DT-UFB-485

– 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)
– ⏚ ⏚

5-wire 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)
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	10 kA / 10 kA	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA	20 kA
Protection level U_p			
	Core-Core / Core-Ground	≤ 30 V (C3 - 25 A) / ≤ 30 V (C3 - 25 A)	≤ 40 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			
Dimensions W/H/D		17.7 mm / 91 mm / 77.5 mm	
PT-IQ...UT dimensions W/H/D		17.7 mm / 91 mm / 77.5 mm	
PT-IQ...PT dimensions W/H/D		17.7 mm / 109.3 mm / 77.5 mm	
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 /	

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-5DC-UT**	2800797	1
	12 V DC	**PT-IQ-5-HF-12DC-UT**	2800799	1
MCR-PLUGTRAB, consisting of a plug, base element, and DIN rail bus, with Push-in connection technology				
	5 V DC	**PT-IQ-5-HF-5DC-PT**	2801291	1
	12 V DC	**PT-IQ-5-HF-12DC-PT**	2801293	1
PLUGTRAB plug, with protective circuit for plugging into the PT base element				
PLUGTRAB base element, for mounting on NS 35				
	Bridge between 3/4 (⏚) and 9/10			
	Gas-filled surge arrester between 3/4 (⏚) and 9/10			
DATATRAB adapter, protective adapter for inserting into the data line				

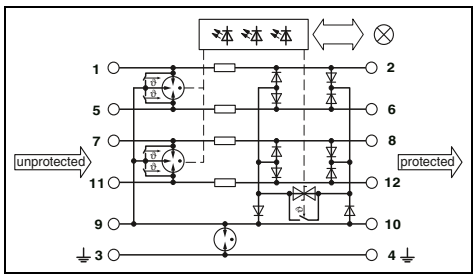
Accessories

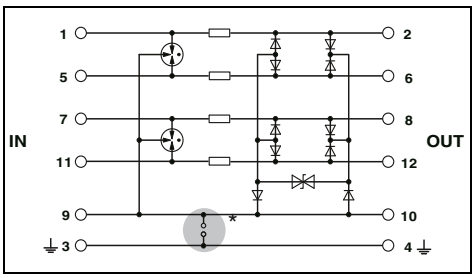
PLUGTRAB, supply and remote signaling module			
Screw connection technology	**PT-IQ-PTB-UT**	2800768	1
Push-in connection technology	**PT-IQ-PTB-PT**	2801296	1

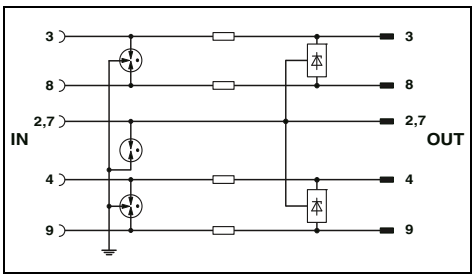
5-wire with common reference potential, 9/10 connection grounded via gas-filled surge arrester

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) / ≤ 900 V (C3 - 25 A)	≤ 40 V (C3 - 25 A) / ≤ 900 V (C3 - 25 A)
-	-
typ. 60 MHz	typ. 60 MHz
17.7 mm / 91 mm / 77.5 mm	
17.7 mm / 91 mm / 77.5 mm	
17.7 mm / 109.3 mm / 77.5 mm	
-40 °C ... 70 °C	
Screw connection	Push-in connection
IEC 61643-21 / EN 61643-21 / EN 61000-6-2 /	

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 / 10 kA
20 kA	20 kA
≤ 45 V (C3 - 25 A) / ≤ 45 V (C3 - 25 A)	≤ 50 V (C3 - 25 A) / ≤ 50 V (C3 - 25 A)
typ. 60 MHz	typ. 60 MHz
-	-
17.7 mm / 90 mm / 65.5 mm	
-	
-	
-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
-
25 mm / 108 mm / 63 mm
-
-
-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

Accessories

PT-IQ-PTB-UT	2800768	1
PT-IQ-PTB-PT	2801296	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

Accessories

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-485/BS	2920612	1

Accessories

V.11/RS-422 interfaces

PLUGTRAB PT 5-HF-12DC

– For high data transmission rates
– Plugs can be checked with CHECKMASTER
– 9/10 connections (GND) are connected to the mounting foot via a gas-filled surge arrester

Pluggable arrester with screw connection, for five conductors, with common reference potential

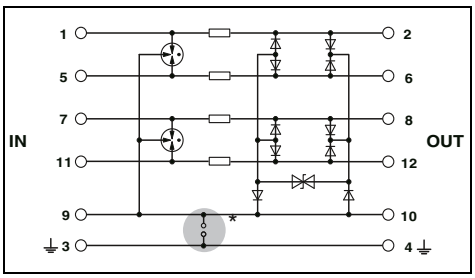
PLUGTRAB PT-IQ-5-HF-12DC

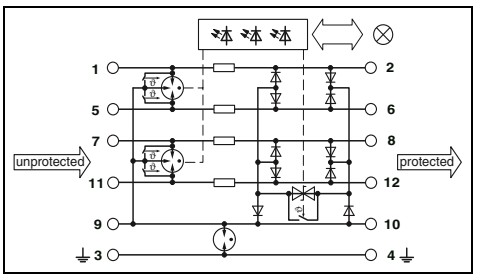
– Connection: Push-in or screw connection technology
– For high transmission speeds
– Multi-stage, floating remote signaling
– Group message via supply and remote signaling module

5-wire 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	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		14 V DC / 9.8 V AC	15 V DC / 10 V AC
Rated current		450 mA (45°C)	600 mA (40°C)
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	10 kA / 20 kA (in total)	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA	20 kA
Protection level U_p			
	Core-Core / Core-Ground	≤ 50 V (C3 - 25 A) / ≤ 50 V (C3 - 25 A)	≤ 40 V (C3 - 25 A) / ≤ 900 V (C3 - 25 A)
Cut-off frequency fg (3 dB)			
In a 100 Ω system	Symmetrical	typ. 60 MHz	-
In a 150 Ω system	Symmetrical / Asymmetrical	- / -	typ. 60 MHz / typ. 60 MHz
General data			
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm	17.7 mm / 91 mm / 77.5 mm
Temperature range		-40 °C ... 85 °C	-40 °C ... 70 °C
Test standards		EN 61643-21 / IEC 61643-21	IEC 61643-21 / EN 61643-21 / 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	12 V DC	**PT 5-HF-12 DC-ST**	2838775	10
PLUGTRAB base element, for mounting on NS 35	Gas-filled surge arrester between 3/4 (⏚) and 9/10	**PT 2X2+F-BE**	2839224	10
PLUGTRAB, consisting of a plug, base element, and DIN rail bus	Screw connection technology	**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		**PT-IQ-PTB-UT**	2800768	1
Push-in connection technology		**PT-IQ-PTB-PT**	2801296	1
Marking material		**ZBF ..., see page 197**		

TTY interfaces

PLUGTRAB PT 2X2-24DC

– Plugs can be checked with CHECKMASTER
– 9/10 connections (GND) are directly connected to the mounting foot

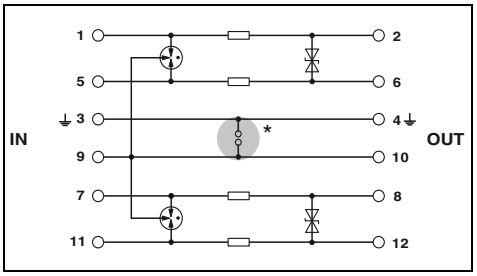
PLUGTRAB PT-IQ-2X2-24DC

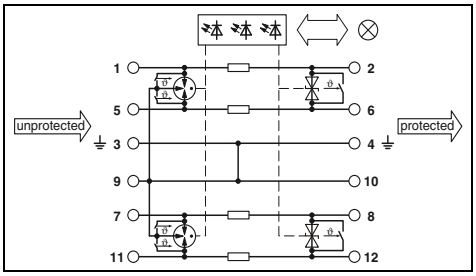
– Connection: Push-in or screw connection technology
– Multi-stage, floating remote signaling
– Group message via supply and remote signaling module

Notes:
Attenuation characteristics at phoenixcontact.net/products

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





Technical data

Electrical data			
IEC test classification/EN type		C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		28 V DC / 20 V AC	30 V DC / 21 V AC
Rated current		450 mA (45°C)	700 mA (50 °C)
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	10 kA / 10 kA	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA	20 kA
Protection level U_p			
	Core-Core / Core-Ground	≤ 50 V (C3 - 25 A) / ≤ 450 V (C1 - 1 kV / 500 A with PT 2X2-BE)	≤ 55 V (C3 - 25 A) / ≤ 700 V (C3 - 25 A)
Cut-off frequency fg (3 dB)			
In a 50 Ω system	Symmetrical	typ. 4.5 MHz	-
General data			
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm	17.7 mm / 91 mm / 77.5 mm
Temperature range		-40 °C ... 85 °C	-40 °C ... 70 °C
Test standards		IEC 61643-21 / EN 61643-21	IEC 61643-21 / EN 61643-21 / EN 61000-6-3 /

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	Bridge between 3/4 (⏚) and 9/10	**PT 2X2-BE**	2839208	10
PLUGTRAB, consisting of a plug, base element, and DIN rail bus	Screw connection technology	**PT-IQ-2X2-24DC-UT**	2800980	1
	Push-in connection technology			

Accessories

	Type	Order No.	Pcs./Pkt.
Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10
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

PROFIBUS DP/PA fieldbus system TERMITRAB complete

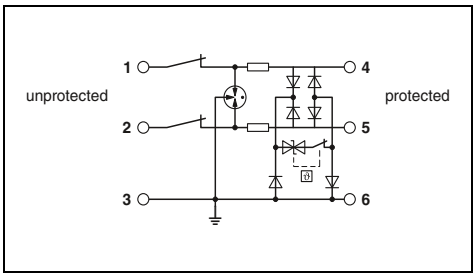
- One-piece or pluggable surge protection
- Overall width of just 6.2 mm
- With Push-in or screw connection technology
- Integrated mechanical status indicator
- Impedance-neutral insertion and removal
- Coded connector versions
- With knife disconnection
- Optional remote signaling module monitors up to 40 items, without additional wiring
- Plugs can be tested with CHECKMASTER 2

new

SIL evaluated IEC 61508

H D W

3-conductor with common reference potential, 3/6 connection grounded directly, one-piece



Technical data

Electrical data		... 12DC
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		15 V DC
Rated current		600 mA (40°C)
Pulse discharge current I_{imp} (10/350) µs		0.5 kA
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 25 V (C3 - 25 A) / ≤ 25 V (C3 - 25 A)
Cut-off frequency fg (3 dB)		
	Symmetrical in the 150 Ω system	typ. 60 MHz
Resistance per path		1.65 Ω
General data		
Dimensions W/H/D		6.2 mm / 105.8 mm / 83.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 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 screw connection technology				
	12 V DC 24 V DC	**TTC-6-3-HF-M-12DC-UT-I**	2906721	1
TERMITRAB complete, with Push-in connection technology				
	12 V DC 24 V DC	**TTC-6-3-HF-M-12DC-PT-I**	2906732	1

new

SIL evaluated IEC 61508

3-conductor with common reference potential, 3/6 connection grounded via gas-filled surge arrester, one-piece

new

SIL evaluated IEC 61508

CHECKMASTER

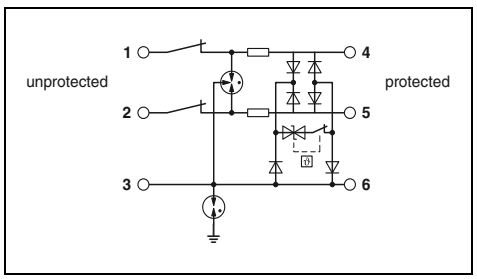
3-conductor with common reference potential, 3/6 connection grounded directly, pluggable

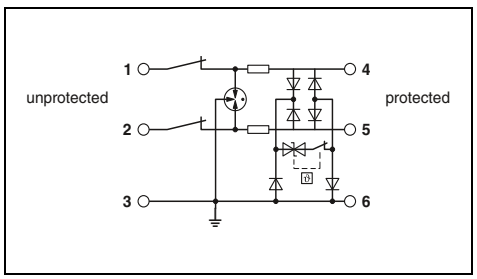
new

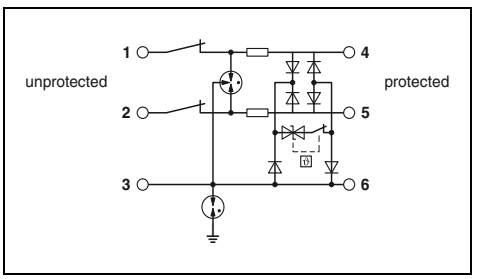
SIL evaluated IEC 61508

CHECKMASTER

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	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
≤ 25 V (C3 - 25 A) / ≤ 1.1 kV (C3 - 25 A)	≤ 45 V (C3 - 25 A) / ≤ 110 V (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	

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6-3-HF-F-M-12DC-UT-I	**2906769**	1
TTC-6-3-HF-F-M-24DC-UT-I	**2906770**	1
TTC-6-3-HF-F-M-12DC-PT-I	**2906778**	1
TTC-6-3-HF-F-M-24DC-PT-I	**2906779**	1

Technical data

... 12DC
C1 / C2 / C3 / D1
15 V DC
600 mA (40°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

Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-M-12DC-UT-I	**2906744**	1
TTC-6P-3-HF-M-12DC-PT-I	**2906756**	1

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
≤ 25 V (C3 - 25 A) / ≤ 1.1 kV (C3 - 25 A)	≤ 45 V (C3 - 25 A) / ≤ 110 V (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	

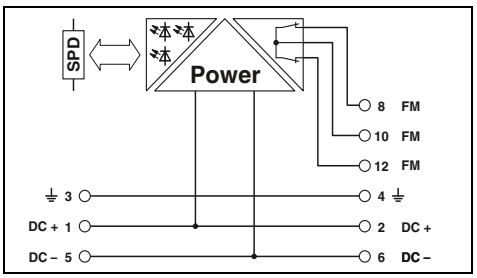
Ordering data

Type	Order No.	Pcs./Pkt.
TTC-6P-3-HF-F-M-12DC-UT-I	**2906786**	1
TTC-6P-3-HF-F-M-24DC-UT-I	**2906787**	1
TTC-6P-3-HF-F-M-12DC-PT-I	**2906796**	1
TTC-6P-3-HF-F-M-24DC-PT-I	**2906797**	1

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

Supply and remote signaling module



Technical data

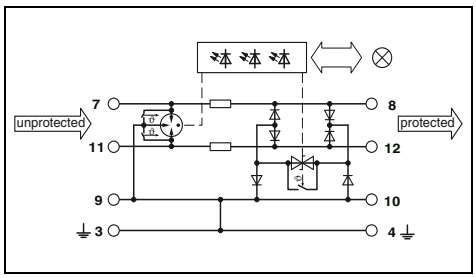
Electrical data	
IEC test classification/EN type	
Maximum continuous operating voltage U_C	-
Rated current	-
Pulse discharge current I_{imp} (10/350) µs	-
Nominal discharge current I_n (8/20) µs	
Core-Core / Core-Ground	- / -
Total discharge current I_{total} (8/20) µs	-
Max. discharge current $I_{max.}$ (8/20) µs	-
Protection level U_p	
Core-Core	-
Core-Ground	-
Cut-off frequency fg (3 dB)	
Symmetrical in the 150 Ω system	-
Resistance per path	-
General data	
PT-IQ...UT dimensions W/H/D	17.7 mm / 91.1 mm / 77.5 mm
PT-IQ...PT dimensions W/H/D	17.7 mm / 109.3 mm / 77.5 mm
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 70 °C
Test standards	EN 61000-6-2 / EN 61000-6-3 / EN 60950-1 / EN 60079-0 / EN 60079-11 / EN 60079-15
Remote indication contact	2x N/C contacts
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 14
Max. operating voltage	30 V AC (50/60 Hz, non-Ex) / 50 V DC (non-Ex)
Max. operating current	1 A (up to 50°C, non-Ex)

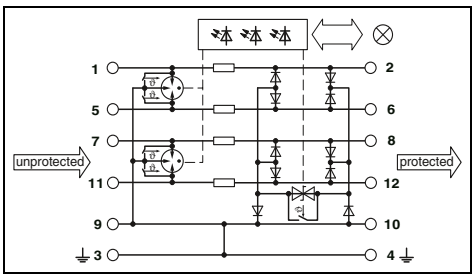
Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
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
MCR-PLUGTRAB, with screw connection technology				
	5 V DC			
	12 V DC			
MCR-PLUGTRAB, with Push-in connection technology				
	5 V DC			
	12 V DC			

3-wire protection for fieldbus and serial interface, connection 9/10 grounded directly

5-wire with common reference potential, 9/10 connection grounded directly





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)
2.5 kA	2.5 kA
10 kA / 10 kA	10 kA / 10 kA
20 kA	20 kA
-	-
≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
typ. 60 MHz	typ. 60 MHz
1.2 Ω	1.2 Ω
17.7 mm / 91.1 mm / 77.5 mm	
17.7 mm / 109.3 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 TBUS	
- mm² / - mm² / -	
-	
-	

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)
2.5 kA	2.5 kA
10 kA / 10 kA	10 kA / 10 kA
20 kA	20 kA
-	-
≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
≤ 30 V (C3 - 25 A)	≤ 40 V (C3 - 25 A)
typ. 60 MHz	typ. 60 MHz
1.2 Ω	1.2 Ω
17.7 mm / 91 mm / 77.5 mm	
17.7 mm / 109.3 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 TBUS	
- mm² / - mm² / -	
-	
-	

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-3-PB-UT	**2800785**	1
PT-IQ-3-HF-12DC-UT	**2800786**	1
PT-IQ-3-PB-PT	**2801286**	1
PT-IQ-3-HF-12DC-PT	**2801288**	1

Ordering data

Type	Order No.	Pcs./Pkt.
PT-IQ-5-HF-5DC-UT	**2800797**	1
PT-IQ-5-HF-12DC-UT	**2800799**	1
PT-IQ-5-HF-5DC-PT	**2801291**	1
PT-IQ-5-HF-12DC-PT	**2801293**	1

PROFIBUS DP fieldbus system PLUGTRAB PT

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

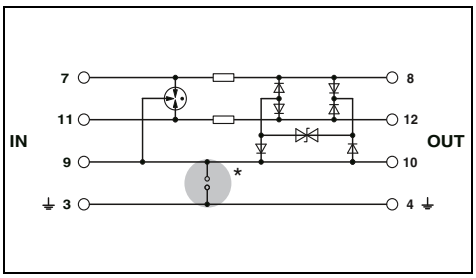
DATATRAB D-UFB-PB

– Direct use at the PROFIBUS interface
– Data transmission rate of up to 12 Mbps
– Integrated termination resistor

Notes:

Attenuation characteristics at phoenixcontact.net/products

Pluggable arrester with screw connection, for three conductors, with common reference potential



Technical data

Electrical data		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		5.2 V DC / 3.6 V AC
Rated current		450 mA (45°C)
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 45 V (C3 - 25 A) / ≤ 45 V (C3 - 25 A)
Output voltage limitation at 1 kV/µs		
	Core-Core / Core-Ground	≤ 15 V / ≤ 15 V
Cut-off frequency fg (3 dB)		
In a 100 Ω system	Symmetrical	typ. 60 MHz
General data		
Dimensions W/H/D		17.7 mm / 90 mm / 65.5 mm
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

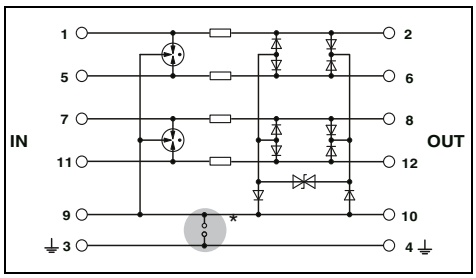
Description	Nominal voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for inserting in PT base element				
	5 V DC	**PT 3-PB-ST**	2858030	10
	12 V DC	**PT 3-HF-12DC-ST**	2858043	10
PLUGTRAB base element, for mounting on NS 35				
	Bridge between 3/4 (⏚) and 9/10	**PT 1X2-BE**	2856113	10
DATATRAB, protective device for PROFIBUS DP applications with up to 12 Mbps				

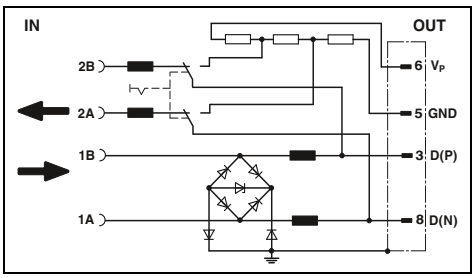
Accessories

Shield fast connection		
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**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	
14 V DC / 9.8 V AC	
450 mA (45°C)	
10 kA / 20 kA (in total)	
20 kA	
≤ 50 V (C3 - 25 A) / ≤ 50 V (C3 - 25 A)	
≤ 25 V / ≤ 25 V (with PT 2X2-BE)	
typ. 60 MHz	
17.7 mm / 90 mm / 65.5 mm	
-40 °C ... 85 °C	
Screw connection (in connection with the base element)	
EN 61643-21 / IEC 61643-21	

Technical data

C1 / C3 / B2	
5.2 V DC / -	
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	
44.5 mm / 58 mm / 16.6 mm	
-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

SSA 3-6	2839295	10
SSA 5-10	2839512	10

Accessories

PROFIBUS PA fieldbus system

new

TERMITRAB complete

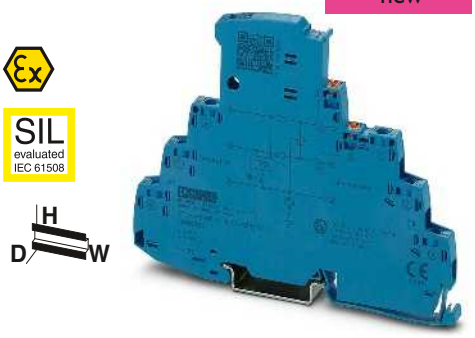
– One-piece or pluggable surge protection
– Tailored to the special requirements of intrinsically safe circuits
– Overall width of just 6.2 mm
– Integrated mechanical status indicator
– Impedance-neutral insertion and removal
– Coded connector versions
– With knife disconnection
– Plugs can be tested 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
– Corresponding replacement plugs can be found on our website

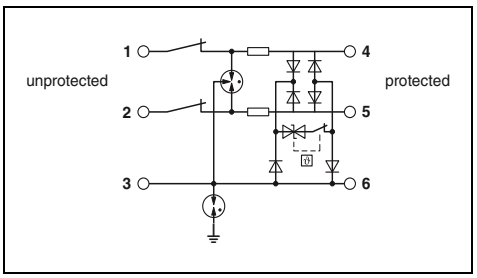
PLUGTRAB PT 2XEX(I)

– 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 checked with CHECKMASTER



3-conductor with common reference potential, intrinsically safe, one-piece

Ex:



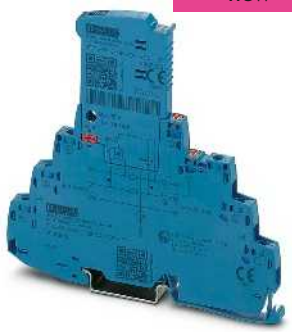
Technical data

		... 12DC	... 24DC
Electrical data			
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_{imp} (10/350) µs		0.5 kA	0.5 kA
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	5 kA / 5 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core	≤ 145 V (C1 - 1 kV/500 A)	≤ 150 V (C1 - 1 kV/500 A)
	Core-Ground	≤ 750 V (C1 - 1 kV/500 A)	≤ 750 V (C1 - 1 kV/500 A)
	Core-GND	≤ 80 V (C1 - 1 kV/500 A)	≤ 80 V (C1 - 1 kV/500 A)
Cut-off frequency fg (3 dB)			
	Symmetrical in the 150 Ω system	typ. 60 MHz	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 solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 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	

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 the PT base element	24 V DC			
PLUGTRAB base element, for mounting on NS 35	24 V DC			

new



3-conductor with common reference potential, intrinsically safe, pluggable

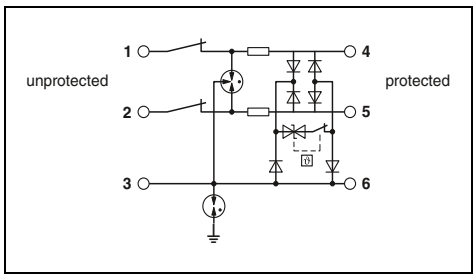
Ex:

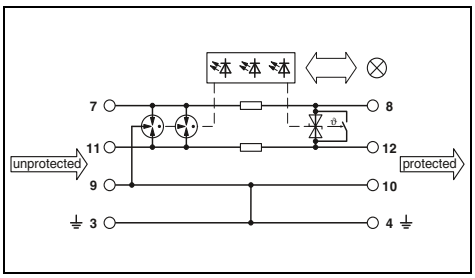
Double wire (loop), floating, connection 9/10 grounded directly, e.g., for 4 ... 20 mA current loop

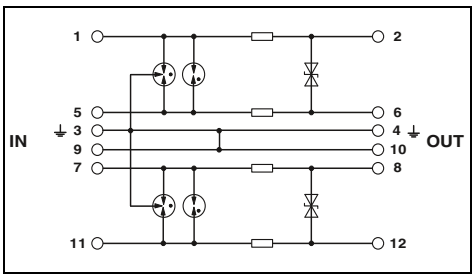
Ex:

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
≤ 95 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 mm² / 0.2...2.5 mm² / 24 ... 12	
-40 °C ... 85 °C	
EN 60079-0 / EN 60079-11 / EN 61643-21 / IEC 60079-0 / IEC 60079-11 / IEC 61643-21	

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 mm² / 0.2...2.5 mm² / 24 ... 12
-40 °C ... 70 °C
EN 61643-21/A2 / IEC 61643-21/A2 / EN 61000-6-2 / EN 61000-6-3/A1

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
17.7 mm / 90 mm / 65.5 mm
0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
-40 °C ... 85 °C
EN 61643-21 / EN 60079-0 / EN 60079-11 / EN 60079-26 / IEC 60079-0 / IEC 60079-11

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

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 checked with CHECKMASTER

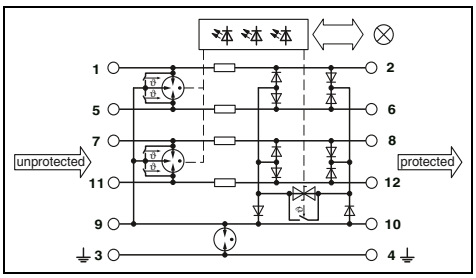
DATATRAB DT-UFB-IB-RBI/ -RBO
- Adapter type
- 9-pos. D-SUB connection
- For remote bus modules
- DIN rail mounting possible by removing the cap
- D-SUB cable included

*** Note:PT .x.+F-BE** connections 9/10 (GND) are linked 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		
IEC test classification/EN type		C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		6 V DC / 4 V AC
Rated current		600 mA (40°C)
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 30 V (C3 - 25 A) / ≤ 900 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
General data		
Dimensions W/H/D		17.7 mm / 91 mm / 77.5 mm
Temperature range		-40 °C ... 70 °C
Connection method		Screw connection
Test standards		IEC 61643-21 / EN 61643-21 / EN 61000-6-2 /

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 the PT base element				
PLUGTRAB base element, for mounting on NS 35	Gas-filled surge arrester between 3/4 (⏚) and 9/10			
DATATRAB adapter, protective adapter for inserting into the data line				

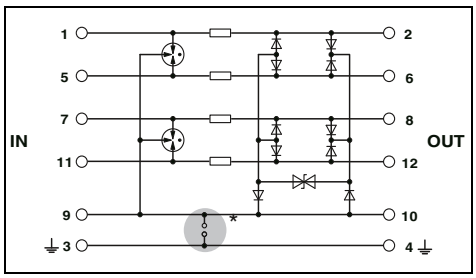
Accessories

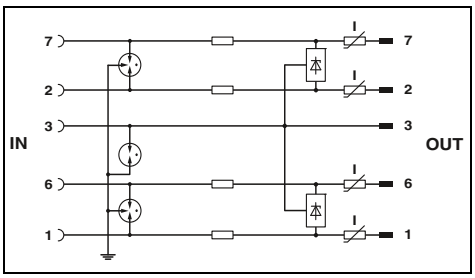
PLUGTRAB, supply and remote signaling module			
Screw connection technology	**PT-IQ-PTB-UT**	2800768	1
Push-in connection technology	**PT-IQ-PTB-PT**	2801296	1

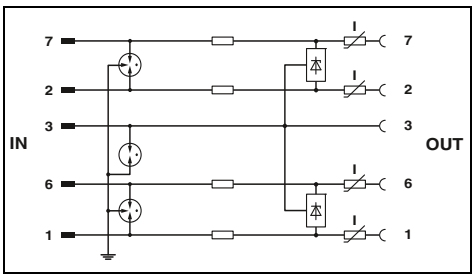
Pluggable arrester with screw connection, for five conductors, with common reference potential

Protective adapter for 5-wire remote bus input

Protective adapter for 5-wire 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	
-	
17.7 mm / 90 mm / 65.5 mm	
-40 °C ... 85 °C	
Screw connection (in connection with the base element)	
EN 61643-21/A1 / IEC 61643-21/A1	

Ordering data

Type	Order No.	Pcs./Pkt.
PT 5-HF- 5 DC-ST	2838762	10
PT 2X2+F-BE	2839224	10

Accessories

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	
25 mm / 110 mm / 63 mm	
-40 °C ... 85 °C	
D-SUB-9	
DIN EN 61643-21 / IEC 61643-21	

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-IB-RB0	2800056	1

Accessories

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	
25 mm / 110 mm / 63 mm	
-40 °C ... 85 °C	
D-SUB-9	
DIN EN 61643-21 / IEC 61643-21	

Ordering data

Type	Order No.	Pcs./Pkt.
DT-UFB-IB-RBI	2800055	1

Accessories

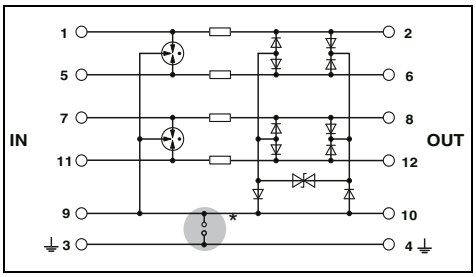
MCR-PLUGTRAB, for various applications

- 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:**
Various grounding options for the base elements:
PT .x.-BE connections 9/10 (GND) directly connected to the mounting foot.
PT .x.+F-BE connections 9/10 (GND) connected to the mounting foot via a gas-filled surge arrester.

Notes:
Attenuation characteristics at phoenixcontact.net/products

5-wire protection for fieldbus and serial interface



Technical data

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) µs	2.5 kA	2.5 kA	2.5 kA
Nominal discharge current I_n (8/20) µs			
Core-Core / Core-Ground	10 kA / 10 kA	10 kA / 20 kA (in total)	10 kA / 10 kA (with PT 2X2+F-BE)
Total discharge current I_{total} (8/20) µs	20 kA	20 kA	20 kA
Max. discharge current $I_{max.}$ (8/20) µs	10 kA	20 kA (in total)	-
Output voltage limitation at 1 kV/µs			
Core-Core	≤ 15 V	≤ 25 V	-
Core-Ground	≤ 15 V	≤ 25 V (with PT 2X2-BE)	-
Cut-off frequency fg (3 dB)			
Symmetrical in the 100 Ω system	typ. 60 MHz	typ. 60 MHz	typ. 70 MHz
Resistance per path	2.2 Ω	2.2 Ω	2.2 Ω
General data			
Dimensions W/H/D	17.7 mm / 90 mm / 65.5 mm		
Connection data solid/stranded/AWG	0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12		
Temperature range	-40 °C ... 85 °C		
Test standards	EN 61643-21/A1 / IEC 61643-21/A1		

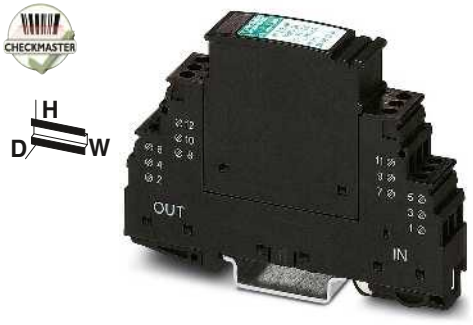
Ordering data

Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
PLUGTRAB plug, with protective circuit for inserting in PT base element				
	5 V DC	**PT 5-HF- 5 DC-ST**	2838762	10
	12 V DC	**PT 5-HF-12 DC-ST**	2838775	10
	24 V DC	**PT 5-HF-24DC-ST**	2906002	1
	32 V DC			
PLUGTRAB base element, for mounting on NS 35				
Bridge between 3/4 (⏚) and 9/10		**PT 2X2-BE**	2839208	10
Gas-filled surge arrester between 3/4 (⏚) and 9/10		**PT 2X2+F-BE**	2839224	10

Accessories

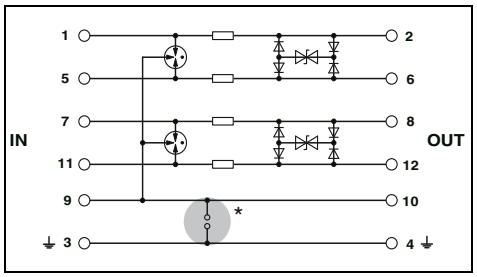
Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	2839295	10
For Ø 5-10 mm	**SSA 5-10**	2839512	10

2 x 2-wire protection for 2-wire bus system

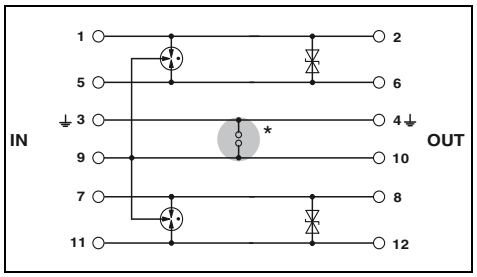


2 x 2-wire protection for FOUNDATION Fieldbus

Ex:



Ex:



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
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		

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

Accessories

SSA 3-6	**2839295**	10
SSA 5-10	**2839512**	10

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 / 90 mm / 65.5 mm	
- mm² / - mm² / -	
-40 °C ... 85 °C	
EN 61643-21/A1	

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

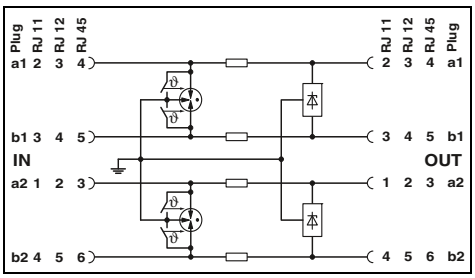
DSL telecommunications

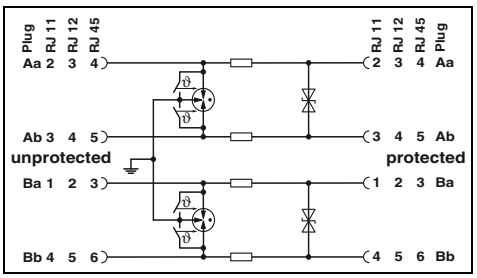
DATATRAB DT

– 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:
Course/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	Technical data
Electrical data			
IEC test classification/EN type		B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C		185 V DC	185 V DC
Rated current		≤ 380 mA (25 °C)	≤ 380 mA (25 °C)
Nominal discharge current I_n (8/20) µs			
	Core-Core / Core-Ground	≤ 5 kA / ≤ 5 kA	≤ 5 kA / ≤ 5 kA
Total discharge current I_{total} (8/20) µs		10 kA	10 kA
Protection level U_p			
	Core-Core / Core-Ground	≤ 250 V (C1 - 1 kV/500 A) / ≤ 250 V (C1 - 1 kV/500 A)	≤ 250 V (C1 - 500 A) / ≤ 580 V (C1 - 500 A)
Cut-off frequency fg (3 dB)			
In a 100 Ω system	Core-Core	typ. 50 MHz	25 MHz
General data			
Dimensions W/H/D		25 mm / 102 mm / 63.5 mm	25 mm / 103 mm / 63 mm
Connection data solid/stranded/AWG		0.14...1.5 mm² / 0.14...1.5 mm² / 28 ... 16	0.14...1.5 mm² / 0.14...1.5 mm² / 28 ... 16
Temperature range		-40 °C ... 85 °C	-40 °C ... 85 °C
Connection method		RJ45/COMBICON	RJ45/COMBICON
Test standards		IEC 61643-21 / EN 61643-21	IEC 61643-21

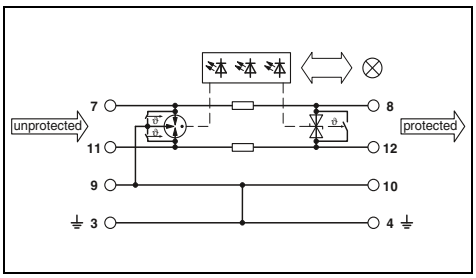
	Ordering data			Ordering data		
DATATRAB, protective adapter for insertion in the data cable						
	DT-TELE-RJ45	2882925	1	**DT-TELE-SHDSL**	2801593	1

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) µs		2.5 kA
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	10 kA / 10 kA
Total discharge current I_{total} (8/20) µs		20 kA
Protection level U_p		
	Core-Core	≤ 290 V (C3 - 50 A)
	Core-Ground	≤ 700 V (C3 - 50 A)
Cut-off frequency fg (3 dB)		
	Symmetrical in the 150 Ω system	typ. 25 MHz
Resistance per path		1.2 Ω
General data		
Dimensions W/H/D		17.7 mm / 91.1 mm / 77.5 mm
Connection data solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 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 TBUS

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DATA-PLUGTRAB			
Screw connection technology	**PT-IQ-1X2-TELE-UT**	**2800769**	1
Push-in connection technology	**PT-IQ-1X2-TELE-PT**	**2801290**	1

Accessories

Replacement plug			
	PT-IQ-1X2-TELE-P	**2800782**	1
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

DSL telecommunications

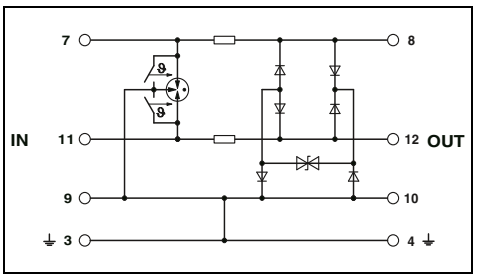
Notes:

Attenuation characteristics at phoenixcontact.net/products

PT 2-TELE

– For analog telecommunications
– Two-piece, pluggable
– Universal use
– High discharge capacity
– Plugs can be checked with CHECKMASTER

3-wire 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 / Core-Ground	10 kA / 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 fg (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 solid/stranded/AWG		0.2...4 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range		-40 °C ... 85 °C
Test standards		IEC 61643-21 / EN 61643-21

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DATA-PLUGTRAB, consisting of plug and base element	**PT 2-TELE**	**2882828**	10

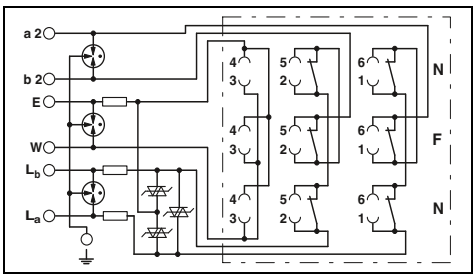
Accessories

Replacement plug	**PT 2-TELE-ST**	**2838733**	10
Shield fast connection			
For Ø 3-6 mm	**SSA 3-6**	**2839295**	10
For Ø 5-10 mm	**SSA 5-10**	**2839512**	10

DSL telecommunications

- For surface mounting
- Three TAE6 slots
- For two N-coded and one F-coded terminal devices
- Suitable for ADSL and VDSL
- Main areas of application: Phone terminals, answering machines, modems, and fax machines

TAE outlet box for VDSL (NFN)



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 (≤ 40°C)
Nominal discharge current I_n (8/20) µs		
	Core-Core / Core-Ground	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		10 kA
Protection level U_p		
	Core-Core / Core-Ground	≤ 250 V (C2 - 10 kV / 5 kA) / ≤ 500 V (C2 - 10 kV / 5 kA)
Output voltage limitation at 1 kV/µs		
	Core-Core / Core-Ground	≤ 250 V / ≤ 450 V
Cut-off frequency fg (3 dB)		
In a 600 Ω system	Core-Core	typ. 2 MHz
General data		
Dimensions W/H/D		65 mm / 27 mm / 80 mm
Temperature range		-40 °C ... 80 °C
Connection method		Screw connection & TAE 6
Test standards		DIN EN 61643-21 / IEC 61643-21

Ordering data

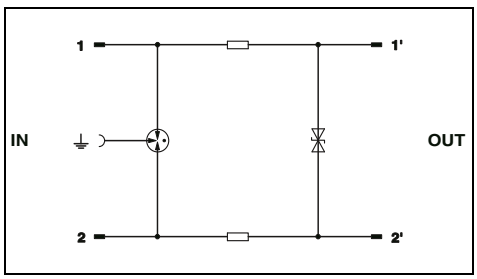
Description	For country-specific use in	Type	Order No.	Pcs./Pkt.
TAE outlet box (NFN) with surge protection for analog telecommunications interfaces				
Surface-mounted socket	D	**TAE-TRAB FM-NFN-AP**	2749628	1

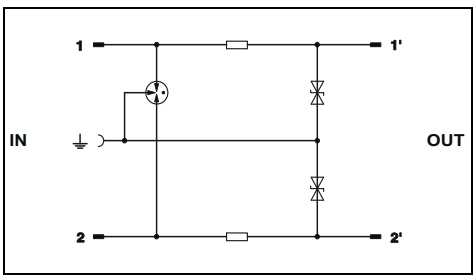
For telecommunications and measurement and control interfaces COMTRAB modular

- 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-wire, with common reference potential





Technical data

Electrical data	... 110AC	... 110AC
IEC test classification/EN type	B2 / C1 / C2 / C3 / D1	B2 / C1 / C2 / C3 / D1
Maximum continuous operating voltage U_C	60 V DC / 125 V AC	60 V DC / 125 V AC
Rated current	380 mA AC (25 °C)	380 mA AC (25 °C)
Pulse discharge current I_{imp} (10/350) µs	1 kA	1 kA
Nominal discharge current I_n (8/20) µs		
Core-Core / Core-Ground	5 kA / 5 kA	- / 5 kA
Total discharge current I_{total} (8/20) µs	10 kA	10 kA
Protection level U_p		
Core-Core	≤ 260 V (C3 - 100 A)	-
Core-Ground	≤ 800 V (C3 - 100 A)	≤ 260 V (C3 - 100 A)
Cut-off frequency fg (3 dB)		
Symmetrical/asymmetrical in the 100 Ω system	typ. 20 MHz / -	- / typ. 20 MHz
Resistance per path	3.3 Ω	3.3 Ω
General data		
Dimensions W/H/D	9.4 mm / 21 mm / 52.4 mm	9.4 mm / 21 mm / 52.4 mm
Temperature range	-25 °C ... 75 °C	-25 °C ... 75 °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.
COMTRAB modular, surge protection for a double wire with coarse and fine protection and ohmic decoupling, DSL-compatible	110 V AC 180 V DC	**CTM 1X2-110AC**	2838539	10
COMTRAB modular, surge protection for the ISDN S_0 interface	6 V DC			

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 connector	**CTM EST**	2838649	10

Ordering data

Type	Order No.	Pcs./Pkt.
CTM 2X1-110AC	2838526	10

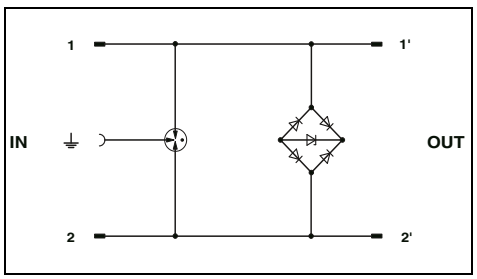
Accessories

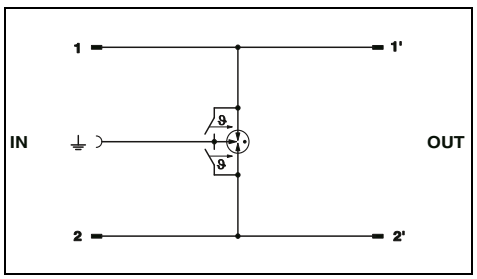
Magazine, with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	**CTM 10-MAG**	2838610	5
Grounding connector	**CTM EST**	2838649	10

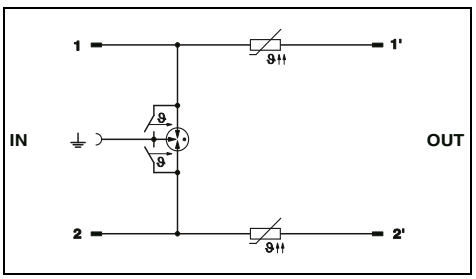
2-wire, with common reference potential

2-wire, coarse protection, with failsafe contact

2-wire, coarse protection, with failsafe contact and current protection (Powercross)







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)

≥ 100 MHz / -
-

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

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)

- / > 100 MHz
-

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

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)

- / > 100 MHz
5.5 Ω

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

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 surge arrester is triggered, the potentials of the three connections a-b-⏚ are equalized
– Coarse protection both in the normal mode voltage branch and the common mode voltage branch for 10 double wires

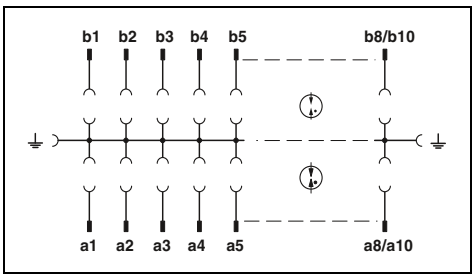
Notes:

For dimensional drawings, see phoenixcontact.net/products

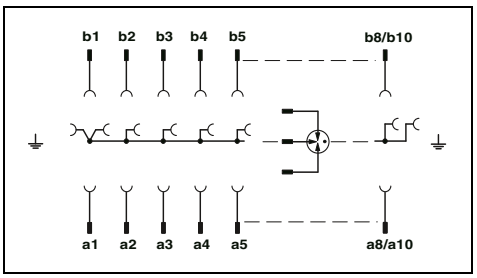
For 10 double wires (loops) and 20 two-electrode GDTs

For 10 double wires (loops) and 10 three-electrode GDTs

EAC



EAC



Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
Ordering data				
Coarse protection magazine, to accommodate 20 two-electrode gas-filled surge arresters, type H, unassembled, design: 10 double wires		CT 10-2/2-GS	2765398	5
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	CT 10-2/2-GS/3E	2765408	5
		CT 10-2/2-GS/3E-110AC	2920829	10
Accessories				
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	SVP 2E- 48AC	2788919	10
	110 V AC	SVP 2E-110AC	2765534	10
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	SVP 3E-110AC	2765521	10

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 according to EN 60715

Notes:

For dimensional drawings, see phoenixcontact.net/products

For accommodating the CT and CTM protective plugs, with screw connection

Magazine for 10 CTM

Technical data	
General data	
Dimensions W/H/D	118 mm / 43 mm / 40.9 mm
Connection data solid/stranded/AWG	0.2...2.5 mm² / 0.2...2.5 mm² / 24 ... 12
Temperature range	-40 °C ... 85 °C
Degree of protection in acc. with IEC 60529/EN 60529	IP20
Inflammability class in acc. with UL 94	V2

Technical data	
	112.5 mm / 21.8 mm / 44 mm
	- mm² / - mm² / -
	-25 °C ... 75 °C
	IP20
	V-0

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Screw terminal block, with disconnect contacts for accommodating the CT and CTM protective plugs, design: 10 double wires	CT-TERMIBLOCK 10 DA	0441711	10

Ordering data

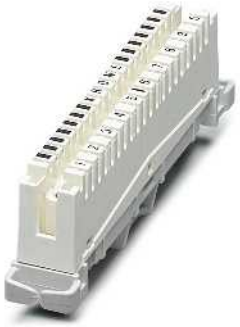
Description	Type	Order No.	Pcs./Pkt.
Magazine, with grounding rail for accommodating up to 10 LSA-PLUS protective plugs (CTM...), for insertion in CT-TERMIBLOCK or LSA-PLUS disconnect strip	CTM 10-MAG	2838610	5

COMTRAB disconnect strip

- LSA-PLUS disconnect strip
- For COMTRAB protective plugs
- For up to 10 CTM connectors

Notes:

For dimensional drawings, see phoenixcontact.net/products



For accommodating the CT and CTM protective plugs, with LSA-PLUS connection

Grounding rail/mounting clip

Ordering data

Description	Type	Order No.	Pcs./Pkt.
LSA-PLUS disconnect strip for accommodating the CTM and CT 10 protection modules, design: 10 double wires	CT 10-TL	2765356	5
Grounding rail for CTM protective plug when used in combination with LSA-PLUS disconnect strip, design: 10 double wires			
Mounting clip, for holding 3 disconnect or ground wire strips, design: 10 double wires			
Mounting clip, for holding 10 disconnect or ground wire strips, design: 10 double wires			
Cable feed-through sleeve for mounting trays, for protecting the lines guided through the laminated frame			

Ordering data

Type	Order No.	Pcs./Pkt.
CT 1-10-ES	2765547	10
CT 10-MB/ 3	2765372	2
CT 10-MB/10	2765385	2
CT-KDT	2765518	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 atmospherical discharge.

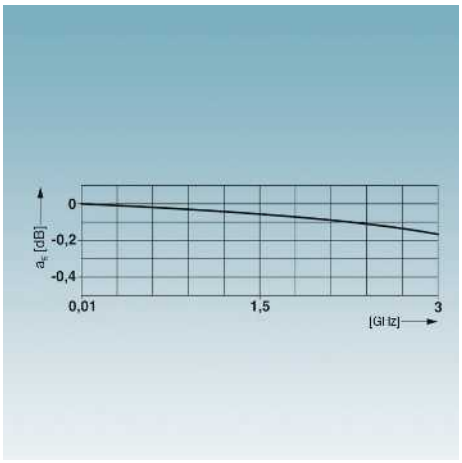
Cables with a coaxial structure and therefore favorable EMC properties are primarily used in antenna systems. However, the risk of surge voltage coupling in antenna cables and potential transfer through to the sensitive interfaces of transceiver systems is not eliminated.

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.

Your web code: #0146

Shielding

Good shielding properties are vital for 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 µs, and for fine protection in accordance with Category C2 and C1, 8/20 µs.

Connection technology

The right connection technology to suit the application: F connector, TV connector, type N, 7/16, BNC, SMA.

The interface matrix indicates which surge protective device is suitable for a specific interface.

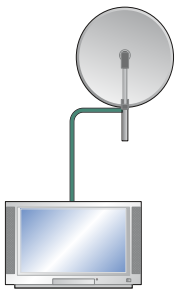
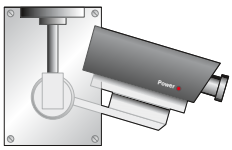
Note:

For further interface recommendations, visit phoenixcontact.net/products.

[1]) The PT-IQ-PTB-UT supply module is required in order to operate the PT-IQ series.

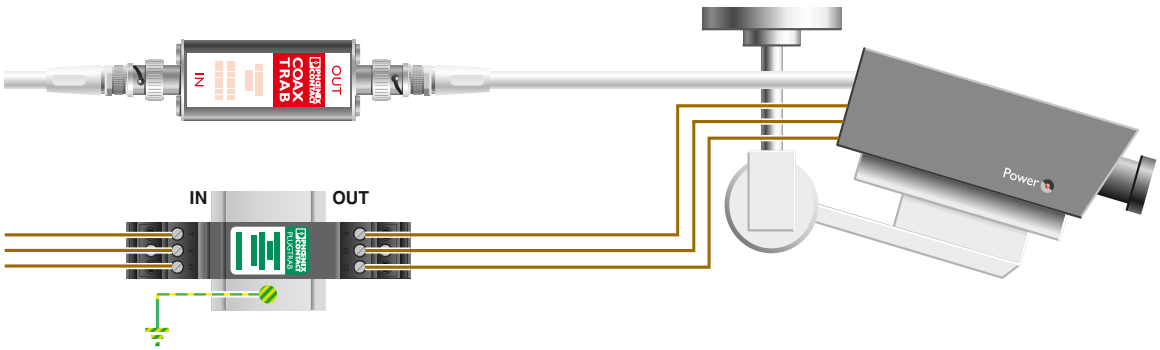
Explanation of the IEC categories		
LPZ zone	Test category for SPD corresponds to IEC 61643-21	Test class for SPD corresponds to IEC 61643-11
0/1	D1	I
1/2	C2	II
2/3	C1	III

	Screw connection
	Schuko plug-in connection
	Coaxial plug-in connection

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 to 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
			Type F + IEC
	Cable/terrestrial TV		Type IEC
			Type F + IEC
	Video monitoring (coax connection)		Type BNC
	Video monitoring (2-wire connection)		

IEC category	Protected wires	Surge protective device (SPD)	Order No.	Page
D1/C2/C3	2	CN-UB-280DC-3	2801050 / 2801051	176
D1/C2/C3	2	CN-UB-70-6	2803166 / 2803153	176
D1/C2/C3	2	CN-LAMBDA/4-2.25	2801057 / 2801056	178
D1/C2/C3	2	CN-LAMBDA/4-5.9	2838490 / 2800023	178
D1/C2/C3	2	CSMA-LAMBDA/4-2.0-BS-SET	2800491	178
D1/C2/C1	5 x 2	C-SAT-BOX	2880561	180
D1/C2/C1	2	C-TV-SAT	2856993	180
D1/C2/C3 & T3	2	MNT-TV-SAT	2882297	74
D1/C2/C1	2	C-TV/HIFI	2857002	180
D1/C2/C3 & T3	2	MNT-TV-SAT	2882297	74
D1/C2/C3	2	C-UFB-5DC/E	2782300	176
D1/C2/C3	2	C-UFB-5DC/E 75	2763604	176
D1/C2/C1	2	PT-IQ-3-PB+F-UT[1])	2800994	96

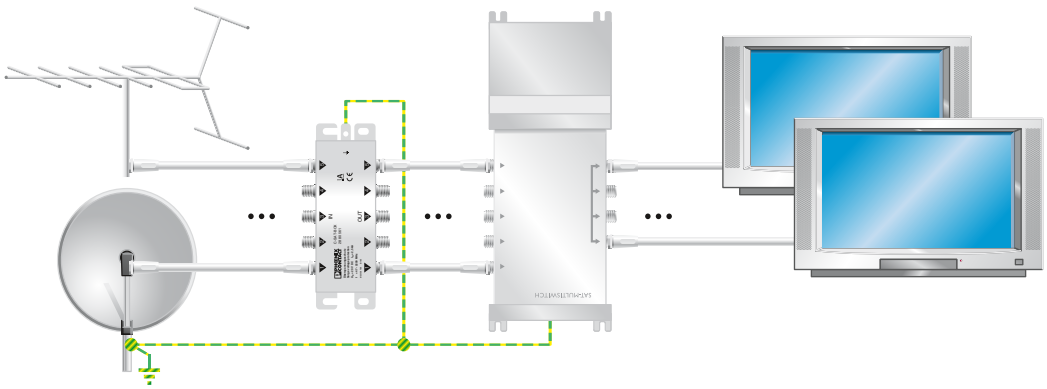
Protection of video signals



C-UFB 5DC
2797858
Page 177

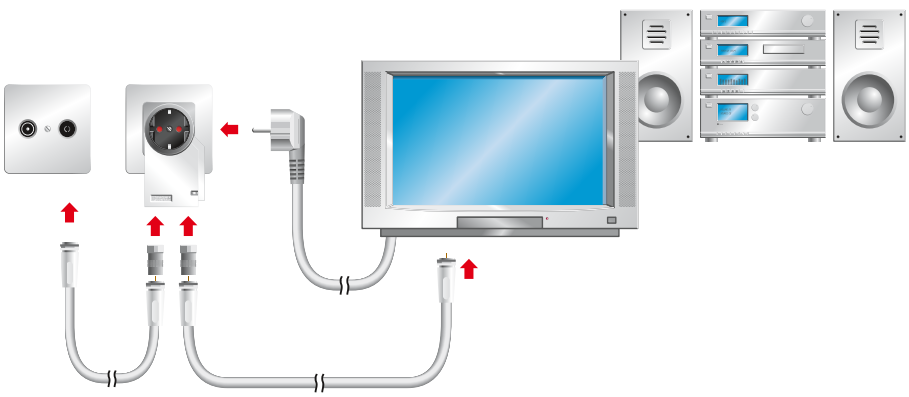
PT 3-HF-12DC-ST + PT 1X2-BE
2858043 + 2856113
Page 144

Protection of the SAT antenna connection



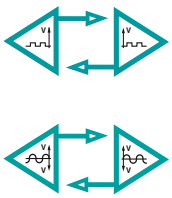
C-SAT-BOX
2880561
Page 180

Protection of the cable TV connection

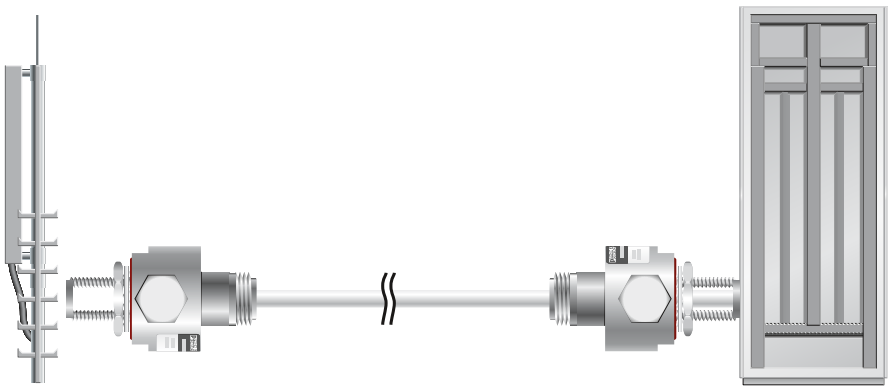


MNT-TV-SAT D
2882284
Page 75

Protection of antenna signals



– GPS
– GSM
– UMTS



CN-UB-280DC-3-BB		Optional	CN-LAMBDA/4-2.25-BB
2801050			2801057
Page 176			Page 178

Antenna systems

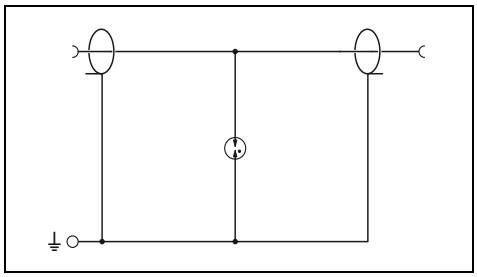
- For antennas with N and BNC connection
- High transmission capacities even for frequencies up to 6 GHz
- Mounting plate enables fixed mounting, e.g., in a control cabinet
- The protective adapters can also be used in a 75 Ω system with 50 Ω BNC connectors
- For the CN-UB-280DC, the gas-filled surge arrester can be replaced in case of malfunction

Notes:
Attenuation characteristics at phoenixcontact.net/products

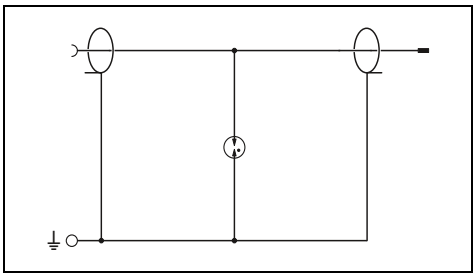
For GSM systems (0-3 GHz), grounded shield, connection: type N

For GSM systems (0 - 6 GHz), grounded shield, connection: type N

EAC



EAC



Technical data

Electrical data			
IEC test classification/EN type		C2 / C3 / D1	C2 / C3 / D1
Maximum continuous operating voltage U_C		280 V DC	70 V DC / 50 V AC
Rated current		5 A (25 °C)	10 A
Nominal discharge current I_n (8/20) µs			
	Core-Shield / Core-Ground	20 kA / 20 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		20 kA	5 kA
Protection level U_p			
	Core-Shield / Core-Ground	≤ 900 V (C1 - 1 kV/500 A) / ≤ 900 V (C1 - 1 kV/500 A)	≤ 800 V (C2 - 4 kV/2 kA) / ≤ 800 V (C2 - 4 kV/2 kA)
In a 50 Ω system	Asymmetrical	> 3 GHz	> 6 GHz
Standing wave ratio SWR in a 50 Ω system		typ. 1.15 (≤ 3 GHz)	typ. 1.15 (≤ 6 GHz)
Permissible RF power P_{max}		700 W (VSWR = 1.1)	30 W (VSWR = 1.15)
General data			
Dimensions W/H/D		31 mm / - / 33.5 mm	24 mm / 50 mm / 24 mm
Temperature range		-40 °C ... 80 °C	-40 °C ... 90 °C
Degree of protection in acc. with IEC 60529/EN 60529		IP55	IP68
Connection method		N connector 50 Ω	N connector 50 Ω
Test standards		IEC 61643-21/A1 / -	IEC 61643-21

Ordering data

Description	Type	Order No.	Pcs./Pkt.
COAXTRAB, protective adapter for antenna connections			
Socket-socket	**CN-UB-280DC-3-BB**	2801050	1
Connector-socket	**CN-UB-280DC-3-SB**	2801051	1
COAXTRAB, as surge protection for coaxial cables, connection via connector and socket			
BNC 50 Ω			
BNC 75 Ω			
BNC 50 Ω			

Accessories

Description	Type	Order No.	Pcs./Pkt.
Mounting plate, for individual attachment to housing panels			
straight	**CN-UB/MP**	2818135	10
angled	**CN-UB/MP-90DEG-50**	2803137	10
BNC connector, single-level, for mounting on NS 32 or NS 35/7.5			
50 Ω wave impedance			
75 Ω wave impedance			
Adapter, insertion loss <0.3 dB at 2.4 GHz			
N (male) -> SMA (female)	**RAD-ADP-N/M-SMA/F**	2917036	1
Adapter cable, pigtail, 50 Ω impedance; 50 cm long, MCX (male) -> N (male)	**RAD-PIG-EF316-MCX-N**	2867681	1

Technical data

Electrical data			
IEC test classification/EN type		C2 / C3 / D1	C2 / C3 / D1
Maximum continuous operating voltage U_C		280 V DC	70 V DC / 50 V AC
Rated current		5 A (25 °C)	10 A
Nominal discharge current I_n (8/20) µs			
	Core-Shield / Core-Ground	20 kA / 20 kA	5 kA / 5 kA
Total discharge current I_{total} (8/20) µs		20 kA	5 kA
Protection level U_p			
	Core-Shield / Core-Ground	≤ 900 V (C1 - 1 kV/500 A) / ≤ 900 V (C1 - 1 kV/500 A)	≤ 800 V (C2 - 4 kV/2 kA) / ≤ 800 V (C2 - 4 kV/2 kA)
In a 50 Ω system	Asymmetrical	> 3 GHz	> 6 GHz
Standing wave ratio SWR in a 50 Ω system		typ. 1.15 (≤ 3 GHz)	typ. 1.15 (≤ 6 GHz)
Permissible RF power P_{max}		700 W (VSWR = 1.1)	30 W (VSWR = 1.15)
General data			
Dimensions W/H/D		31 mm / - / 33.5 mm	24 mm / 50 mm / 24 mm
Temperature range		-40 °C ... 80 °C	-40 °C ... 90 °C
Degree of protection in acc. with IEC 60529/EN 60529		IP55	IP68
Connection method		N connector 50 Ω	N connector 50 Ω
Test standards		IEC 61643-21/A1 / -	IEC 61643-21

Ordering data

Description	Type	Order No.	Pcs./Pkt.
COAXTRAB, protective adapter for antenna connections			
Socket-socket	**CN-UB-70DC-6-BB**	2803166	1
Connector-socket	**CN-UB-70DC-6-SB**	2803153	1
COAXTRAB, as surge protection for coaxial cables, connection via connector and socket			
BNC 50 Ω			
BNC 75 Ω			
BNC 50 Ω			

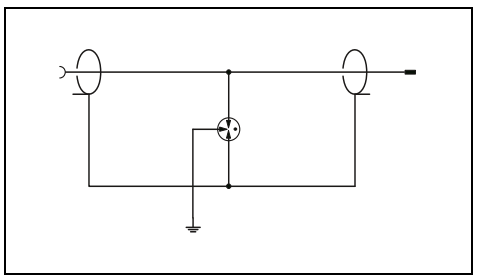
Accessories

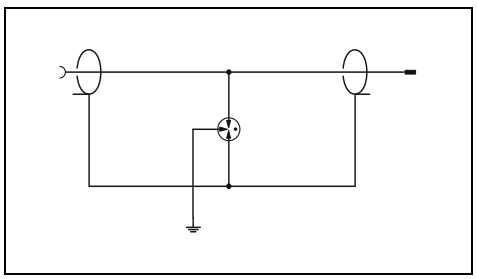
Description	Type	Order No.	Pcs./Pkt.
Mounting plate, for individual attachment to housing panels			
straight	**CN-UB/MP**	2818135	10
angled	**CN-UB/MP-90DEG-50**	2803137	10
BNC connector, single-level, for mounting on NS 32 or NS 35/7.5			
50 Ω wave impedance			
75 Ω wave impedance			
Adapter, insertion loss <0.3 dB at 2.4 GHz			
N (male) -> SMA (female)	**RAD-ADP-N/M-SMA/F**	2917036	1
Adapter cable, pigtail, 50 Ω impedance; 50 cm long, MCX (male) -> N (male)	**RAD-PIG-EF316-MCX-N**	2867681	1

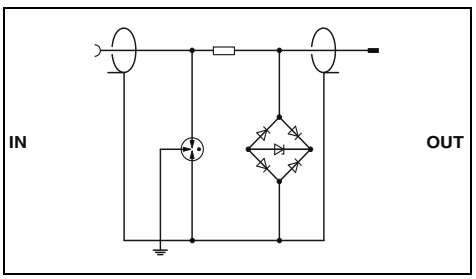
For TETRA systems (380 MHz - 470 MHz), floating shield, connection: type N

For video systems, floating shield, coarse protection, connection: BNC

For video systems, floating shield, connection: BNC







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 / 96 mm / 25.4 mm		
-40 °C ... 80 °C		
-		
N connector 50 Ω		
IEC 61643-21 / -		

Ordering data

Type	Order No.	Pcs./Pkt.
CN-UB/E-BB	2817686	1
CN-UB/E	2763691	1

Accessories

BNC-V 50	2805041	10

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 / 80 mm / 25.4 mm		
-40 °C ... 80 °C		
-		
BNC 50 Ω		
IEC 61643-21 / -		

Ordering data

Type	Order No.	Pcs./Pkt.
C-UB/E	2763701	10

Accessories

BNC-V 50	2805041	10

Technical data

	... 5DC/E	... 24DC/E	... 5DC/E 75
C2 / C3 / D1	C2 / C3 / D1	C2 / C3 / D1	C2 / C3 / D1
5 V DC	30 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) / ≤ 500 V (C3 - 10 A)	≤ 50 V (C3 - 10 A) / ≤ 500 V (C3 - 10 A)	≤ 25 V (C3 - 10 A) / ≤ 500 V (C3 - 10 A)	
typ. 90 MHz	typ. 90 MHz	typ. 80 MHz	
		-	
		-	
25.4 mm / - / 93 mm			
-40 °C ... 80 °C			
-			
BNC 50 Ω	BNC 50 Ω	BNC 75 Ω	
IEC 61643-21			

Ordering data

Type	Order No.	Pcs./Pkt.
C-UFB- 5DC/E	2782300	10
C-UFB- 5DC/E 75	2763604	10
C-UFB-24DC/E	2782313	10

Accessories

BNC-V 50	2805041	10
BNC-V 75	2805070	10

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

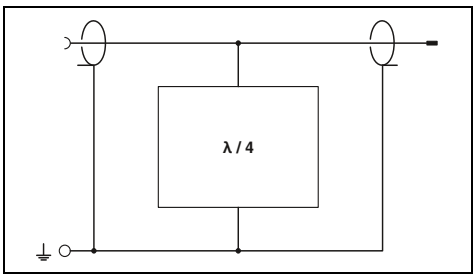
Notes:

Attenuation characteristics at phoenixcontact.net/products

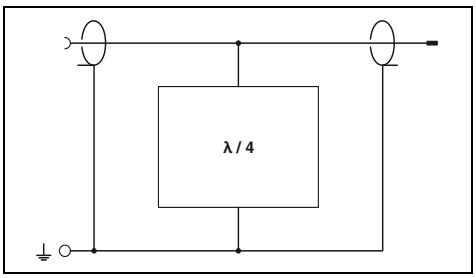
For TETRA systems (380 MHz - 470 MHz), grounded shield, connection: type N

For GSM systems (0.8 GHz-2.25 GHz), grounded shield, connection: type N

EAC



EAC



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) µs	
Core-Shield / Core-Ground	20 kA / 20 kA
Total discharge current I_{total} (8/20) µs	30 kA
Protection level U_p	
Core-Shield / Core-Ground	≤ 95 V (C2 - 10 kV / 5 kA) / ≤ 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 (≤ 1.15)
Permissible RF power P_{max}	≤ 800 W
General data	
Dimensions W/H/D	32 mm / 32 mm / 83 mm
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) µs	
Core-Shield / Core-Ground	50 kA / 50 kA
Total discharge current I_{total} (8/20) µs	-
Protection level U_p	
Core-Shield / Core-Ground	- / ≤ 5 V (C1 - 1 kV/500 A)
Frequency range	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	
Dimensions W/H/D	25 mm / 77.5 mm
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	Type	Order No.	Pcs./Pkt.
COAXTRAB, protective adapter for antenna connections with Lambda/4 technology			
Socket-socket	**CN-LAMBDA/4-0.47-BB**	2800021	1
Connector-socket	**CN-LAMBDA/4-0.47-SB**	2800022	1
Surge protection for UMTS and quad-band GSM antenna, with SMA plug and SMA coupling			

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	**CN-UB/MP-90DEG-50**	2803137	10
Adapter, insertion loss <0.3 dB at 2.4 GHz			
N (male) -> SMA (female)	**RAD-ADP-N/M-SMA/F**	2917036	1
Adapter cable, pigtail, 50 Ω impedance;			
50 cm long, MCX (male) -> N (male)	**RAD-PIG-EF316-MCX-N**	2867681	1
30 cm long, N (female) -> SMA (male)	**RAD-PIG-EF316-N-SMA**	2867694	1

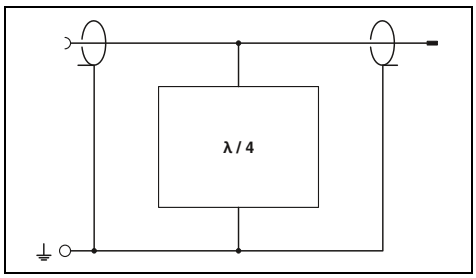
Accessories

straight	**CN-UB/MP**	2818135	10
angled	**CN-UB/MP-90DEG-50**	2803137	10
N (male) -> SMA (female)	**RAD-ADP-N/M-SMA/F**	2917036	1
50 cm long, MCX (male) -> N (male)	**RAD-PIG-EF316-MCX-N**	2867681	1
30 cm long, N (female) -> SMA (male)	**RAD-PIG-EF316-N-SMA**	2867694	1

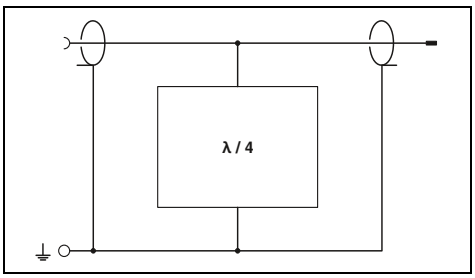
For GSM systems (0.8 GHz - 2.25 GHz), grounded shield, connection: SMA

For GSM and WiMAX systems (2.4 GHz - 5.9 GHz), grounded shield, connection: type N

EAC



EAC



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)	
46.5 mm / 25 mm / 70 mm	
-40 °C ... 70 °C	
IP55	
SMA connector	
IEC 61643-21/A1 / EN 61643-21/A1	

Ordering data

Type	Order No.	Pcs./Pkt.
CSMA-LAMBDA/4-2.0-BS-SET	2800491	1

Accessories

CN-UB/MP	2818135	10
CN-UB/MP-90DEG-50	2803137	10

Technical data

C2 / C3 / D1	
5 A (25 °C)	
50 kA / 50 kA	
60 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	
26.1 mm / 38 mm / 60 mm	
-40 °C ... 90 °C	
IP68	
N Connector	
IEC 61643-21	

Ordering data

Type	Order No.	Pcs./Pkt.
CN-LAMBDA/4-5.9-BB	2838490	1
CN-LAMBDA/4-5.9-SB	2800023	1

Accessories

CN-UB/MP-90DEG-50	2803137	10
RAD-ADP-N/M-SMA/F	2917036	1
RAD-PIG-EF316-MCX-N	2867681	1

TV and radio systems

C-SAT-BOX

– Protection for antenna inputs in satellite receiver technology
– Used 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

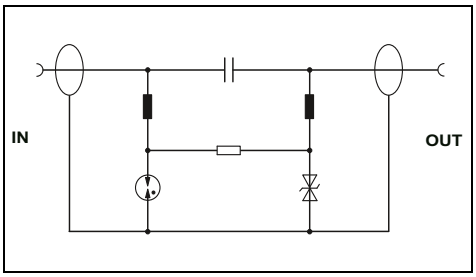
– Protective adapter for antenna connections
– Use on broadband cable or SAT connection
– TV (IEC) or F connector

Notes:

Attenuation characteristics at phoenixcontact.net/products

For antenna distributor or multi-switch, grounded shield, connection: F

EAC



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 (25 °C)
Nominal discharge current I_n (8/20) µs		
	Core-Shield / Core-Ground	2.5 kA / 2.5 kA
Total discharge current I_{total} (8/20) µs		10 kA
Output voltage limitation at 1 kV/µs		
	Core-Shield / Core-Ground	≤ 80 V / ≤ 80 V
Cut-off frequency fg (3 dB)		
In a 75 Ω system	Symmetrical / Asymmetrical	- / > 2.5 GHz
General data		
Dimensions W/H/D		145 mm / 72 mm / 32 mm
Temperature range		-25 °C ... 55 °C
Degree of protection in acc. with IEC 60529/EN 60529		IP40
Inflammability class in acc. with UL 94		-
Connection method		F connector
Test standards		IEC 61643-21+A1+A2 / DIN EN 61643-21 / DIN EN 50083-2

Ordering data

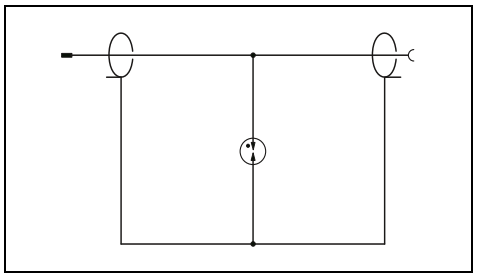
Description	Type	Order No.	Pcs./Pkt.
COAXTRAB, protective device for antenna distributors/multi-switches for insertion in the antenna line	**C-SAT-BOX**	2880561	1
COAXTRAB, surge protection adapter			
F connector			
TV connector			

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)

EAC



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 / 66 mm / 44 mm	
-25 °C ... 75 °C	
-	
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

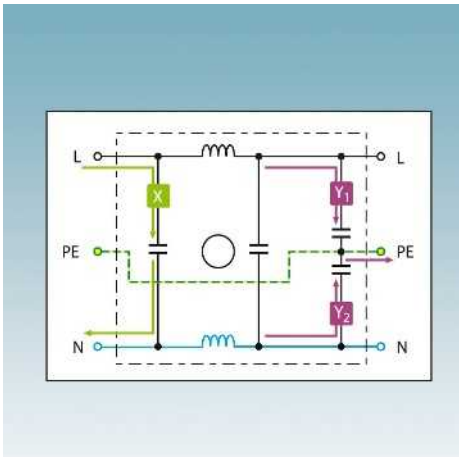
Reliable signals by means of interference suppression filters with integrated surge protection

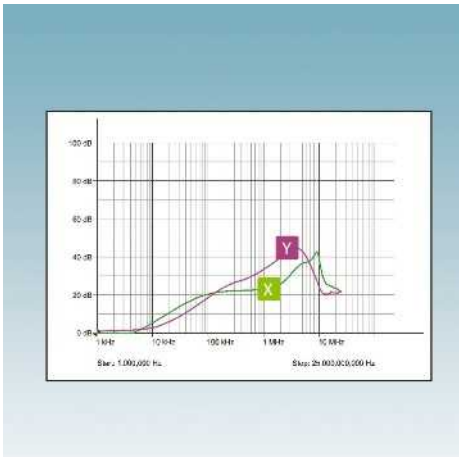
Switching operations triggered mechanically or electronically generate pulse-like and high-frequency interference voltages. These voltages spread in an unimpeded manner across the cable network. All the devices within this cable network are affected. Data errors, uncontrolled functions, and system crashes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

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

Y_1,Y_2 - 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 surge voltages and also limit high-frequency interference voltages.

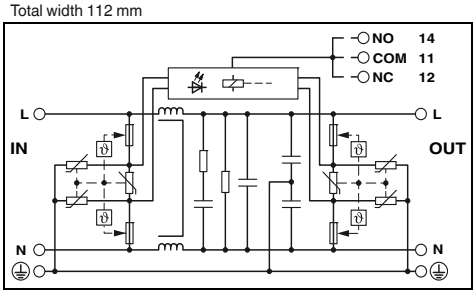
Versions are available for the power supply and for signal circuits.

DIN-rail-mountable device protection with SFP-TRAB interference suppression 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)		III / T3 / 2CA	III / 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
Backup fuse max. in acc. with IEC		20 A (MCB B/general purpose)	20 A (MCB B/general purpose)
Input attenuation a_l			
	Symmetrical	20 dB (≥ 100 kHz / 50 Ω)	20 dB (≥ 100 kHz / 50 Ω)
	Asymmetrical	30 dB (≥ 1 MHz / 50 Ω)	30 dB (≥ 1 MHz / 50 Ω)
Inductance		2x 1 mH ±30 % (with current compensation)	2x 1 mH ±30 % (with current compensation)

General data		
Dimensions W/H/D	112 mm / 93 mm / 79 mm	
Connection data solid/stranded/AWG	2.5 mm² ... 6 mm² / 2.5 mm² ... 4 mm² / 14 ... 10	
Temperature range	-25 °C ... 70 °C	-25 °C ... 70 °C
Inflammability class in acc. with UL 94	V-0	
Test standards	IEC 61643-11 / EN 61643-11	

Remote indication contact	PDT contact
Connection data solid/stranded/AWG	0.14 mm² ... 1.5 mm² / 0.14 mm² ... 1.5 mm² / 26 ... 16
Max. operating voltage	250 V AC / 250 V DC
Max. operating current	1 A AC / 1 A DC

Ordering data

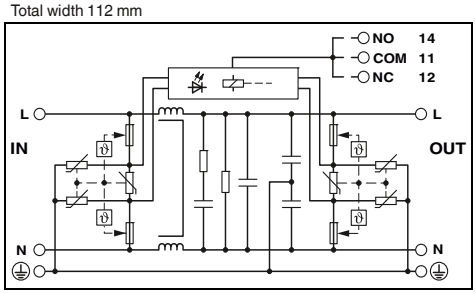
Description	Voltage U_N	Type	Order No.	Pcs./Pkt.
SFP-TRAB, DIN-rail-mountable TVSS device protection with integrated mains interference filter and optical signaling				
Nominal current: 20 A	120 V AC	**SFP 1-20/120AC**	2856702	1
Nominal current: 20 A	240 V AC	**SFP 1-20/230AC**	2859987	1
SFP-TRAB, DIN-rail-mountable device protection with integrated mains interference filter and optical 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

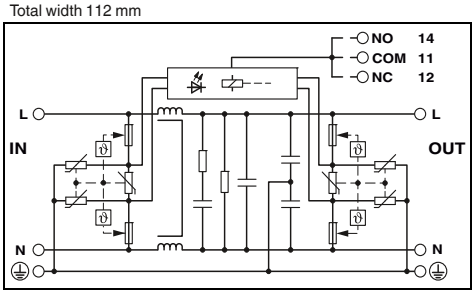
10 A nominal current

15 A nominal current

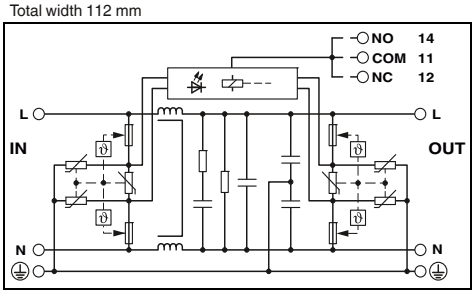
Total width 112 mm



Total width 112 mm



Total width 112 mm



Technical data

III / 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 / 93 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

Technical data

III / 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 / 93 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

Technical data

III / 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 / 93 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

Ordering data

Type	Order No.	Pcs./Pkt.
SFP 1-10/120AC	2920670	1

Ordering data

Type	Order No.	Pcs./Pkt.
SFP 1-15/120AC	2920683	1

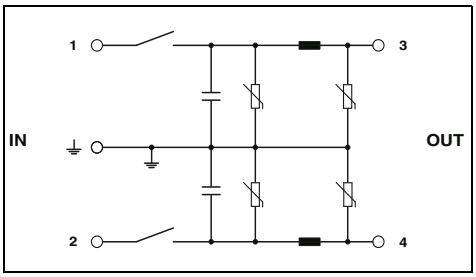
TERMITRAB

- Combined protective circuit for absorbing transient surge voltages and high-frequency interference voltages
- With spring-cage connection
- Disconnection of signal circuits by disconnect knife

Notes:

Attenuation characteristics at phoenixcontact.net/products

Protection for two conductors with a common reference potential



Technical data

Electrical data		
IEC test classification/EN type		C1 / C3
Maximum continuous operating voltage U_C		38 V DC / 30 V AC
Rated current		500 mA (55°C)
Nominal discharge current I_n (8/20) µs		
	Core-Ground	350 A (per path)
Total discharge current I_{total} (8/20) µs		700 A
Output voltage limitation at 1 kV/µs		
	Core-Ground	≤ 70 V (per path)
Cut-off frequency fg (3 dB)		
	Asymmetrical in the 50 Ω system	typ. 60 kHz
Resistance per path		0.5 Ω
Inductance per path		typ. 100 µH
Capacity per path		typ. 130 nF
General data		
Connection data solid/stranded/AWG		0.2 mm² ... 4 mm² / 0.2 mm² ... 2.5 mm² / 24 ... 12
Temperature range		-40 °C ... 85 °C
Degree of protection in acc. with IEC 60529/EN 60529		IP20
Inflammability class in acc. 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**	2858894	50

FILTRAB

– Low pass filters for nominal currents of 1 to 10 A
– For single-phase circuits
– DIN rail module

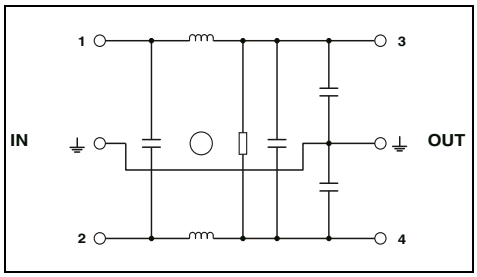
Notes:

Attenuation characteristics at phoenixcontact.net/products

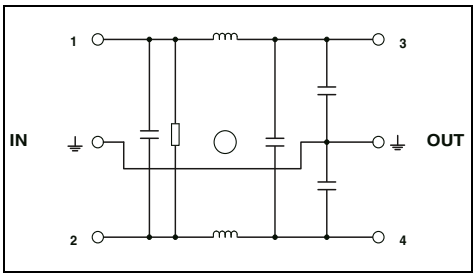
1 A / 3 A nominal current

6 A / 10 A nominal current

Total width 25 mm



Total width 40 mm



Technical data

Electrical data	NEF 1- 1	NEF 1- 3
Rated voltage	240 V AC (L-N)	240 V AC (L-N)
Maximum continuous operating voltage U_C	264 V AC (L-N) / 264 V AC (L-PE)	264 V AC (L-N) / 264 V AC (L-PE)
Rated current	1 A (40°C)	3 A (40°C)
Backup fuse max. 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)	> 55 dB (50 Ω/ 1 MHz)
Asymmetrical	> 45 dB (50 Ω/ 1 MHz)	> 35 dB (50 Ω/ 1 MHz)
General data		
Dimensions W/H/D	25 mm / 79.4 mm / 84.15 mm	
Connection data solid/stranded/AWG	0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 - 12	
Temperature range	-25 °C ... 100 °C (HMF)	
Inflammability class in acc. with UL 94	V-2	
Test standards	IEC 60939-2 / EN 60939-2	

Technical data

Electrical data	NEF 1- 6	NEF 1-10
Rated voltage	240 V AC (L-N)	240 V AC (L-N)
Maximum continuous operating voltage U_C	264 V AC (L-N) / 264 V AC (L-PE)	264 V AC (L-N) / 264 V AC (L-PE)
Rated current	6 A (40°C)	10 A (40°C)
Backup fuse max. 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)	> 80 dB (50 Ω/ 1 MHz)
Asymmetrical	> 40 dB (50 Ω/ 1 MHz)	> 40 dB (50 Ω/ 1 MHz)
General data		
Dimensions W/H/D	40 mm / 79.4 mm / 84.1 mm	
Connection data solid/stranded/AWG	0.2 ... 4 mm² / 0.2 ... 2.5 mm² / 24 - 12	
Temperature range	-25 °C ... 100 °C (HMF)	
Inflammability class in acc. with UL 94	V-2	
Test standards	IEC 60939-2 / EN 60939-2	

Ordering data

Description	Nominal load current I_L	Type	Order No.	Pcs./Pkt.
FILTRAB, interference suppression filter for single-phase current circuits, for mounting on NS 32 or NS 35...				
	1 A	**NEF 1- 1**	2794123	10
	3 A	**NEF 1- 3**	2794110	10
	6 A			
	10 A			

Ordering data

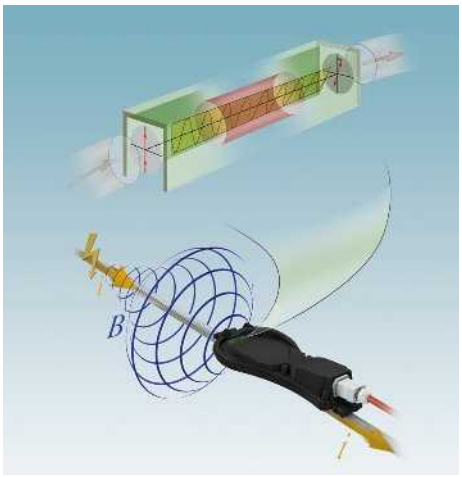
Type	Order No.	Pcs./Pkt.
NEF 1- 6	2783082	5
NEF 1-10	2788977	5

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 monitoring system consists of the following components:
– Sensor
– Connecting cable
– O/E module
– Evaluation unit

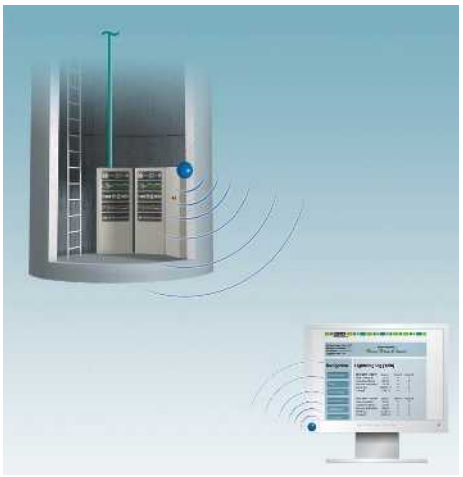


Faraday effect as a reliable measuring method

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.

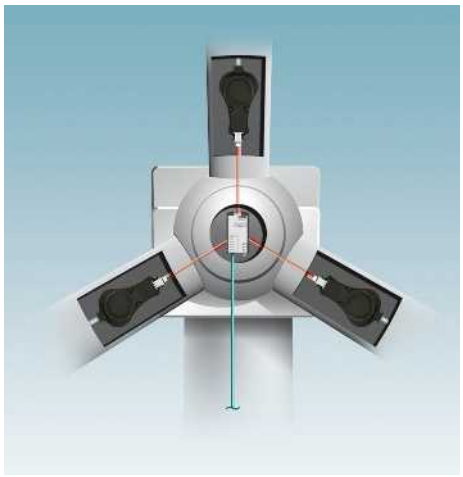
The higher the amperage (i) generated by a lightning strike the greater the magnetic flux density (B) and, therefore, the rotation of the polarized light.

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.

Sensor

- Optical sensor for measuring lightning surge currents
- Can be retrofitted
- Resistant to humidity
- Good UV resistance

Sensor

Technical data	
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

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Sensor	**LM-S-LS-H**	**2800616**	1

Connecting cable

- HCS cable for connecting LM-S sensors to the O/E module
- Good UV resistance
- Good oil resistance

Notes:

The specified connector 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 connector, and a cable length of 10 m.

Order No.		Length [m] Max. 200 m
1417723 / FOC-SJ:14-ST/HB02	/	**10.0**
		Increments: 10.0 m ... 200 m = 1.0 m

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Connecting cable, variable	**FOC-SJ:14-ST/HB02/...**	**1417723**	1

Evaluation unit

- Complete module including O/E module for connecting up to three LM-S sensors
- Evaluation and storage of amperage, current rate of rise, charge, and specific energy
- 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
- Mounted on DIN rails

Evaluation unit with O/E module

Technical data

Operating voltage	24 V DC ±4 V
Ethernet ports	
Connection method	RJ45
Transmission speed	10/100 Mbps
FO interface	
Interface	B-FOC (ST®)
Number of ports	3
Sensor interfaces	
Connection method	Rack for plug-in I/O module
Remote indication contact	
Connection method	M12 D-coded
Max. operating voltage	60 V DC
General data	
Ambient temperature (operation)	-30 °C ... 60 °C
Degree of protection	IP20

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Evaluation unit with O/E module	**LM-S-A/C-3S-ETH**	**2800618**	1

Opto-electronic module

- O/E module replacement for evaluation unit
- Connection of up to three LM-S sensors
- Status and diagnostic display via evaluation unit

O/E module

Technical data

FO interface	
Interface	B-FOC (ST®)
Number of ports	3
General data	
Ambient temperature (operation)	-30 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Degree of protection	IP20

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Opto-electronic module	**LM-S-C-3LS**	**2800617**	1

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 protective devices, 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.

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	
Ambient temperature (operation)	

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 FLT-CP/SEC and VALVETRAB VAL-CP/SEC
VALVETRAB VAL-MS
PLUGTRAB PT/PLT (width: 17.5 mm)
PLUGTRAB PT/PLT (width: 35 mm)
COMTRAB CTM
FLASHTRAB-SEC-HYBRID
PLUGTRAB UFBK/UAK
TERMITRAB complete

Test device

Transport case

Test adapter

Total width 432 mm

Technical data

100 V AC ... 240 V AC
5 °C ... 35 °C

Ordering data

Type	Order No.	Pcs./Pkt.
CHECKMASTER 2	2905256	1

Ordering data

Type	Order No.	Pcs./Pkt.
PA-CASE 2	2906272	1

Ordering data

Type	Order No.	Pcs./Pkt.
CM 2-PA-FLT/VAL-CP/SEC	2905283	1
CM 2-PA-VAL-MS	2905265	1
CM 2-PA-PT/PLT	2905284	1
CM 2-PA-PT4/PLT3S	2907019	1
CM 2-PA-CTM	2905282	1
CM 2-PA-SEC-HYBRID	2907889	1
CM 2-PA-PT/A	2907891	1
CM 2-PA-TTC	2908707	1

Feed-through terminal block

- For wiring mixed combinations of lightning current arresters and surge protective devices
- As a system extension for FLASHTRAB and VALVETRAB applications
- Practical wiring of all common applications

Feed-through terminal block

Technical data

Electrical data	
Maximum continuous operating voltage U_C	500 V AC
Nominal current I_N	-
Impulse discharge curr. I_{imp} (10/350) µs	
Peak value	100 kA
General data	
Dimensions W/H/D	17.7 mm / 89.8 mm / 65.5 mm
Connection data solid/stranded/AWG	0.5...35 mm² / - mm² / 20 ... 2
Temperature range	-40 °C ... 85 °C
Inflammability class in acc. with UL 94	V-0
Test standards	IEC 60947-7-1 / DIN EN 61643-11 / IEC 61643-1

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Feed-through terminal block with biconnect connecting terminal blocks as wiring aid for lightning current arrester and surge protective device applications.	**DK-BIC-35**	2749880	1

Equipotential bonding and TRABTECH housing

Equipotential bonding strip

- For main equipotential bonding according to DIN VDE 0100
- As well as for lightning protection equipotential bonding in acc. with DIN EN 62305 TRABTECH housing
- Use in harsh environmental conditions at the installation location
- Suitable for outdoor and indoor installation

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 CMS computer 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 roll, width: 20 mm						
Color: white				**EML (20XE)R**	0803452	1
Color: yellow				**EML (20XE)R YE**	0803453	1

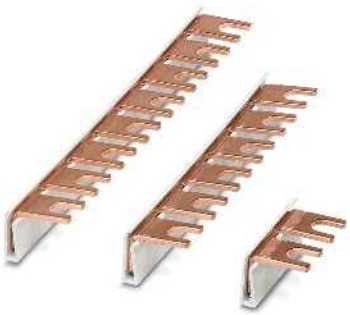
Shield fast connection and wiring bridges

– 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	**SSA 3-6**	2839295	10			
For Ø 5-10 mm	**SSA 5-10**	2839512	10			
Wiring bridge, for wiring applications with lightning current arresters and surge protective devices; 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 mm²						
6-pos.				**MPB 18/1-6/35**	2908705	10
8-pos.				**MPB 18/1-8/35**	2908704	10

+ + - - -
Output DC 24V 10A
PHOENIX CONTACT
Uout
29.5V
24V
Signal
13
14
Rem
SGnd
Out 1
Out 2
> 100% Boost
> 75%
> 50%
P out
DC OK
NFC
QUINT POWER
Input AC 100-240V
N/- L/+
+ −
Input
DC 24V 10A
QUINT CAP 8KJ
+ −
Output
DC 24V 10A
PHOENIX CONTACT
Signal
Uₕ OK
13
14
Alarm
Ready
Remote
SGnd
Alarm
Ready
Uₕ OK

Power supplies and UPS

For superior system availability

The product ranges differ with regard to their design, performance, and functionality. Select the ideal solution based on your requirements:

– QUINT POWER – maximum functionality
– TRIO POWER – robust standard functionality
– UNO POWER – compact basic functionality

The product range is supplemented with designs tailor-made for specific applications:

– MINI POWER for measurement and control technology
– STEP POWER for installation distributors and flat control panels

Power supplies

Thanks to high-quality products featuring leading technology, our QUINT, TRIO, UNO, MINI, and STEP POWER product ranges optimally equip you for international competition.

DC/DC converters

Change the voltage level, regenerate the voltage at the end of long cables or enable the creation of independent supply systems with the QUINT and MINI DC/DC converters.

Redundancy modules

A redundant power supply system is the result of the parallel connection of two power supply units. Optimize this solution with the QUINT ORING and QUINT-S-ORING redundancy modules and the QUINT, TRIO, UNO, and STEP diodes for superior system availability.

Uninterruptible power supplies (UPS) for control cabinets

IQ technology is the key to an intelligent power supply solution. The UPS monitors and optimizes the energy storage. Avoid interruptions when working with the intelligent UPS for non-stop power.

Your web code: #0150

Power supplies and UPS

Selection guides	**200**
Power supplies	**204**
QUINT POWER	**206**
QUINT POWER, with protective coating	**216**
TRIO POWER	**218**
UNO POWER	**226**
MINI POWER	**234**
STEP POWER	**238**
DC/DC converters	**246**
QUINT DC/DC converters	**248**
QUINT DC/DC converters, with protective coating	**254**
MINI DC/DC converters	**256**
Redundancy modules	**258**
QUINT ORING	**260**
QUINT S-ORING	**262**
QUINT DIODE	**264**
TRIO DIODE	**266**
UNO DIODE	**267**
STEP DIODE	**267**
Accessories	**268**
Uninterruptible power supplies for the control cabinet	**270**
Selection guide for QUINT DC-UPS	**272**
QUINT DC UPS	**274**
Selection guide for QUINT AC-UPS	**278**
QUINT AC-UPS	**280**
TRIO AC-UPS	**282**
Energy storage for QUINT UPS	**284**
Accessories	**290**
Selection guide for UPS modules	**292**
UPS module with integrated energy storage	**294**
UPS module with integrated power supply	**300**
Energy storage for TRIO UPS and MINI UPS	**302**

Product range overview

QUINT POWER, with NFC technology, 1~

24 DC / 5 A
Page 206

24 DC / 10 A
Page 206

24 DC / 20 A
Page 207

QUINT POWER, with NFC technology, 3~

24 DC / 5 A
Page 208

24 DC / 10 A
Page 208

24 DC / 20 A
Page 209

QUINT POWER 1~

24 DC / 3.5 A
Page 210

48 DC / 5 A
Page 213

12 DC / 15 A
Page 212

48 DC / 10 A
Page 213

12 DC / 20 A
Page 212

24 DC / 40 A
Page 210

48 DC / 20 A
Page 213

... 3~

24 DC / 40 A
Page 211

48 DC / 20 A
Page 214

QUINT POWER, with protective coating 1~

1 AC / 24 DC / 5 A CO
Page 216

1 AC / 24 DC / 10 A CO
Page 217

1 AC / 24 DC / 20 A CO
Page 217

... 3~

3 AC / 24 DC / 20 A CO
Page 217

TRIO POWER 1~

24 DC / 3 A
Page 218

12 DC / 5 A
Page 224

24 DC / 5 A
Page 219

12 DC / 10 A
Page 225

24 DC / 5 A B+D
Page 219

24 DC / 10 A
Page 220

48 DC / 5 A
Page 225

24 DC / 10 A B+D
Page 221

24 DC / 20 A
Page 221

48 DC / 10 A
Page 225

TRIO POWER 3~

24 DC / 5 A
Page 222

24 DC / 10 A
Page 223

24 DC / 20 A
Page 223

24 DC / 40 A
Page 223

UNO POWER 1~

24 DC / 30 W
Page 226
15 DC / 30 W
Page 231
12 DC / 30 W
Page 229
5 DC / 25 W
Page 230

24 DC / 60 W
Page 226
48 DC / 60 W
Page 232
15 DC / 55 W
Page 231
12 DC / 55 W
Page 229
5 DC / 40 W
Page 230

24 DC / 90 W
Page 228

24 DC / 100 W
Page 227
48 DC / 100 W
Page 232
15 DC / 100 W
Page 231
12 DC / 100 W
Page 229

24 DC / 150 W
Page 227

24 DC / 240 W
Page 227

2~

24 DC / 90 W
Page 228

MINI POWER 1~

24 DC / 1.3 A
Page 234
5 DC / 3 A
Page 236

24 DC / 1.5 A
Page 234

24 DC / 2 A
Page 235
10 - 15 DC / 2 A
Page 236
±15 DC / 1 A
Page 237

24 DC / 4 A
Page 235
24 DC / 100 W
Page 235
10 - 15 DC / 8 A
Page 237

24 DC / 1.5 A EX
Page 237

STEP POWER 1~

24 DC / 0.5 A
Page 238
48 AC / 24 DC / 0.5 A
Page 239
12 DC / 1 A
Page 244
5 DC / 2 A
Page 242

24 DC / 0.75 A / FL
Page 239
12 DC / 1.5 A / FL
Page 244

24 DC / 0.75 A
Page 239
12 DC / 1.5 A
Page 245

24 DC / 1.75 A
Page 240
12 DC / 3 A
Page 245

24 DC / 2.5 A
Page 240
5 DC / 6.5 A
Page 243
12 DC / 5 A
Page 245
15 DC / 4 A
Page 243

24 DC / 4.2 A
Page 241
24 DC / 100 W
Page 241
48 DC / 2 A
Page 243
277 AC / 24 DC / 3.5 A
Page 241

Redundancy modules – QUINT

24 DC / 2x10 A
Page 260

24 DC / 2x20 A
Page 261

24 DC / 2x40
Page 261

12 - 24 DC / 1x40 A
Page 262
12 - 24 DC / 1x40 A /+
Page 263

12 - 24 DC / 2x20 A
Page 264
48 DC / 2x20 A
Page 265

Redundancy modules – TRIO

12 - 24 DC / 2x10 A
Page 266

12 - 24 DC / 2x20 A
Page 267

- UNO

5 - 24 DC / 2x10 A
Page 267

- STEP

5 - 24 DC / 2x5 A
Page 267

Product range overview

QUINT DC/DC converters

24 DC / 24 DC / 5 A
Page 248
24 DC / 12 DC / 8 A
Page 249
48 DC / 24 DC / 5 A
Page 252
12 DC / 24 DC / 5 A
Page 250
12 DC / 12 DC / 8 A
Page 251

24 DC / 24 DC / 10 A
Page 248
24 DC / 48 DC / 5 A
Page 249
48 DC / 48 DC / 5 A
Page 253
60 - 72 DC / 24 DC / 10 A
Page 253
96 - 110 DC / 24 DC / 10 A
Page 253

24 DC / 24 DC / 20 A
Page 249

QUINT DC/DC converters, with protective coating

24 DC / 24 DC / 5 A / CO
Page 254

60 -72 DC/24 DC/10 A/CO
Page 255
96-110 DC/24 DC/10 A/CO
Page 255

24 DC / 24 DC / 10 A / CO
Page 254

24 DC / 24 DC / 20 A / CO
Page 255

UNO DC/DC converters

350-900 DC/24 DC/60 W
Page 233

MINI DC/DC converters

12 - 24 DC/24 DC/1 A
Page 256
48 - 60 DC/24 DC/1 A
Page 257
12 - 24 DC/5 - 15 DC/2 A
Page 256
12 - 24 DC/48 DC / 0.7 A
Page 257

AC power module
Page 257

For frequency inverters

2 AC / 1 DC / 24 DC / 20 A
Page 215

600 DC / 24 DC / 20 A
Page 215

QUINT DC-UPS

24 DC / 5 A
Page 274

24 DC / 10 A
Page 275

24 DC / 20 A
Page 275

24 DC / 40 A
Page 275

12 DC/5 A/24 DC/10 A
Page 276

QUINT AC-UPS

1 AC / 1 AC / 500 VA
Page 280

1 AC / 1 AC / 1 kVA
Page 281

TRIO AC-UPS

1 AC / 1 AC / 750 VA
Page 282

UPS-CAP for QUINT UPS

24 DC / 10 A / 10 KJ
Page 284

24 DC / 20 A / 20 KJ
Page 284

UPS-BAT/LI-ION for QUINT UPS

24 DC / 120 WH
Page 285

24 DC / 925 WH
Page 285

UPS-BAT/VRLA-WTR for QUINT UPS

24 DC / 13 AH
Page 288

24 DC / 26 AH
Page 288

UPS-BAT/VRLA for QUINT UPS

24 DC / 1.3 AH
Page 286

24 DC / 3.4 AH
Page 286

24 DC / 7.2 AH
Page 287

24 DC / 12 AH
Page 287

24 DC / 38 AH
Page 287

UPS with integrated QUINT, UNO, STEP energy storage

24 DC / 5 A / 1.3 AH
Page 294

24 DC / 10 A / 3.4 AH
Page 294

24 DC / 60 W
Page 299

24 DC / 3 A
Page 298

12 DC / 4 A
Page 298

QUINT BUFFER

24 DC / 20 A
Page 295

24 DC / 40 A
Page 295

QUINT CAP

24 DC / 5 A / 4 KJ
Page 296

24 DC / 5 A / 8 KJ
Page 297

MINI UPS with integrated power supply and energy storage

1 AC / 24 DC / 2 A
Page 301

1 AC / 12 DC / 4 A
Page 301

24 DC / 1.3 AH
Page 302

12 DC / 2.6 AH
Page 305

24 DC / 0.8 AH
Page 304

12 DC / 1.6 AH
Page 305

TRIO UPS with integrated power supply and energy storage

1 AC / 24 DC / 5 A
Page 300

24 DC / 3.4 AH
Page 303

24 DC / 7.2 AH
Page 303

24 DC / 12 AH
Page 303

Leading technology and high quality – power supplies for superior system availability.

Thanks to high-quality products featuring leading technology, with our power supply solutions from the QUINT, TRIO, UNO, MINI, and STEP POWER product ranges, you are optimally equipped to handle competitors on an international scale.

Functionality, performance class, and design are tailored to the demands of various different sectors and always offer the ideal solution. Choose from our wide range of power supplies and DC/DC converters.

QUINT POWER – maximum functionality

Cost-effective selective fuse protection with SFB Technology:

In order to trip miniature circuit breakers magnetically and quickly, power supplies must be able to supply several times the nominal current for a short period. With SFB (Selective Fuse Breaking) Technology, which supplies up to 6 times the nominal current for 15 ms, a dynamic power reserve is available. Faulty current paths are switched off selectively, the fault is located, and important system parts remain in operation.

Preventive function monitoring:

Comprehensive diagnostics are provided through constant monitoring of the output voltage and output current. This preventive function monitoring visualizes critical operating states, before errors can occur. The remote monitoring takes place by means of active switching outputs and floating relay contacts.

Power reserves:

– Easy system extension with static boost with sustained power of up to 125%
– Start heavy loads with dynamic boost, providing up to 200% power for 5 s

Adaptable:

– Signaling thresholds and characteristic curves that can be adjusted via NFC maximize system availability

TRIO POWER – robust standard functionality

The reliable supply of the loads under challenging ambient conditions is ensured by the power supply units, which feature an extremely robust electrical and mechanical design. TRIO POWER supplies up to 1.5 times the nominal current for five seconds with the dynamic boost. Loads with high starting currents can therefore be started without other loads being affected by voltage dips.

UNO POWER – compact basic functionality

UNO POWER offers maximum energy efficiency thanks to high efficiency of up to 94% and low idling losses below 0.3 W. The extremely high power density of up to 325 W/dm³ enables a very compact design. Thanks to the wide range of products and the temperature range from -25°C to +70°C, the devices support flexible use.

Your web code: #0151

Power supplies – a comparison of the advantages

– QUINT POWER – maximum flexibility up to 1000 W
– TRIO POWER – standard functionality up to 1000 W
– UNO POWER – compact basic functionality up to 240 W

QUINT POWER

The QUINT POWER power supplies enable individual adjustment to the signaling thresholds and characteristic curves via the NFC interface.

– Quick tripping of standard circuit breakers with SFB Technology
– Easy system extension with static boost
– Starting of heavy loads with dynamic boost

TRIO POWER

The TRIO POWER power supplies represent standard functionality, high quality, and reliability. They are therefore perfect for use in machine building.

– Robust design
– Reliable supply of loads with high switch-on currents with the dynamic boost
– Time savings during installation thanks to Push-in connection technology

UNO POWER

The UNO POWER power supplies offer extremely compact basic functionality.

– The wide range of products covers all common voltage levels
– Save energy thanks to high efficiency and low idling losses
– Compact design saves space in the control cabinet

MINI POWER

MINI POWER power supplies in electronics housing for measurement and control technology.

– Maintenance-friendly connection technology: coded COMBICON connectors
– Active function monitoring with switching output for remote monitoring of the output voltage

STEP POWER

The STEP POWER power supplies are particularly suited to installation distributors and flat control panels.

– Maximum energy efficiency, thanks to incredibly low idling losses and a high degree of efficiency
– Flexible: snap onto the DIN rail or screw onto a level surface

QUINT POWER power supplies – maximum functionality

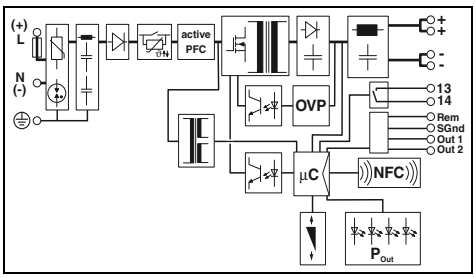
QUINT POWER, 1 AC, 24 V DC

– SFB Technology selectively trips standard circuit breakers; loads connected in parallel continue working
– Preventive function monitoring
– Signaling thresholds and characteristic curves that can be adjusted via NFC maximize system availability
– Easy system extension thanks to static boost; starting of difficult loads thanks to dynamic boost
– High noise immunity, thanks to integrated gas-filled surge arrester and mains failure buffer time in excess of 20 ms

new

Power supply, 1 AC, 24 V DC, 5 A

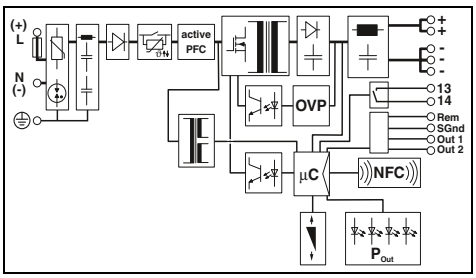
Ex:



new

Power supply, 1 AC, 24 V DC, 10 A

Ex:



Technical data

Input data		
Input voltage range	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC -18 % ... +40 %	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC -18 % ... +40 %
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %	50 Hz ... 60 Hz -10 % ... +10 %
Current consumption (nominal load)	1.7 A (100 V AC) / 1.5 A (120 V AC) 0.9 A (230 V AC) / 0.8 A (240 V AC) 1.6 A (110 V DC) / 0.7 A (250 V DC)	3.4 A (100 V AC) / 2.8 A (120 V AC) 1.5 A (230 V AC) / 1.5 A (240 V AC) 3 A (110 V DC) / 1.3 A (250 V DC)
Inrush current limitation at 25°C / I^2t	typ. 14 A / < 0.3 A^2s	typ. 18 A / < 0.7 A^2s
Mains buffering (I_N, typ.)	≥ 24 ms (120 V AC) / ≥ 32 ms (230 V AC)	≥ 35 ms (120 V AC) / ≥ 35 ms (230 V AC)
Output data		
Nominal output voltage	24 V DC	24 V DC
Output current I_N / $I_{Stat. Boost}$ / $I_{Dyn. Boost}$ / I_{SFB}	5 A / 6.25 A / 10 A (5 s) / 30 A (15 ms)	10 A / 12.5 A / 20 A (5 s) / 60 A (15 ms)
Magnetic circuit breaker tripping	A1...A4 / B2 / C1...C2 / Z1...Z4	A1...A6 / B2...B6 / C1...C3 / Z1...Z6
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	< 3 W (230 V AC) / < 16 W (230 V AC)	< 3 W (230 V AC) / < 17 W (230 V AC)
Efficiency	typ. 88.8 % (120 V AC) / typ. 89.2 % (230 V AC)	typ. 92.5 % (120 V AC) / typ. 93.4 % (230 V AC)
Residual ripple	< 30 mV_{PP}	< 80 mV_{PP}
Signaling		
LED signaling	DC OK, utilization indicator	DC OK, utilization indicator
Configurable signal output	Relay contact 13/14, Out 1 digital, Out 2 digital/analog	Relay contact 13/14, Out 1 digital, Out 2 digital/analog
Signal options	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP
General data		
Weight / Dimensions W x H x D	0.7 kg / 36 x 130 x 125 mm	0.9 kg / 50 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	> 895000 h (40°C)	> 783000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Ambient temperature (startup type tested)	-40 °C	-40 °C
Standards/regulations		
Insulation voltage input/output	2.4 kV AC (routine test) / 4 kV AC (type test)	2.4 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Safety of power supply units up to 1100 V	DIN EN 61558-2-16	DIN EN 61558-2-16
Overvoltage category according to EN 62477-1	III	III
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched			
	QUINT4-PS/1AC/24DC/5	2904600	1

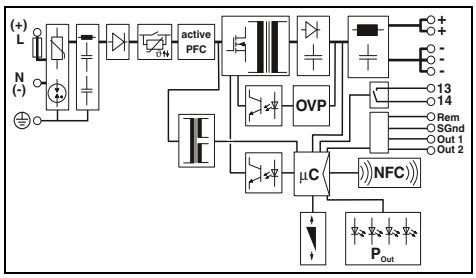
Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-PS/1AC/24DC/10	2904601	1

new

**Power supply,
1 AC, 24 V DC, 20 A**

Ex:



Technical data

	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC -18 % ... +40 %
	50 Hz ... 60 Hz -10 % ... +10 %
	6.8 A (100 V AC) / 5.5 A (120 V AC) 2.8 A (230 V AC) / 2.7 A (240 V AC) 6 A (110 V DC) / 2.5 A (250 V DC)
	typ. 11 A / < 0.4 A^2s
	≥ 20 ms (120 V AC) / ≥ 20 ms (230 V AC)
	24 V DC
	20 A / 25 A / 30 A (5 s) / 120 A (15 ms)
	A1...A16 / B2...B13 / C1...C6 / Z1...Z16
	Yes / yes
	< 5 W (230 V AC) / < 32 W (230 V AC)
	typ. 92.4 % (120 V AC) / typ. 94 % (230 V AC)
	< 50 mV_{PP}
	DC OK, utilization indicator
	Relay contact 13/14, Out 1 digital, Out 2 digital/analog
	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP
	1.3 kg / 70 x 130 x 125 mm
	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
	Screw connection
	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10
	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10
	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16
	IP20 / I
	> 673000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	-40 °C
	2.4 kV AC (routine test) / 4 kV AC (type test)
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	DIN EN 61558-2-16
	III
	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
	EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-PS/1AC/24DC/20	2904602	1

QUINT POWER power supplies – maximum functionality

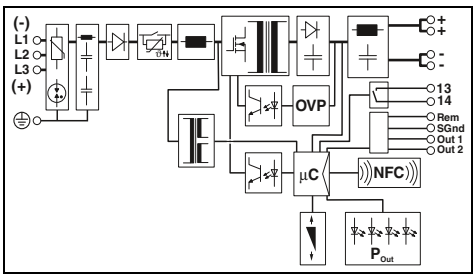
QUINT POWER, 3 AC, 24 V DC

– SFB Technology selectively trips standard circuit breakers; loads connected in parallel continue working
– Preventive function monitoring
– Signaling thresholds and characteristic curves that can be adjusted via NFC maximize system availability
– Easy system extension thanks to static boost; starting of difficult loads thanks to dynamic boost
– High noise immunity, thanks to integrated gas-filled surge arrester and mains failure buffer time in excess of 20 ms

new

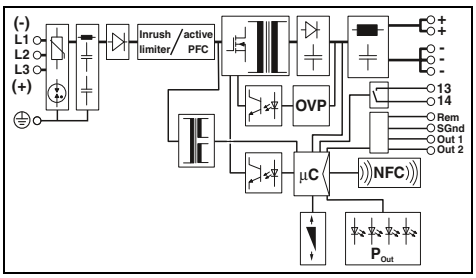
Power supply, 3 AC, 24 V DC, 5 A

Ex:



new

Power supply, 3 AC, 24 V DC, 10 A

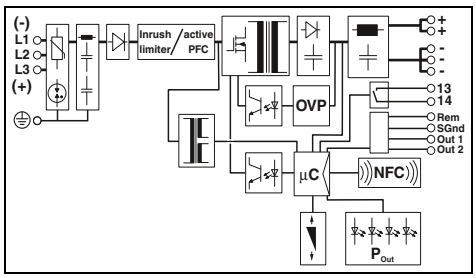


	Technical data	Technical data
Input data		
Input voltage range	3x 400 V AC ... 500 V AC -20 % ... +10 % 2x 400 V AC ... 500 V AC -10 % ... +10 % ± 300 V DC -25 % ... +30 %	3x 400 V AC ... 500 V AC -20 % ... +10 % 2x 400 V AC ... 500 V AC -10 % ... +10 % ± 260 V DC ... 300 V DC -13 % ... +30 %
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %	50 Hz ... 60 Hz -10 % ... +10 %
Current consumption (nominal load)	3x 0.6 A (400 V AC) / 3x 0.5 A (480 V AC) 2x 0.9 A (400 V AC) / 2x 0.8 A (480 V AC) 0.3 A (± 300 V DC)	3x 0.5 A (400 V AC) / 3x 0.4 A (480 V AC) 2x 0.8 A (400 V AC) / 2x 0.9 A (480 V AC) 0.7 A (± 260 V DC) / 0.6 A (± 300 V DC)
Inrush current limitation at 25°C / I^2t	typ. 10 A / < 0.2 A^2s	typ. 3 A / < 0.1 A^2s
Mains buffering (I_N, typ.)	≥ 28 ms (3x 400 V AC) / ≥ 40 ms (3x 480 V AC)	≥ 22 ms (3x 400 V AC) / ≥ 22 ms (3x 480 V AC)
Output data		
Nominal output voltage	24 V DC	24 V DC
Output current I_N / $I_{Stat. Boost}$ / $I_{Dyn. Boost}$ / I_{SFB}	5 A / 6.25 A / 10 A (5 s) / 30 A (15 ms)	10 A / 12.5 A / 20 A (5 s) / 60 A (15 ms)
Magnetic circuit breaker tripping	A1...A4 / B2 / C1...C2 / Z1...Z4	A1...A6 / B2...B6 / C1...C3 / Z1...Z6
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	< 4 W (480 V AC) / < 17 W (480 V AC)	< 5 W (480 V AC) / < 20 W (480 V AC)
Efficiency	typ. 89 % (400 V AC) / typ. 87.5 % (480 V AC)	typ. 93 % (400 V AC) / typ. 92.6 % (480 V AC)
Residual ripple	< 30 mV_{PP}	< 75 mV_{PP}
Signaling		
LED signaling	DC OK, utilization indicator	DC OK, utilization indicator
Configurable signal output	Relay contact 13/14, Out 1 digital, Out 2 digital/analog	Relay contact 13/14, Out 1 digital, Out 2 digital/analog
Signal options	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP
General data		
Weight / Dimensions W x H x D	0.6 kg / 36 x 130 x 125 mm	0.9 kg / 50 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 30 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	> 914000 h (40°C)	> 654000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Ambient temperature (startup type tested)	-40 °C	-40 °C
Standards/regulations		
Insulation voltage input/output	2.4 kV AC (routine test) / 4 kV AC (type test)	2.4 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Safety of power supply units up to 1100 V	DIN EN 61558-2-16	DIN EN 61558-2-16
Overvoltage category according to EN 62477-1	III	III
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	QUINT4-PS/3AC/24DC/5	2904620	1	QUINT4-PS/3AC/24DC/10	2904621	1

new

**Power supply,
3 AC, 24 V DC, 20 A**



Technical data

	3x 400 V AC ... 500 V AC -20 % ... +10 % 2x 400 V AC ... 500 V AC -10 % ... +10 % ± 260 V DC ... 300 V DC -13 % ... +30 %
	50 Hz ... 60 Hz -10 % ... +10 %
	3x 1 A (400 V AC) / 3x 0.9 A (480 V AC) 2x 1.7 A (400 V AC) / 2x 1.3 A (480 V AC)
	1.23 A (± 260 V DC) / 1.1 A (± 300 V DC)
	typ. 2 A / < 0.1 A^2s
	≥ 25 ms (3x 400 V AC) / ≥ 25 ms (3x 480 V AC)
	24 V DC
	20 A / 25 A / 30 A (5 s) / 120 A (15 ms)
	A1...A16 / B2...B13 / C1...C6 / Z1...Z16
	Yes / yes
	< 7 W (480 V AC) / < 33 W (480 V AC)
	typ. 93.9 % (400 V AC) / typ. 93.8 % (480 V AC)
	< 60 mV_{PP}
	DC OK, utilization indicator
	Relay contact 13/14, Out 1 digital, Out 2 digital/analog
	I_{Out}, U_{Out}, P_{Out}, U_{In} OK, Operating hours, Temp. OK, OVP
	1.1 kg / 70 x 130 x 125 mm
	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
	Screw connection
	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10
	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 30 - 10
	0.2 - 1.5 mm^2 / 0.2 - 1.5 mm^2 / 24 - 16
	IP20 / I
	> 638000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	-40 °C
	2.4 kV AC (routine test) / 4 kV AC (type test)
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	DIN EN 61558-2-16
	III
	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
	EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-PS/3AC/24DC/20	2904622	1

QUINT POWER power supplies – maximum functionality

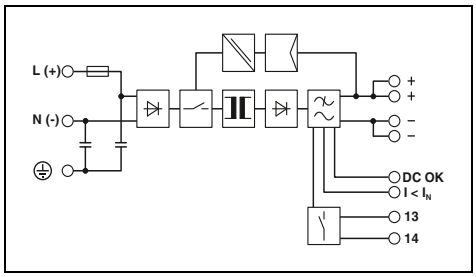
QUINT POWER, 1 AC, 24 V DC

- Fast tripping of standard miniature circuit breakers with SFB (Selective Fuse Breaking) Technology dynamic power reserve with up to 6 times the nominal current for 12 ms
- Reliable starting of heavy loads with the static Power Boost power reserve with up to 1.5 times the nominal current
- Preventive function monitoring
- Flexible thanks to input voltage ranges for AC and DC voltages
- Approved for semiconductor production according to SEMI F47-0706

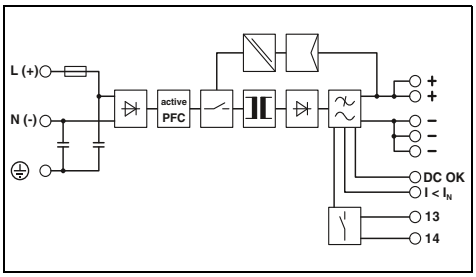
Power supply, 1 AC, 24 V DC, 3.5 A

Power supply, 1 AC, 24 V DC, 40 A

Ex:



Ex:



	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC 120 V DC ... 300 V DC
Input voltage range	85 V AC ... 264 V AC 90 V DC ... 350 V DC	85 V AC ... 264 V AC 90 V DC ... 300 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	1.4 A (120 V AC) / 0.8 A (230 V AC)	8.8 A (120 V AC) / 4.6 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 20 A / < 2 A^2s	< 15 A / < 1.7 A^2s
Mains buffering (I_N, typ.)	> 20 ms (120 V AC) / > 80 ms (230 V AC)	> 35 ms (120 V AC) / > 35 ms (230 V AC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	3.5 A / 4 A / 15 A	40 A / 45 A / 215 A
Magnetic circuit breaker tripping	B2	B2 / B4 / B6 / B10 / B16 / B25 / C2 / C4 / C6 / C13
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	3.5 W / 11 W	14 W / 80 W
Efficiency	> 88 % (for 230 V AC and nominal values)	> 92 % (for 230 V AC and nominal values)
Residual ripple	< 50 mV_{PP}	< 30 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output, relay contact	LED, active switching output, relay contact
Boost signaling	LED, active switching output	LED, active switching output
General data		
Weight / Dimensions W x H x D	0.5 kg / 32 x 130 x 125 mm	3.3 kg / 180 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 14 - 10
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12	0.5 - 16 mm^2 / 0.5 - 16 mm^2 / 8 - 6
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 24 - 10
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	> 820000 h (40°C)	> 530000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	2 kV AC (routine test) / 4 kV AC (type test)	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410 , DIN VDE 0106-101
Medical standard	IEC 60601-1, 2 x MOOP	IEC 60601-1, 2 x MOOP
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	QUINT-PS/1AC/24DC/ 3.5	2866747	1	**QUINT-PS/1AC/24DC/40**	2866789	1

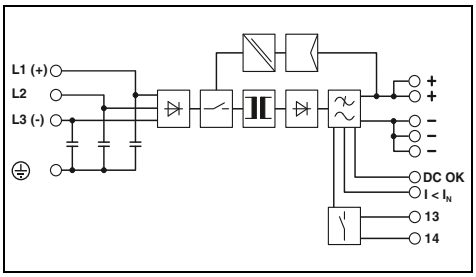
QUINT POWER power supplies – maximum functionality

QUINT POWER, 3 AC, 24 V DC

- High system availability even in the event of a permanent phase failure
- High surge strength of up to 6 kV thanks to integrated gas-filled surge arresters
- Fast tripping of standard miniature circuit breakers with SFB (Selective Fuse Breaking) Technology dynamic power reserve with up to 6 times the nominal current for 12 ms
- Reliable starting of heavy loads with the static Power Boost power reserve with up to 1.5 times the nominal current
- Preventive function monitoring
- Flexible thanks to input voltage ranges for AC and DC voltages
- Approved for semiconductor production according to SEMI F47-0706

Power supply, 3 AC, 24 V DC, 40 A

Ex:



Technical data

Input data	
Nominal input voltage range	3x 400 V AC ... 500 V AC
Input voltage range	3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC 450 V DC ... 800 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	3x 2.1 A (400 V AC) / 3x 1.7 A (500 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 1 A^2s
Mains buffering (I_N, typ.)	> 25 ms (400 V AC) / > 35 ms (500 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	40 A / 45 A / 215 A
Magnetic circuit breaker tripping	B2 / B4 / B6 / B10 / B16 / B25 / C2 / C4 / C6 / C13
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	18 W / 63 W
Efficiency	> 94 % (at 400 V AC and nominal values)
Residual ripple	< 40 mV_{PP}
Signaling	
Signaling DC OK	LED, active switching output, relay contact
Boost signaling	LED, active switching output
General data	
Weight / Dimensions W x H x D	2.5 kg / 96 x 130 x 176 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Output connection data (solid/stranded/AWG)	0.5 - 16 mm^2 / 0.5 - 16 mm^2 / 8 - 6
Signal connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Degree of protection / Protection class	IP20 / I
MTBF (IEC 61709, SN 29500)	> 500000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV) / Overvoltage category III
Safe isolation	DIN VDE 0100-410 , DIN VDE 0106-101
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 (3-wire + PE, star net) , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2

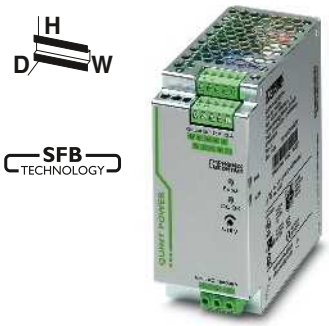
Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**QUINT-PS/3AC/24DC/40**	2866802	1

QUINT POWER power supplies – maximum functionality

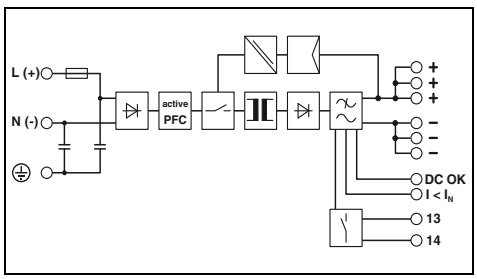
QUINT POWER, 1 AC, 12 and 48 V DC

- Quick tripping of standard circuit breakers
- Reliable starting of heavy loads
- Preventive function monitoring
- Flexible thanks to input voltage ranges for AC and DC voltages
- Approved for semiconductor production according to SEMI F47-0706: 12 V DC and 48 V DC, 5 A and 10 A
- Adjustable output voltage of 5 to 18 V DC, or 30 to 56 V DC



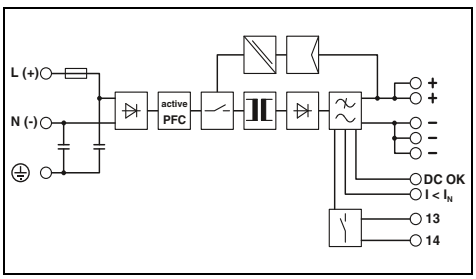
Power supply, 1 AC, 12 V DC, 15 A

Ex:



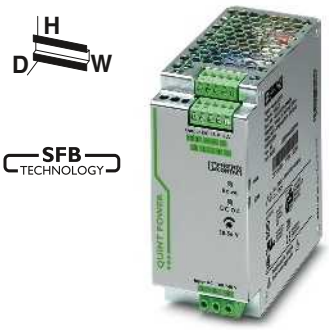
Power supply, 1 AC, 12 V DC, 20 A

Ex:



	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 90 V DC ... 350 V DC	85 V AC ... 264 V AC 90 V DC ... 350 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	1.9 A (120 V AC) / 0.9 A (230 V AC)	2.4 A (120 V AC) / 1.4 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 1.5 A^2s	< 20 A / < 3.2 A^2s
Mains buffering (I_N, typ.)	> 65 ms (120 V AC) / > 65 ms (230 V AC)	> 40 ms (120 V AC) / > 40 ms (230 V AC)
Output data		
Nominal output voltage	12 V DC ±1 %	12 V DC ±1 %
Setting range of the output voltage (U_{Set})	5 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)	5 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	15 A / 16 A / -	20 A / 26 A / -
Magnetic circuit breaker tripping	B2 / B4 / B6 / C2 / C4	B2 / B4 / B6 / B10 / C2 / C4 / C6
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	5 W / 21 W	6 W / 29 W
Efficiency	> 89 % (for 230 V AC and nominal values)	> 90 % (for 230 V AC and nominal values)
Residual ripple	< 10 mV_{PP}	< 50 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output, relay contact	LED, active switching output, relay contact
Boost signaling	LED, active switching output	LED, active switching output
General data		
Weight / Dimensions W x H x D	1.1 kg / 60 x 130 x 125 mm	1.5 kg / 90 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	> 570000 h (40°C)	> 600000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	2 kV AC (routine test) / 4 kV AC (type test)	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
Medical standard	IEC 60601-1, 2 x MOOP	IEC 60601-1, 2 x MOOP
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

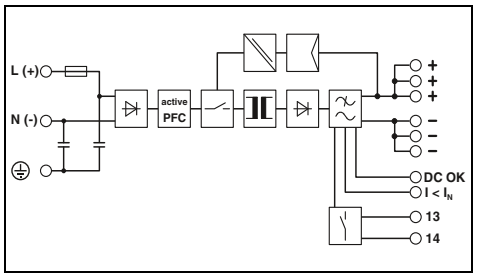
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	QUINT-PS/1AC/12DC/15	2866718	1	**QUINT-PS/1AC/12DC/20**	2866721	1

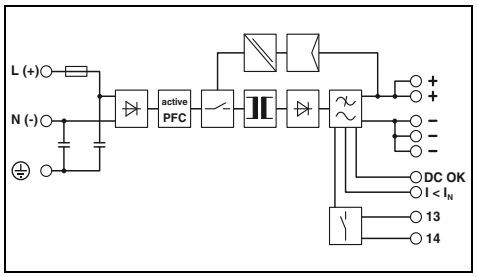


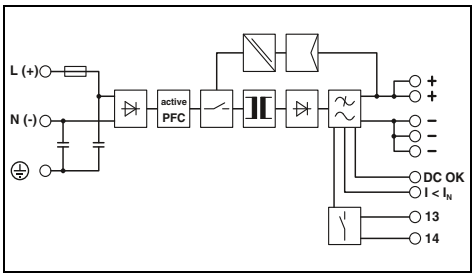
**Power supply,
1 AC, 48 V DC, 5 A**

**Power supply,
1 AC, 48 V DC, 10 A**

**Power supply,
1 AC, 48 V DC, 20 A**







Technical data

100 V AC ... 240 V AC	100 V AC ... 240 V AC	100 V AC ... 240 V AC 120 V DC ... 300 V DC
85 V AC ... 264 V AC 90 V DC ... 350 V DC 45 Hz ... 65 Hz / 0 Hz 2.8 A (120 V AC) / 1.2 A (230 V AC) < 15 A / < 1.5 A²s > 40 ms (120 V AC) / > 40 ms (230 V AC)	85 V AC ... 264 V AC 90 V DC ... 350 V DC 45 Hz ... 65 Hz / 0 Hz 5.1 A (120 V AC) / 2.3 A (230 V AC) < 20 A / < 3.2 A²s > 20 ms (120 V AC) / > 20 ms (230 V AC)	85 V AC ... 264 V AC 90 V DC ... 300 V DC 45 Hz ... 65 Hz / 0 Hz 8.7 A (120 V AC) / 4.5 A (230 V AC) < 15 A / < 1.6 A²s > 20 ms (120 V AC) / > 22 ms (230 V AC)
48 V DC ±1 % 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)	48 V DC ±1 % 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)	48 V DC ±1 % 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)
5 A / 7.5 A / 30 A B2 / B4 / C2 Yes / No 7 W / 21 W > 92.5 % (for 230 V AC and nominal values) < 50 mV_{PP}	10 A / 13 A / 60 A B2 / B4 / B6 / C2 / C4 Yes / yes 16 W / 41 W > 93 % (for 230 V AC and nominal values) < 80 mV_{PP}	20 A / 22.5 A / 100 A B2 / B4 / B6 / B10 / C2 / C4 / C6 Yes / yes 12 W / 74 W > 93 % (for 230 V AC and nominal values) < 50 mV_{PP}
LED, active switching output, relay contact LED, active switching output	LED, active switching output, relay contact LED, active switching output	LED, active switching output, relay contact LED, active switching output
1.1 kg / 60 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Plug-in screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12 IP20 / I > 530000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	1.7 kg / 90 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Screw connection 0.2 - 6 mm² / 0.2 - 4 mm² / 18 - 10 0.2 - 6 mm² / 0.2 - 4 mm² / 12 - 10 0.2 - 6 mm² / 0.2 - 4 mm² / 18 - 10 IP20 / I > 630000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	3.3 kg / 180 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Screw connection 0.2 - 6 mm² / 0.2 - 4 mm² / 14 - 10 0.5 - 16 mm² / 0.5 - 16 mm² / 8 - 6 0.2 - 6 mm² / 0.2 - 4 mm² / 24 - 10 IP20 / I > 523000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 IEC 60601-1, 2 x MOOP UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 IEC 60601-1, 2 x MOOP UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 - UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/1AC/48DC/ 5	2866679	1

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/1AC/48DC/10	2866682	1

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/1AC/48DC/20	2866695	1

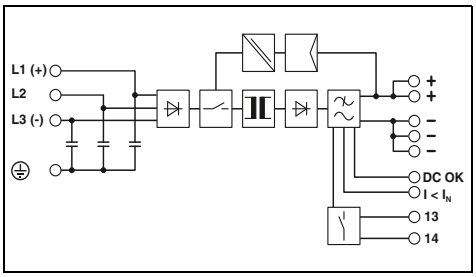
QUINT POWER power supplies – maximum functionality

QUINT POWER, 3 AC, 48 V DC

– High system availability even in the event of a permanent phase failure
– High surge strength of up to 6 kV thanks to integrated gas-filled surge arresters
– Fast tripping of standard miniature circuit breakers with SFB (Selective Fuse Breaking) Technology dynamic power reserve with up to 6 times the nominal current for 12 ms
– Reliable starting of heavy loads with the static Power Boost power reserve with up to 1.5 times the nominal current
– Preventive function monitoring
– Flexible thanks to input voltage ranges for AC and DC voltages
– Adjustable output voltage of 30 to 56 V DC

Power supply, 3 AC, 48 V DC, 20 A

Ex:



Technical data

Input data	
Nominal input voltage range	3x 400 V AC ... 500 V AC
Input voltage range	3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC 450 V DC ... 800 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	3x 2.1 A (400 V AC) / 3x 1.7 A (500 V AC)
Inrush current limitation at 25°C / I^2t	< 20 A / < 1 A^2s
Mains buffering (I_N, typ.)	> 25 ms (400 V AC) / > 35 ms (500 V AC)
Output data	
Nominal output voltage	48 V DC ±1 %
Setting range of the output voltage (U_{Set})	30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	20 A / 22.5 A / 100 A
Magnetic circuit breaker tripping	B2 / B4 / B6 / B10 / C2 / C4 / C6
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	24 W / 70 W
Efficiency	> 93 % (at 400 V AC and nominal values)
Residual ripple	< 50 mV_{PP}
Signaling	
Signaling DC OK	LED, active switching output, relay contact
Boost signaling	LED, active switching output
General data	
Weight / Dimensions W x H x D	2.5 kg / 96 x 130 x 179 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Output connection data (solid/stranded/AWG)	0.5 - 16 mm^2 / 0.5 - 16 mm^2 / 8 - 6
Signal connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10
Degree of protection / Protection class	IP20 / I
MTBF (IEC 61709, SN 29500)	> 509000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 (3-wire + PE, star net) , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**QUINT-PS/3AC/48DC/20**	2320827	1

Power supplies for frequency inverters

QUINT POWER and TRIO POWER for frequency inverters

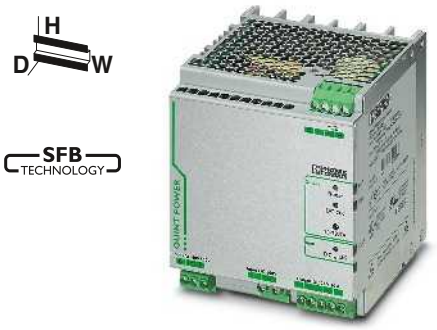
– In the event of mains failure, the DC intermediate circuit voltage of the inverter continues to supply all connected 24 V loads without interruption
– Maintenance-free buffer solution: controlled machine stop in the event of mains failure by using the existing capacity in the frequency inverter or by using the kinetic energy of motors

QUINT POWER

– Combined solution with a QUINT POWER power supply

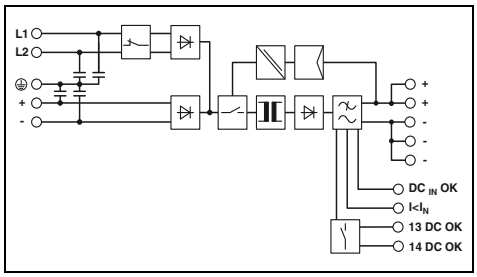
TRIO POWER

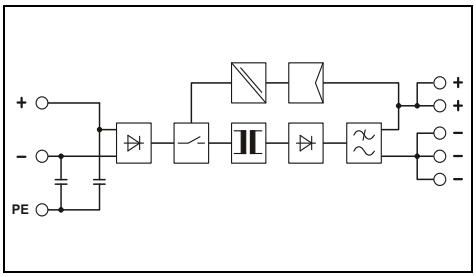
– Standard solution with two TRIO POWER power supplies



Power supply with two separate input circuits for frequency inverters 2 AC, 1 DC/24 V DC, 20 A

Power supply, 600 V DC, 24 V DC, 20 A





	Technical data	Technical data
Input data		
Nominal input voltage range	2x 400 V AC ... 500 V AC 600 V DC	600 V DC
Input voltage range	2x 360 V AC ... 575 V AC 450 V DC ... 840 V DC	450 V DC ... 840 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz	- / 0 Hz
Current consumption (nominal load)	2.5 A (400 V AC) / 2.1 A (500 V AC) 0.9 A (600 V DC)	0.9 A (600 V DC)
Inrush current limitation at 25°C / I^2t	< 85 A / < 1.5 A^2s	< 26 A / 0.8 A^2s
Mains buffering (I_N, typ.)	> 20 ms (400 V AC)	> 15 ms (600 V DC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (U_{IN} ≥ 360 V AC / 480 V DC) 18 V DC ... 26 V DC (< 480 V DC)	22.5 V DC ... 29.5 V DC (U_{IN} > 475 V DC) 22.5 V DC ... 28 V DC (U_{IN} ≤ 475 V DC)
Output current / Power Boost / SFB (20 ms)	20 A / 26 A / 120 A	20 A / - / -
Magnetic circuit breaker tripping	C6 / B16	-
Max. power dissipation (no load/nominal load)	11 W / 51 W	3.8 W / 45 W
Efficiency	> 92 % (600 V DC) / > 90.5 % (400 V AC)	> 91 % (With 600 V DC and nominal values)
Residual ripple	< 50 mV_{PP}	< 40 mV_{PP}
Signaling		
Signaling DC OK	LED, relay contact	LED
Boost signaling	LED, active switching output	-
Signaling DC_{IN} OK	LED, active switching output	-
General data		
Weight / Dimensions W x H x D	2 kg / 120 x 130 x 125 mm	2 kg / 115 x 130 x 152.5 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 24 - 10	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
Output connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10	0.5 - 6 mm^2 / 0.5 - 4 mm^2 / 12 - 10
Signal connection data (solid/stranded/AWG)	0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 24 - 10	- / - / -
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	> 860000 h (40°C)	> 701000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	2 kV AC (routine test) / 1.5 kV AC (type test)	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950-1	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	QUINT-PS/2AC/1DC/24DC/20	2320830	1	**TRIO-PS/600DC/24DC/20**	2866530	1

Power supplies for extreme requirements

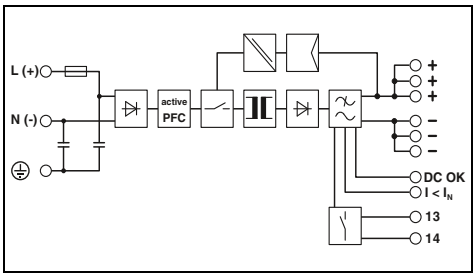
QUINT POWER with protective coating

The protective coating protects against extreme ambient conditions, such as dust, pollution, corrosive gases, and 100% humidity.

- Devices with ATEX approval conform to standard EN 60079-15 and EN 60079-0 and may be installed in a potentially explosive area (Zone 2)
- They are suitable for use in Class I, Division 2, Groups A, B, C, D
- Conformance with railway standard EN 50155
- OVP (overvoltage protection) limits surge voltages to 32 V
- Wide temperature range from -40°C to +70°C
- Fast tripping of standard miniature circuit breakers with SFB (Selective Fuse Breaking) Technology dynamic power reserve with up to 6 times the nominal current for 12 ms
- Reliable starting of heavy loads with the static Power Boost power reserve with up to 1.5 times the nominal current
- Preventive function monitoring
- Flexible thanks to input voltage ranges for AC and DC voltages

Power supply, with protective coating, 1 AC, 24 V DC, 5 A

Ex:



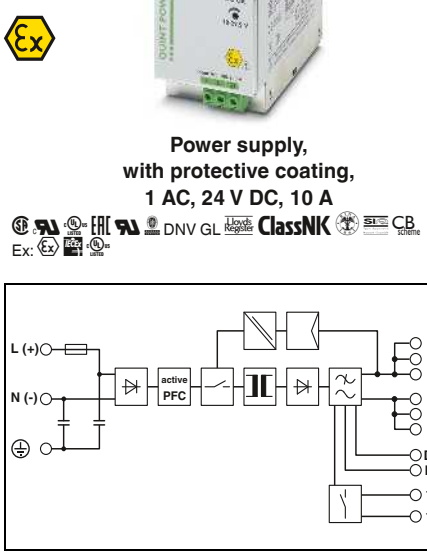
Technical data

Input data	
Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 90 V DC ... 410 V DC +5 %
Frequency range	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	1.2 A (120 V AC) / 0.6 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 1 A^2s
Mains buffering (I_N, typ.)	> 25 ms (120 V AC) / > 25 ms (230 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	5 A / 7.5 A / 30 A
Magnetic circuit breaker tripping	B2 / B4 / C2
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	< 3 W / < 15 W
Efficiency	> 90 % (for 230 V AC and nominal values)
Residual ripple	< 40 mV_{PP}
Signaling	
Signaling DC OK	LED, active switching output, relay contact
Boost signaling	LED, active switching output
General data	
Weight / Dimensions W x H x D	0.7 kg / 40 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 20 - 12
Degree of protection / Protection class	IP20 / I
MTBF (IEC 61709, SN 29500)	> 635000 h (40°C)
Ambient temperature (operation)	-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	2 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
Rail applications	EN 50121-4 / EN 50155
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**QUINT-PS/1AC/24DC/ 5/CO**	2320908	1

Power supply, with protective coating, 1 AC, 24 V DC, 10 A



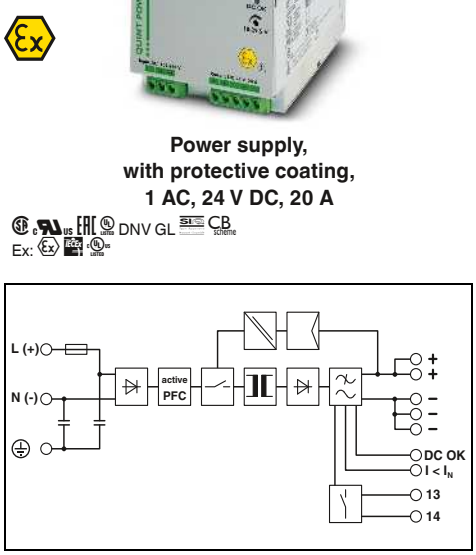
Technical data

100 V AC ... 240 V AC 110 V DC ... 250 V DC 85 V AC ... 264 V AC 90 V DC ... 410 V DC +5 %	
45 Hz ... 65 Hz / 0 Hz 2.2 A (120 V AC) / 1.3 A (230 V AC) < 15 A / < 1.5 A^2s > 36 ms (120 V AC) / > 36 ms (230 V AC)	
24 V DC ±1 % 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
10 A / 15 A / 60 A B2 / B4 / B6 / C2 / C4 Yes / yes 9.1 W / 22 W > 92.5 % (for 230 V AC and nominal values) < 50 mV_{PP}	
LED, active switching output, relay contact LED, active switching output	
1.1 kg / 60 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Plug-in screw connection 0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12 0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12 0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 16 - 12 IP20 / I > 535000 h (40°C) -40 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 EN 50121-4 / EN 50155 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/1AC/24DC/10/CO	2320911	1

Power supply, with protective coating, 1 AC, 24 V DC, 20 A



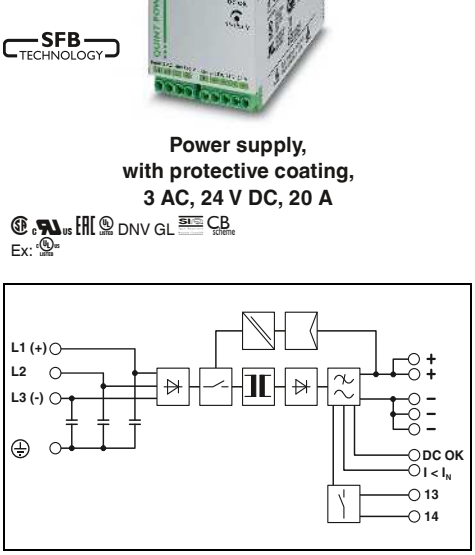
Technical data

100 V AC ... 240 V AC 110 V DC ... 250 V DC 85 V AC ... 264 V AC 90 V DC ... 410 V DC +5 %	
45 Hz ... 65 Hz / 0 Hz 4.5 A (120 V AC) / 2.5 A (230 V AC) < 20 A / < 3.2 A^2s > 32 ms (120 V AC) / > 32 ms (230 V AC)	
24 V DC ±1 % 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
20 A / 26 A / 120 A B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6 Yes / yes 8 W / 40 W > 93 % (for 230 V AC and nominal values) < 30 mV_{PP}	
LED, active switching output, relay contact LED, active switching output	
1.7 kg / 90 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Screw connection 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10 IP20 / I > 520000 h (40°C) -40 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 EN 50121-4 / EN 50155 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/1AC/24DC/20/CO	2320898	1

Power supply, with protective coating, 3 AC, 24 V DC, 20 A



Technical data

3x 400 V AC ... 500 V AC 3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC 450 V DC ... 800 V DC	
45 Hz ... 65 Hz / 0 Hz 3x 1.6 A (400 V AC) / 3x 1.3 A (500 V AC) < 20 A / < 3.2 A^2s > 28 ms (400 V AC) / > 43 ms (500 V AC)	
24 V DC ±1 % 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
20 A / 26 A / 120 A B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6 Yes / yes 11 W / 40 W > 93 % (at 400 V AC and nominal values) < 40 mV_{PP}	
LED, active switching output, relay contact LED, active switching output	
1.5 kg / 69 x 130 x 125 mm Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically Screw connection 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10 0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 18 - 10 IP20 / I > 534000 h (40°C) -40 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
2 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 EN 50121-4 / EN 50155 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950-1 (3-wire + PE, star net) , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/3AC/24DC/20/CO	2320924	1

TRIO POWER power supplies – robust standard functionality

TRIO POWER 1 AC, 24 V DC

– High operational reliability thanks to the robust design
– Wide temperature range from -25°C to +70°C as well as device startup at -40°C (type-tested)
– Reliable starting of dynamic loads with the dynamic boost, which supplies up to 1.5 times the nominal current for 5 seconds
– Time savings during installation, thanks to the use of tool-free Push-in connection technology
– Space savings in the control cabinet thanks to the narrow design
– Active function monitoring with DC OK LED and relay contact
– Input voltage range for DC voltage of 110 ... 250 V DC
– Third negative terminal block for grounding on the secondary side
– Maximum availability thanks to high MTBF (mean time between failure)
– Compensation of voltage drops by means of output voltage that can be set on the front

TRIO POWER, NEC Class 2

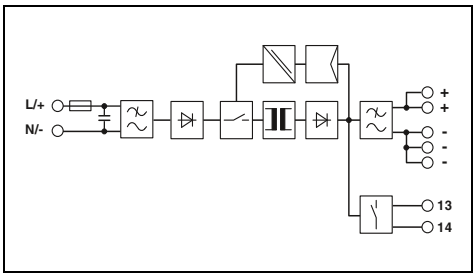
Output power limited to 100 W
– Specifically for applications that require certification according to UL 1310/508 Listed Class 2

TRIO POWER, Bridge and Deck

Optimized for use on the ship's bridge

Power supply, 1 AC, 24 V DC, 3 A NEC Class 2

Ex:



Technical data

Input data	
Nominal input voltage range	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC
Input voltage range	85 V AC ... 264 V AC 99 V DC ... 275 V DC
Frequency range	50 Hz ... 60 Hz
Current consumption (nominal load)	1.4 A (100 V AC) / 0.7 A (240 V AC) 0.8 A (110 V DC) / 0.3 A (250 V DC)
Inrush current limitation at 25°C / I^2t	≤ 15 A / < 0.26 A^2s
Mains buffering (I_N, typ.)	> 10 ms (120 V AC) / > 20 ms (230 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Output current / Dynamic Boost (5 s)	3 A / -
Can be connected in parallel/series	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 1 W / < 10 W
Efficiency	> 89 % (for 230 V AC and nominal values)
Residual ripple	≤ 50 mV_{PP}
Signaling	
Signaling DC OK	LED, floating signal contact
General data	
Weight / Dimensions W x H x D	0.35 kg / 30 x 130 x 115 mm
Assembly instructions	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Connection method	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 2000000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	1.5 kV AC (routine test) / 3 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2

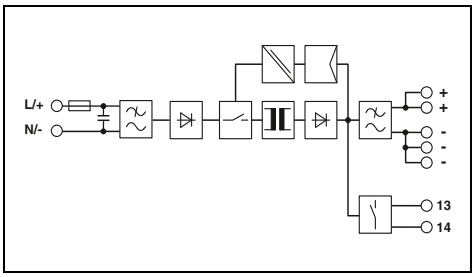
Ordering data

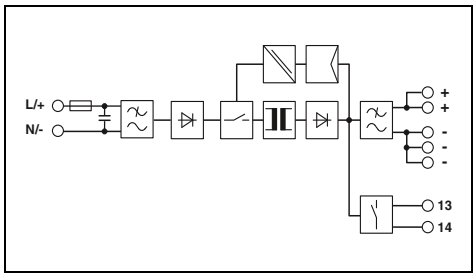
Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**TRIO-PS-2G/1AC/24DC/3/C2LPS**	2903147	1

Power supply,
1 AC, 24 V DC, 5 A

new

Power supply, Bridge and Deck
1 AC, 24 V DC, 5 A





Technical data

100 V AC ... 240 V AC -15 % ... +10 %
110 V DC ... 250 V DC
85 V AC ... 264 V AC
99 V DC ... 275 V DC
50 Hz ... 60 Hz
2.2 A (100 V AC) / 1.1 A (240 V AC)
1.4 A (110 V DC) / 0.6 A (250 V DC)
≤ 16 A / < 0.6 A^2s
> 20 ms (120 V AC) / > 100 ms (230 V AC)
24 V DC ±1 %
24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
5 A / 7.5 A
yes, with redundancy module / yes
< 1 W / < 16 W
> 90 % (for 230 V AC and nominal values)
≤ 50 mV_{PP}
LED, floating signal contact
0.45 kg / 35 x 130 x 115 mm
Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Push-in connection
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
IP20 / II
> 1970000 h (40°C)
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
1.5 kV AC (routine test) / 3 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/24DC/5	2903148	1

Technical data

100 V AC ... 240 V AC -15 % ... +10 %
110 V DC ... 250 V DC
85 V AC ... 264 V AC
99 V DC ... 275 V DC
50 Hz ... 60 Hz
2.2 A (100 V AC) / 1.1 A (240 V AC)
1.4 A (110 V DC) / 0.6 A (250 V DC)
≤ 16 A / < 0.6 A^2s
> 20 ms (120 V AC) / > 100 ms (230 V AC)
24 V DC ±1 %
24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
5 A / 7.5 A
yes, with redundancy module / yes
< 1 W / < 16 W
> 89 % (for 230 V AC and nominal values)
≤ 50 mV_{PP}
LED, floating signal contact
0.45 kg / 35 x 130 x 115 mm
Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Push-in connection
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
IP20 / II
> 1970000 h (40°C)
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
1.5 kV AC (routine test) / 3 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/24DC/5/B+D	2903144	1

TRIO POWER power supplies – robust standard functionality

TRIO POWER 1 AC, 24 V DC

- High operational reliability thanks to the robust design
- Wide temperature range from -25°C to +70°C as well as device startup at -40°C (type-tested)
- Reliable starting of dynamic loads with the dynamic boost, which supplies up to 1.5 times the nominal current for 5 seconds
- Time savings during installation, thanks to the use of tool-free Push-in connection technology
- Space savings in the control cabinet thanks to the narrow design
- Active function monitoring with DC OK LED and relay contact
- Input voltage range for DC voltage of 110 ... 250 V DC
- Third negative terminal block for grounding on the secondary side
- Maximum availability thanks to high MTBF (mean time between failure)
- Compensation of voltage drops by means of output voltage that can be set on the front

TRIO POWER, NEC Class 2

Output power limited to 100 W

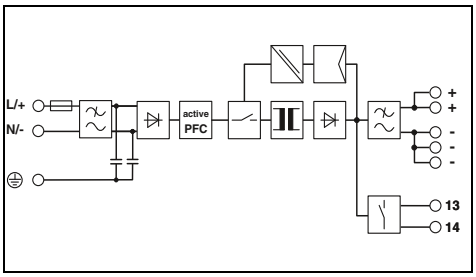
- Specifically for applications that require certification according to UL 1310/508 Listed Class 2

TRIO POWER, Bridge and Deck

Optimized for use on the ship's bridge

Power supply, 1 AC, 24 V DC, 10 A

Ex:



Technical data

Input data	
Nominal input voltage range	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC
Input voltage range	85 V AC ... 264 V AC 99 V DC ... 275 V DC
Frequency range	50 Hz ... 60 Hz
Current consumption (nominal load)	3.1 A (100 V AC) / 1.4 A (240 V AC)
Inrush current limitation at 25°C / I^2t	≤ 25 A / < 0.5 A^2s
Mains buffering (I_N, typ.)	> 15 ms (120 V AC) / > 15 ms (230 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Output current / Dynamic Boost (5 s)	10 A / 15 A
Can be connected in parallel/series	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 5.1 W (230 V) / < 25 W
Efficiency	> 91 % (for 230 V AC and nominal values)
Residual ripple	≤ 10 mV_{PP}
Signaling	
Signaling DC OK	LED, floating signal contact
General data	
Weight / Dimensions W x H x D	1 kg / 42 x 130 x 160 mm
Assembly instructions	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Connection method	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / I
MTBF (IEC 61709, SN 29500)	> 1000000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	1.5 kV AC (routine test) / 3 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
Limitation of harmonic line currents	EN 61000-3-2

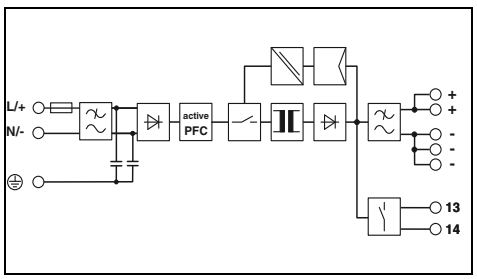
Ordering data

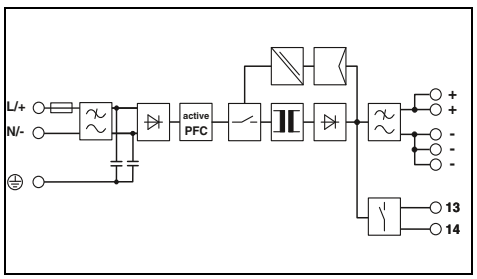
Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**TRIO-PS-2G/1AC/24DC/10**	2903149	1

new

Power supply, Bridge and Deck
1 AC, 24 V DC, 10 A

Power supply,
1 AC, 24 V DC, 20 A





Technical data

100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC 85 V AC ... 264 V AC 99 V DC ... 275 V DC 50 Hz ... 60 Hz 3.1 A (100 V AC) / 1.4 A (240 V AC) ≤ 25 A / < 0.5 A²s > 15 ms (120 V AC) / > 15 ms (230 V AC)
24 V DC ±1 % 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
10 A / 15 A yes, with redundancy module / yes < 5.1 W / < 25 W > 91 % (for 230 V AC and nominal values) ≤ 10 mV_{PP}
LED, floating signal contact
1 kg / 42 x 130 x 160 mm Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm Push-in connection 0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12 0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / I > 1000000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
1.5 kV AC (routine test) / 3 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/24DC/10/B+D	2903145	1

Technical data

100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC 85 V AC ... 264 V AC 99 V DC ... 275 V DC 50 Hz ... 60 Hz 5.6 A (100 V AC) / 2.4 A (240 V AC) ≤ 20 A / < 0.9 A²s > 10 ms (120 V AC) / > 15 ms (230 V AC)
24 V DC ±1 % 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
20 A / 30 A yes, with redundancy module / yes < 5.7 W / < 44 W > 93 % (for 230 V AC and nominal values) ≤ 30 mV_{PP}
LED, floating signal contact
1.5 kg / 68 x 130 x 160 mm Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm Push-in connection 0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12 0.2 - 10 mm² / 0.2 - 6 mm² / 24 - 8 IP20 / I > 1000000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
1.5 kV AC (routine test) / 3 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/24DC/20	2903151	1

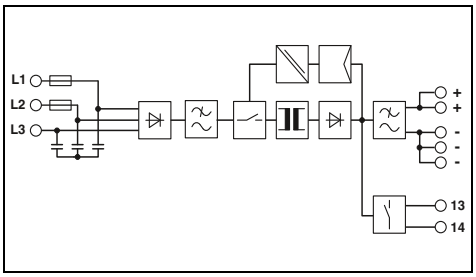
TRIO POWER power supplies – robust standard functionality

TRIO POWER 3 AC, 24 V DC

- High operational reliability thanks to the robust design
- Wide temperature range from -25°C to +70°C as well as device startup at -40°C (type-tested)
- Reliable starting of dynamic loads with the dynamic boost, which supplies up to 1.5 times the nominal current for 5 seconds
- Time savings during installation, thanks to the use of tool-free Push-in connection technology
- Space savings in the control cabinet thanks to the narrow design
- Active function monitoring with DC OK LED and relay contact
- Third negative terminal block for grounding on the secondary side
- Maximum availability thanks to high MTBF (mean time between failure)
- Compensation of voltage drops by means of output voltage that can be set on the front

Power supply, 3 AC, 24 V DC, 5 A

Ex:



Technical data

Input data	
Nominal input voltage range	3x 400 V AC ... 500 V AC -20 % ... +15 % 2x 400 V AC ... 500 V AC -10 % ... +15 %
Input voltage range	3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC
Frequency range	50 Hz ... 60 Hz
Current consumption (nominal load)	3x 0.4 A (400 V AC) / 3x 0.3 A (500 V AC) 2x 0.6 A (400 V AC) / 2x 0.5 A (500 V AC)
Inrush current limitation at 25°C / I^2t	≤ 22 A / ≤ 0.25 A^2s
Mains buffering (I_N, typ.)	> 20 ms (400 V AC) / > 20 ms (500 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Output current / Dynamic Boost (5 s)	5 A / 7.5 A
Can be connected in parallel/series	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 1 W / < 12 W
Efficiency	> 91 % (at 400 V AC and nominal values)
Residual ripple	≤ 20 mV_{PP}
Signaling	
Signaling DC OK	LED, floating signal contact
General data	
Weight / Dimensions W x H x D	0.4 kg / 35 x 130 x 115 mm
Assembly instructions	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Connection method	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1300000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	1.5 kV AC (routine test) / 3 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**TRIO-PS-2G/3AC/24DC/5**	2903153	1

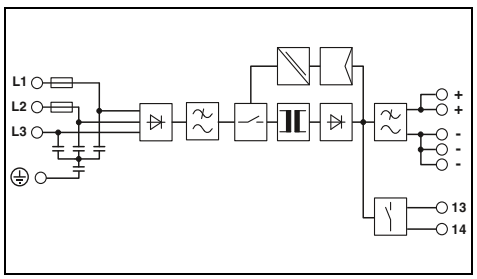
new

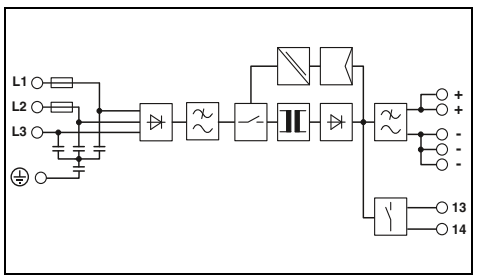
Power supply,
3 AC, 24 V DC, 10 A

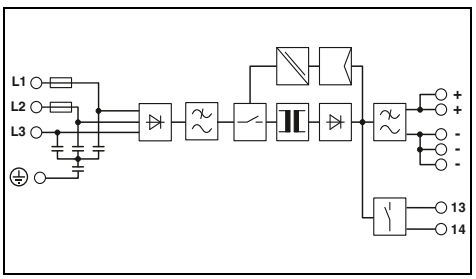
Power supply,
3 AC, 24 V DC, 20 A

Power supply,
3 AC, 24 V DC, 40 A

Ex:







Technical data

3x 400 V AC ... 500 V AC -20 % ... +15 % 2x 400 V AC ... 500 V AC -10 % ... +15 % 3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC	
50 Hz ... 60 Hz	
3x 0.6 A (400 V AC) / 3x 0.6 A (500 V AC) 2x 1.1 A (400 V AC) / 2x 1.1 A (500 V AC)	
≤ 26 A / 0.3 A^2s	
> 10 ms (400 V AC) / > 20 ms (500 V AC)	
24 V DC ±1 % 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	
10 A / 15 A	
yes, with redundancy module / yes	
< 1.1 W / < 22 W	
> 92 % (at 400 V AC and nominal values)	
≤ 20 mV_{PP}	
LED, floating signal contact	
0.9 kg / 42 x 130 x 160 mm	
Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	
Push-in connection	
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	
IP20 / I	
> 1200000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
1.5 kV AC (routine test) / 3 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950-1	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/3AC/24DC/10	**2903154**	1

Technical data

3x 400 V AC ... 500 V AC -20 % ... +15 % 2x 400 V AC ... 500 V AC -10 % ... +15 % 3x 320 V AC ... 575 V AC 2x 360 V AC ... 575 V AC	
50 Hz ... 60 Hz	
3x 1.2 A (400 V AC) / 3x 1 A (500 V AC) 2x 2.3 A (400 V AC) / 2x 1.9 A (500 V AC)	
≤ 22 A / 0.5 A^2s	
> 10 ms (400 V AC) / > 20 ms (500 V AC)	
24 V DC ±1 % 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	
20 A / 30 A	
yes, with redundancy module / yes	
< 1.2 W / < 38 W	
> 93 % (at 400 V AC and nominal values)	
≤ 20 mV_{PP}	
LED, floating signal contact	
1.5 kg / 65 x 130 x 160 mm	
Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	
Push-in connection	
0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 10 mm^2 / 0.2 - 6 mm^2 / 24 - 8	
IP20 / I	
> 1100000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
1.5 kV AC (routine test) / 3 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950-1	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/3AC/24DC/20	**2903155**	1

Technical data

3x 400 V AC ... 500 V AC	
3x 320 V AC ... 575 V AC	
50 Hz ... 60 Hz	
3x 2 A (400 V AC) / 3x 1.6 A (500 V AC) 3x 1.65 A (480 V AC)	
≤ 30 A / 1.1 A^2s	
> 10 ms (400 V AC) / > 20 ms (500 V AC)	
24 V DC ±1 % 24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)	
40 A / 60 A	
yes, with redundancy module / yes	
< 14 W / < 68 W	
> 93 % (at 400 V AC and nominal values)	
≤ 50 mV_{PP}	
LED, floating signal contact	
2.6 kg / 110 x 130 x 160 mm	
Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm	
Push-in connection	
0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.75 - 16 mm^2 / 0.75 - 10 mm^2 / 20 - 4	
IP20 / I	
> 1051000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
1.5 kV AC (routine test) / 3 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950-1	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/3AC/24DC/40	**2903156**	1

TRIO POWER power supplies – robust standard functionality

TRIO POWER 1 AC, 12 and 48 V DC

– High operational reliability thanks to the robust design
– Wide temperature range from -25°C to +70°C as well as device startup at -40°C (type-tested)
– Reliable starting of dynamic loads with the dynamic boost, which supplies up to 1.5 times the nominal current for 5 seconds
– Time savings during installation, thanks to the use of tool-free Push-in connection technology
– Space savings in the control cabinet thanks to the narrow design
– Active function monitoring with DC OK LED and relay contact
– Input voltage range for DC voltage of 110 ... 250 V DC
– Third negative terminal block for grounding on the secondary side
– Maximum availability thanks to high MTBF (mean time between failure)
– Compensation of voltage drops by means of output voltage that can be set on the front

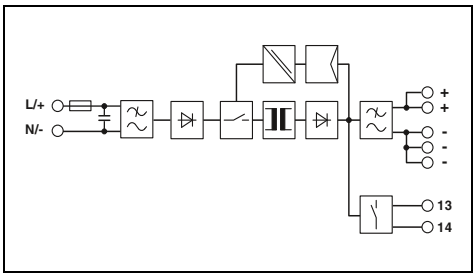
TRIO POWER, NEC Class 2

Output power limited to 100 W
– Specifically for applications that require certification according to UL 1310/508 Listed Class 2

new

Power supply, 1 AC, 12 V DC, 5 A NEC Class 2

Ex:



Technical data

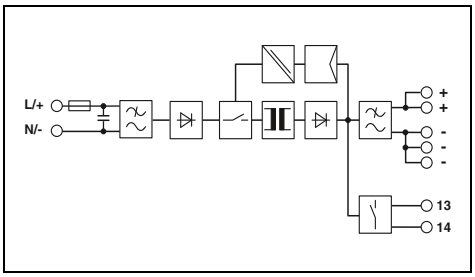
Input data	
Nominal input voltage range	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC
Input voltage range	85 V AC ... 264 V AC 99 V DC ... 275 V DC
Frequency range	50 Hz ... 60 Hz
Current consumption (nominal load)	1.1 A (100 V AC) / 0.6 A (240 V AC) 0.7 A (110 V DC) / 0.3 A (250 V DC)
Inrush current limitation at 25°C / I^2t	≤ 25 A / ≤ 0.6 A^2s
Mains buffering (I_N, typ.)	> 20 ms (120 V AC) / > 110 ms (230 V AC)
Output data	
Nominal output voltage	12 V DC ±1 %
Setting range of the output voltage (U_{Set})	12 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)
Output current / Dynamic Boost (5 s)	5 A / -
Can be connected in parallel/series	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 1 W (230 V) / < 10 W (230 V)
Efficiency	> 86 % (for 230 V AC and nominal values)
Residual ripple	≤ 50 mV_{PP}
Signaling	
Signaling DC OK	LED, floating signal contact
General data	
Weight / Dimensions W x H x D	0.32 kg / 30 x 130 x 115 mm
Assembly instructions	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
Connection method	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 2900000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	1.5 kV AC (routine test) / 3 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1 , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**TRIO-PS-2G/1AC/12DC/5/C2LPS**	2903157	1

new

Power supply,
1 AC, 12 V DC, 10 A



Technical data

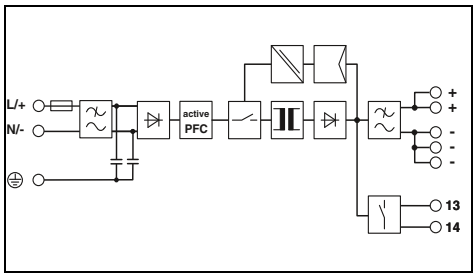
	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC 85 V AC ... 264 V AC 99 V DC ... 275 V DC 50 Hz ... 60 Hz
	2.2 A (100 V AC) / 1.1 A (240 V AC) 1.4 A (110 V DC) / 0.6 A (250 V DC)
	≤ 30 A / ≤ 1.5 A^2s
	> 20 ms (120 V AC) / > 20 ms (230 V AC)
	12 V DC ±1 % 12 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)
	10 A / 15 A
	yes, with redundancy module / yes
	< 1 W (230 V) / < 15 W (230 V)
	> 89 % (for 230 V AC and nominal values)
	≤ 50 mV_{PP}
	LED, floating signal contact
	0.4 kg / 35 x 130 x 115 mm
	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
	Push-in connection
	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
	IP20 / II
	> 1700000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	1.5 kV AC (routine test) / 3 kV AC (type test)
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410
	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
	EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/12DC/10	2903158	1

new

Power supply,
1 AC, 48 V DC, 5 A



Technical data

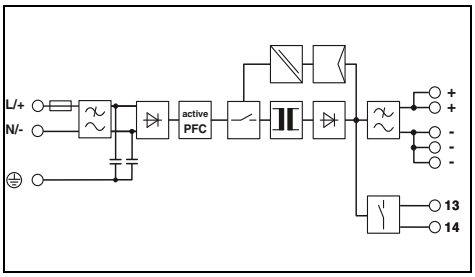
	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC 85 V AC ... 264 V AC 99 V DC ... 275 V DC 50 Hz ... 60 Hz
	2.9 A (100 V AC) / 1.2 A (240 V AC) 2.4 A (110 V DC) / 1 A (250 V DC)
	15 A / 0.3 A^2s
	> 15 ms (120 V AC) / > 15 ms (230 V AC)
	48 V DC ±1 % 36 V DC ... 55 V DC (> 48 V DC, constant capacity restricted)
	5 A / 7.5 A
	yes, with redundancy module / yes
	< 3.5 W (230 V) / < 20 W
	> 92.4 % (for 230 V AC and nominal values)
	< 50 mV_{PP}
	LED, floating signal contact
	0.9 kg / 42 x 130 x 160 mm
	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
	Push-in connection
	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
	IP20 / I
	> 1200000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	1.5 kV AC / 3 kV AC
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410
	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
	EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/48DC/5	2903159	1

new

Power supply,
1 AC, 48 V DC, 10 A



Technical data

	100 V AC ... 240 V AC -15 % ... +10 % 110 V DC ... 250 V DC 85 V AC ... 264 V AC 99 V DC ... 275 V DC 50 Hz ... 60 Hz
	5.6 A (100 V AC) / 2.4 A (240 V AC) 5 A (110 V DC) / 2.2 A (250 V DC)
	20 A / 0.7 A^2s
	> 10 ms (120 V AC) / > 15 ms (230 V AC)
	48 V DC ±1 % 36 V DC ... 55 V DC (> 48 V DC, constant capacity restricted)
	10 A / 15 A
	yes, with redundancy module / yes
	< 5.7 W (230 V) / < 44 W
	> 93 % (for 230 V AC and nominal values)
	< 50 mV_{PP}
	LED, floating signal contact
	1.4 kg / 68 x 130 x 160 mm
	Can be aligned: Horizontally 0 mm (≤ 40 °C) 10 mm (≤ 70 °C), vertically 50 mm
	Push-in connection
	0.2 - 4 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
	0.2 - 10 mm^2 / 0.2 - 6 mm^2 / 24 - 8
	IP20 / I
	> 800000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	1.5 kV AC / 3 kV AC
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410
	UL Listed UL 508 , UL/C-UL Recognized UL 60950-1
	EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO-PS-2G/1AC/48DC/10	2903160	1

UNO POWER power supplies – compact basic functionality

UNO POWER, 1 AC, 24 V DC

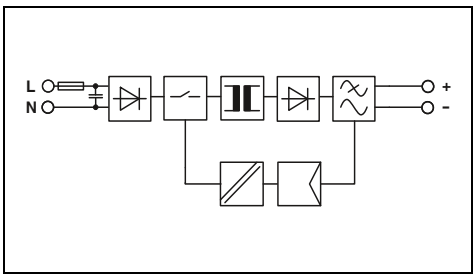
- The wide range of products covers all common voltage levels
- Maximum energy efficiency: save energy thanks to high efficiency and extremely low idling losses
- Save space in the control cabinet thanks to extremely high power density
- Housing depth of 84 mm, tailored to all popular 120 mm control boxes
- Wide temperature range from -25°C to +70°C

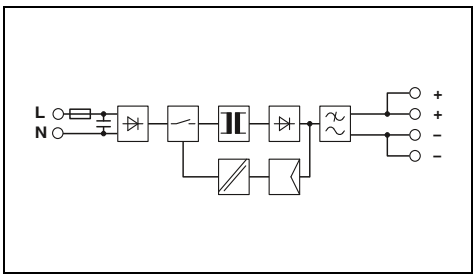
Power supply, 1 AC, 24 DC, 30 W NEC Class 2

Ex:

Power supply, 1 AC, 24 DC, 60 W NEC Class 2

Ex:



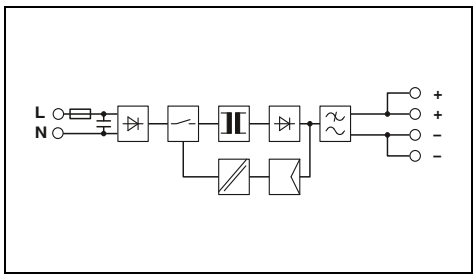


	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC	85 V AC ... 264 V AC
Frequency range	45 Hz ... 65 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	0.5 A (120 V AC) / 0.3 A (230 V AC)	1 A (120 V AC) / 0.6 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 20 A / < 0.4 A^2s	< 30 A / < 0.5 A^2s
Mains buffering (I_N, typ.)	> 25 ms (120 V AC) / > 115 ms (230 V AC)	> 20 ms (120 V AC) / > 85 ms (230 V AC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Output current	1.25 A	2.5 A
Can be connected in parallel/series	yes, with redundancy module / yes	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 0.3 W / < 5 W	< 0.3 W / < 7 W
Efficiency	> 88 % (for 230 V AC and nominal values)	> 90 % (for 230 V AC and nominal values)
Residual ripple	< 60 mV_{PP}	< 30 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.15 kg / 22.5 x 90 x 84 mm	0.2 kg / 35 x 90 x 84 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/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
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1158000 h (40°C)	> 785000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV AC (routine test) / 4 kV AC (type test)	3 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4A (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	UNO-PS/1AC/24DC/ 30W	2902991	1	**UNO-PS/1AC/24DC/ 60W**	2902992	1

**Power supply,
1 AC, 24 DC, 100 W**

Ex:



Technical data

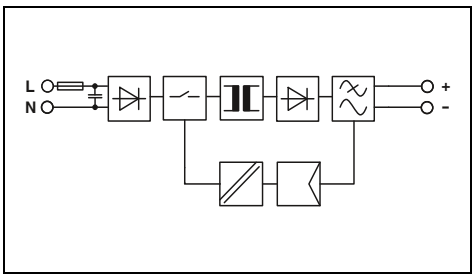
100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
45 Hz ... 65 Hz	
1.7 A (120 V AC) / 1 A (230 V AC)	
< 40 A / < 1.5 A^2s	
> 20 ms (120 V AC) / > 100 ms (230 V AC)	
24 V DC ±1 %	
4.2 A	
yes, with redundancy module / yes	
< 0.5 W / < 11 W	
> 90 % (for 230 V AC and nominal values)	
< 30 mV_{PP}	
LED	
0.34 kg / 55 x 90 x 84 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14	
IP20 / II	
> 738000 h (40°C)	
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	
3 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/24DC/100W	2902993	1

**Power supply,
1 AC, 24 DC, 150 W**

Ex:



Technical data

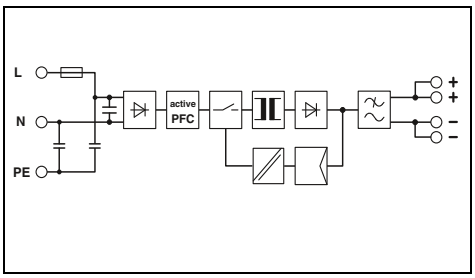
100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
45 Hz ... 65 Hz	
1.4 A (120 V AC) / 0.8 A (230 V AC)	
< 50 A / < 0.8 A^2s	
> 20 ms (120 V AC) / > 20 ms (230 V AC)	
24 V DC ±1 %	
6.25 A	
yes, with redundancy module / No	
< 1.2 W / < 9.7 W	
> 94 % (for 230 V AC and nominal values)	
< 40 mV_{PP}	
LED	
0.5 kg / 37 x 130 x 125 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14	
IP20 / II	
> 868000 h (40°C)	
-25 °C ... 70 °C (> 55 °C derating: 2.5%/K)	
3 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/24DC/150W	2904376	1

**Power supply,
1 AC, 24 DC, 240 W**

Ex:



Technical data

100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
45 Hz ... 65 Hz	
2.3 A (120 V AC) / 1.2 A (230 V AC)	
< 80 A / < 2 A^2s	
> 10 ms (120 V AC) / > 10 ms (230 V AC)	
24 V DC ±1 %	
10 A	
yes, with redundancy module / No	
< 1.1 W / < 18.8 W	
> 93 % (for 230 V AC and nominal values)	
< 50 mV_{PP}	
LED	
0.66 kg / 45 x 130 x 125 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14	
IP20 / I	
> 562000 h (40°C)	
-25 °C ... 70 °C (> 55 °C derating: 2.5%/K)	
3 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/24DC/240W	2904372	1

UNO POWER power supplies – compact basic functionality

UNO POWER, 1 AC, 12 and 24 V DC

– The wide range of products covers all common voltage levels
– Maximum energy efficiency: save energy thanks to high efficiency and extremely low idling losses
– Save space in the control cabinet thanks to extremely high power density
– Housing depth of 84 mm, tailored to all popular 120 mm control boxes
– Wide temperature range from -25°C to +70°C

UNO POWER, 2 AC, 24 V DC, NEC Class 2

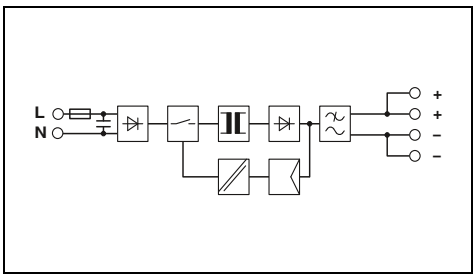
Output power limited to 100 W
– Specifically for applications that require certification according to UL 1310/508 Listed Class 2

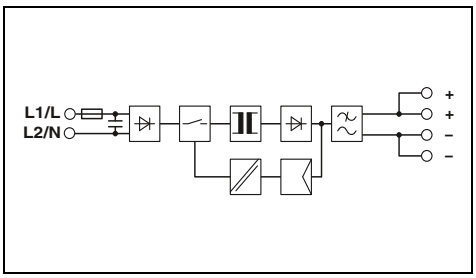
Power supply, 1 AC, 24 DC, 90 W NEC Class 2

Ex:

Power supply, 2 AC, 24 DC, 90 W NEC Class 2

Ex:



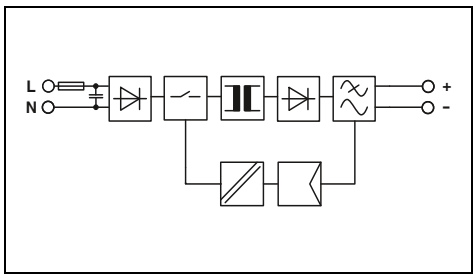


	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	2x 400 V AC ... 500 V AC
Input voltage range	85 V AC ... 264 V AC	2x 264 V AC ... 575 V AC
Frequency range	45 Hz ... 65 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	1.5 A (120 V AC) / 1 A (230 V AC)	0.6 A (400 V AC) / 0.5 A (500 V AC)
Inrush current limitation at 25°C / I^2t	< 40 A / < 1.5 A^2s	< 30 A / < 0.5 A^2s
Mains buffering (I_N, typ.)	> 25 ms (120 V AC) / > 100 ms (230 V AC)	> 65 ms (400 V AC) / > 100 ms (500 V AC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Output current	3.75 A	3.75 A
Can be connected in parallel/series	No / No	No / No
Max. power dissipation (no load/nominal load)	< 0.5 W / < 12 W	< 0.7 W / < 12 W
Efficiency	> 88.5 % (for 230 V AC and nominal values)	> 89.5 %
Residual ripple	< 45 mV_{PP}	< 50 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.34 kg / 55 x 90 x 84 mm	0.32 kg / 55 x 90 x 84 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/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
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1159000 h (40°C)	> 828000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV AC (routine test) / 4 kV AC (type test)	3 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	UNO-PS/1AC/24DC/90W/C2LPS	2902994	1	**UNO-PS/2AC/24DC/90W/C2LPS**	2904371	1

Power supply,
1 AC, 12 DC, 30 W

Ex:



Technical data

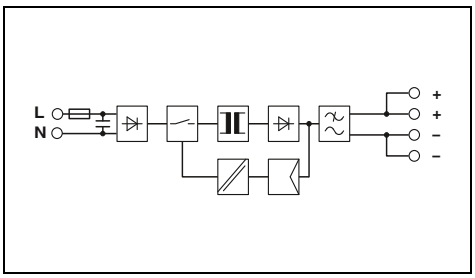
100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
0.5 A (120 V AC) / 0.3 A (230 V AC)
< 25 A / < 0.3 A^2s
> 20 ms (120 V AC) / > 110 ms (230 V AC)
12 V DC ±1 %
2.5 A
yes, with redundancy module / yes
< 0.3 W / < 4.6 W
> 87 % (for 230 V AC and nominal values)
< 30 mV_{PP}
LED
0.15 kg / 22.5 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 953000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/12DC/ 30W	2902998	1

Power supply,
1 AC, 12 DC, 55 W

Ex:



Technical data

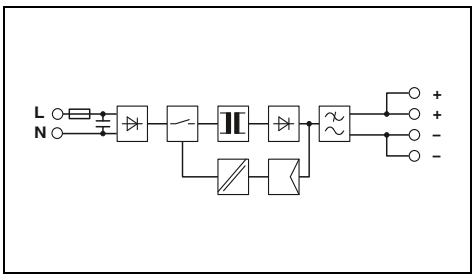
100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
1 A (120 V AC) / 0.6 A (230 V AC)
< 30 A / < 0.5 A^2s
> 20 ms (120 V AC) / > 90 ms (230 V AC)
12 V DC ±1 %
4.6 A
yes, with redundancy module / yes
< 0.3 W / < 8 W
> 89 % (for 230 V AC and nominal values)
< 30 mV_{PP}
LED
0.2 kg / 35 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 865000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4A (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/12DC/ 55W	2902999	1

Power supply,
1 AC, 12 DC, 100 W

Ex:



Technical data

100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
1.7 A (120 V AC) / 1 A (230 V AC)
< 30 A / < 1.5 A^2s
> 20 ms (120 V AC) / > 85 ms (230 V AC)
12 V DC ±1 %
8.3 A
yes, with redundancy module / yes
< 0.4 W / < 12 W
> 89.5 %
< 75 mV_{PP}
LED
0.34 kg / 55 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 500000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/12DC/100W	2902997	1

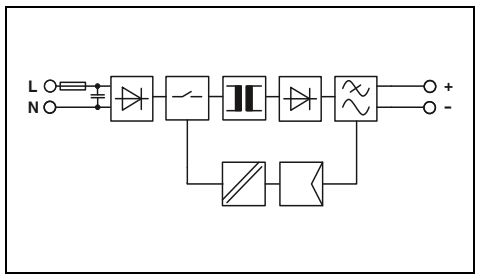
UNO POWER power supplies – compact basic functionality

UNO POWER, 1 AC, 5 and 15 V DC

– The wide range of products covers all common voltage levels
– Maximum energy efficiency: save energy thanks to high efficiency and extremely low idling losses
– Save space in the control cabinet thanks to extremely high power density
– Housing depth of 84 mm, tailored to all popular 120 mm control boxes
– Wide temperature range from -25°C to +70°C

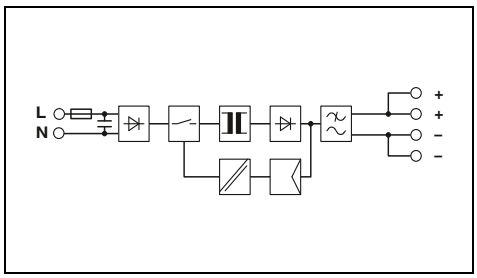
Power supply, 1 AC, 5 DC, 25 W

Ex:



Power supply, 1 AC, 5 DC, 40 W

Ex:

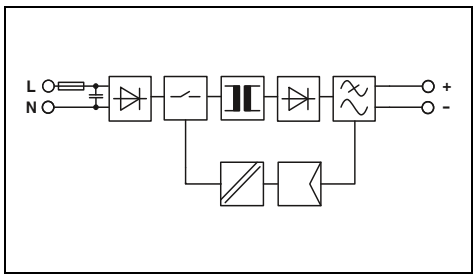


	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC	85 V AC ... 264 V AC
Frequency range	45 Hz ... 65 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	0.5 A (120 V AC) / 0.3 A (230 V AC)	0.7 A (120 V AC) / 0.5 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 30 A / < 0.5 A^2s	< 30 A / < 0.5 A^2s
Mains buffering (I_N, typ.)	> 35 ms (120 V AC) / > 135 ms (230 V AC)	> 30 ms (120 V AC) / > 120 ms (230 V AC)
Output data		
Nominal output voltage	5 V DC ±1 %	5 V DC ±1 %
Output current	5 A	8 A
Can be connected in parallel/series	yes, with redundancy module / yes	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 0.3 W / < 4.5 W	< 0.3 W / < 7.5 W
Efficiency	> 84 %	> 85 % (for 230 V AC and nominal values)
Residual ripple	< 40 mV_{PP}	< 100 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.15 kg / 22.5 x 90 x 84 mm	0.21 kg / 35 x 90 x 84 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/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
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 2174000 h (40°C)	> 1201000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV AC (routine test) / 4 kV AC (type test)	3 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4A (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	UNO-PS/1AC/ 5DC/ 25W	2904374	1	**UNO-PS/1AC/ 5DC/ 40W**	2904375	1

Power supply,
1 AC, 15 DC, 30 W

Ex:



Technical data

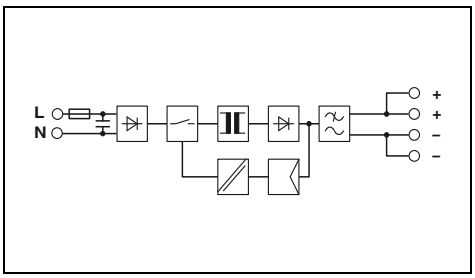
100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
0.6 A (120 V AC) / 0.4 A (230 V AC)
< 30 A / < 0.3 A^2s
> 20 ms (120 V AC) / > 115 ms (230 V AC)
15 V DC ±1 %
2 A
yes, with redundancy module / yes
< 0.3 W / < 4.6 W
> 87 % (for 230 V AC and nominal values)
< 40 mV_{PP}
LED
0.15 kg / 22.5 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 911000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/15DC/30W	2903000	1

Power supply,
1 AC, 15 DC, 55 W

Ex:



Technical data

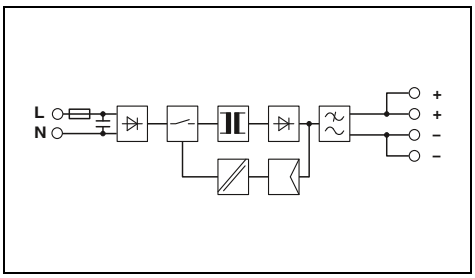
100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
1 A (120 V AC) / 0.6 A (230 V AC)
< 25 A / < 0.5 A^2s
> 25 ms (120 V AC) / > 90 ms (230 V AC)
15 V DC ±1 %
3.7 A
yes, with redundancy module / yes
< 0.3 W / < 7 W
> 88.5 % (for 230 V AC and nominal values)
< 50 mV_{PP}
LED
0.21 kg / 35 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 647000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4A (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/15DC/ 55W	2903001	1

Power supply,
1 AC, 15 DC, 100 W

Ex:



Technical data

100 V AC ... 240 V AC
85 V AC ... 264 V AC
45 Hz ... 65 Hz
1.7 A (120 V AC) / 1 A (230 V AC)
< 30 A / < 1.5 A^2s
> 20 ms (120 V AC) / > 85 ms (230 V AC)
15 V DC ±1 %
6.67 A
yes, with redundancy module / yes
< 0.4 W / < 12 W
> 89 % (for 230 V AC and nominal values)
< 75 mV_{PP}
LED
0.34 kg / 55 x 90 x 84 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
IP20 / II
> 727000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-PS/1AC/15DC/100W	2903002	1

UNO POWER power supplies – compact basic functionality

UNO POWER, 1 AC, 48 V DC

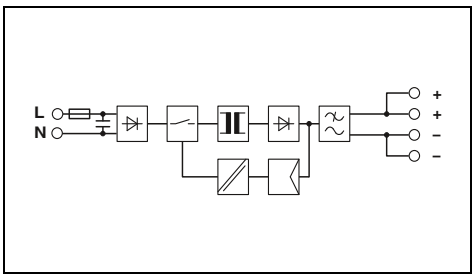
- The wide range of products covers all common voltage levels
- Maximum energy efficiency: save energy thanks to high efficiency and extremely low idling losses
- Save space in the control cabinet thanks to extremely high power density
- Housing depth of 84 mm, tailored to all popular 120 mm control boxes
- Wide temperature range from -25°C to +70°C

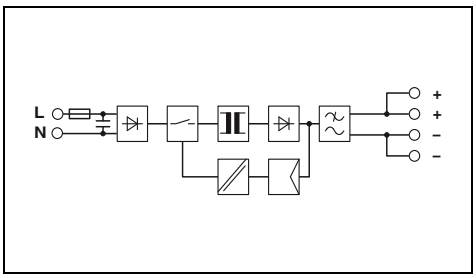
Power supply, 1 AC, 48 DC, 60 W

Power supply, 1 AC, 48 DC, 100 W

Ex:

Ex:





	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC	85 V AC ... 264 V AC
Frequency range	45 Hz ... 65 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	1 A (120 V AC) / 0.6 A (230 V AC)	1.7 A (120 V AC) / 1 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 30 A / < 0.5 A^2s	< 40 A / < 1.4 A^2s
Mains buffering (I_N, typ.)	> 20 ms (120 V AC) / > 90 ms (230 V AC)	> 25 ms (120 V AC) / > 90 ms (230 V AC)
Output data		
Nominal output voltage	48 V DC ±1 %	48 V DC ±1 %
Output current	1.25 A	2.1 A
Can be connected in parallel/series	yes, with redundancy module / yes	yes, with redundancy module / yes
Max. power dissipation (no load/nominal load)	< 0.4 W / < 7 W	< 0.4 W / < 11 W
Efficiency	> 90 % (for 230 V AC and nominal values)	> 90 % (for 230 V AC and nominal values)
Residual ripple	< 35 mV_{PP}	< 40 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.21 kg / 35 x 90 x 84 mm	0.34 kg / 55 x 90 x 84 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/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
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1138000 h (40°C)	> 1010000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV AC (routine test) / 4 kV AC (type test)	3 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4A (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**UNO-PS/1AC/48DC/ 60W**	2902995	1	**UNO-PS/1AC/48DC/100W**	2902996	1

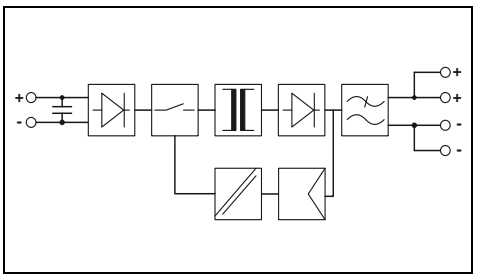
UNO POWER power supplies – DC/DC converter

UNO POWER, input up to 1000 V

– Connect directly to the PV string: no need to supply an AC connection
– Robust and reliable at temperatures from -25°C to +70°C
– Can also be used in small control boxes, thanks to the compact design and high degree of efficiency
– Simplified startup, thanks to LED function monitoring

new

DC/DC converter, 350 - 900 V DC, 24 V DC, 60 W



Technical data

Input data	
Nominal input voltage range	350 V DC ... 900 V DC
Input voltage range	300 V DC ... 1000 V DC
Frequency range	-
Current consumption (nominal load)	0.19 A (350 V DC) / 0.07 A (1000 V DC)
Inrush current limitation at 25°C / I^2t	< 1 A / < 0.38 A^2s
Mains buffering (I_N, typ.)	
Output data	
Nominal output voltage	24 V DC ±1 %
Output current	2.5 A
Can be connected in parallel/series	yes, with redundancy module / No
Max. power dissipation (no load/nominal load)	< 0.5 W / < 6.5 W
Efficiency	> 90 %
Residual ripple	< 20 mV_{PP}
Signaling	
Signaling DC OK	LED
General data	
Weight / Dimensions W x H x D	0.3 kg / 55 x 90 x 84 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1160000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	3 kV DC (routine test) / 8 kV DC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	-
Electronic equipm. for electrical power installations	-
Safe isolation	DIN VDE 0100-410
UL approvals	UL 1741 , IEC 62109-1
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched	**UNO-PS/350-900DC/24DC/60W**	2906300	1

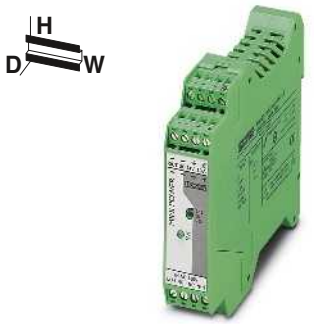
MINI POWER power supplies – for measurement and control technology

MINI POWER, 1 AC, 24 V DC

– Easy-to-maintain connection method thanks to coded COMBICON connector
– Remote monitoring of output voltage via switching output

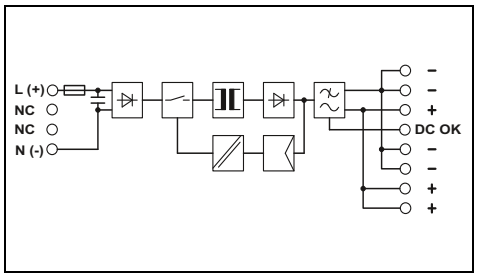
MINI POWER, NEC Class 2

– Output power limited to 100 W: Specifically for applications that require certification according to UL 1310/508 Listed Class 2



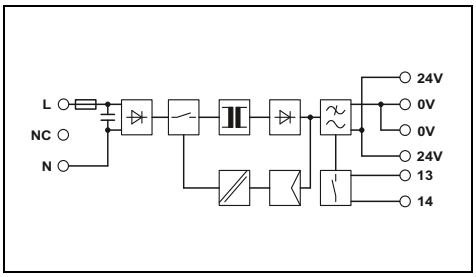
Power supply, 1 AC, 24 V DC, 1.3 A NEC Class 2

Ex:



Power supply, 1 AC, 24 V DC, 1.5 A, DIN rail connector optional

Ex:



	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 90 V DC ... 350 V DC	85 V AC ... 264 V AC
Frequency range	45 Hz ... 65 Hz / 0 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	0.55 A (100 V AC) / 0.23 A (240 V AC)	0.75 A (120 V AC) / 0.45 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / 0.6 A^2s	< 15 A / 0.6 A^2s
Mains buffering (I_N, typ.)	> 20 ms (120 V AC) / > 110 ms (230 V AC)	> 35 ms (120 V AC) / > 150 ms (230 V AC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	22.5 V DC ... 28.5 V DC (> 24 V DC, constant capacity restricted)	-
Output current / Power Boost	1.3 A / 1.6 A	1.5 A / 2 A
Can be connected in parallel/series	Yes / yes	Yes / No
Max. power dissipation (no load/nominal load)	1.4 W / 4.5 W	1.5 W / 6.5 W
Efficiency	> 85 % (for 230 V AC and nominal values)	> 84 % (for 230 V AC and nominal values)
Residual ripple	< 20 mV_{PP}	< 40 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output	LED, relay contact
General data		
Weight / Dimensions W x H x D	0.2 kg / 22.5 x 99 x 107 mm	0.25 kg / 35 x 99 x 95 mm
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Plug-in screw connection	Plug-in screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1104000 h (40°C)	> 2789000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV (routine test) / 4 kV (type test)	3 kV (routine test) / 4 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**MINI-PS-100-240AC/24DC/1.3**	2866446	1

Accessories

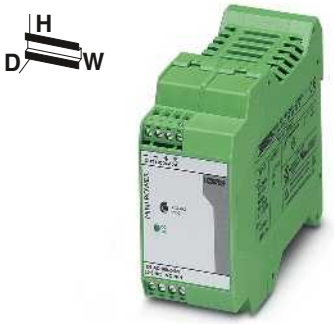
DIN rail connector (optional), for routing through the supply voltage and data signal, two pieces are required per device			

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-SYS-PS-100-240AC/24DC/1.5	2866983	1

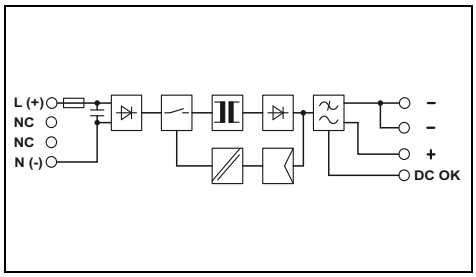
Accessories

ME 17,5 TBUS 1,5/ 5-ST-3,81 GN	2709561	10



**Power supply,
1 AC, 24 V DC, 2 A
NEC Class 2**

Ex:



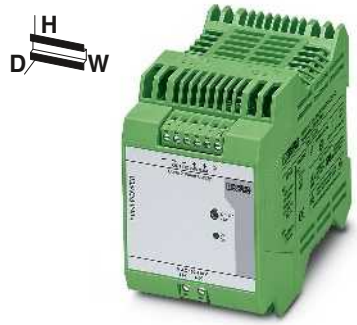
Technical data

100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
90 V DC ... 350 V DC	
45 Hz ... 65 Hz	
0.7 A (120 V AC) / 0.4 A (230 V AC)	
< 15 A / 4.1 A²s	
> 35 ms (120 V AC) / > 170 ms (230 V AC)	
24 V DC ±1 %	
22.5 V DC ... 28.5 V DC (> 24 V DC, constant capacity restricted)	
2 A / 2.9 A	
Yes / yes	
2 W / 7 W	
> 88 % (for 230 V AC and nominal values)	
< 20 mV_{PP}	
LED, active switching output	
0.25 kg / 45 x 99 x 107 mm	
Can be aligned: Horizontally 0 mm, vertically 50 mm	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 507000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
3 kV (routine test) / 4 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	
EN 61000-3-2	

Ordering data

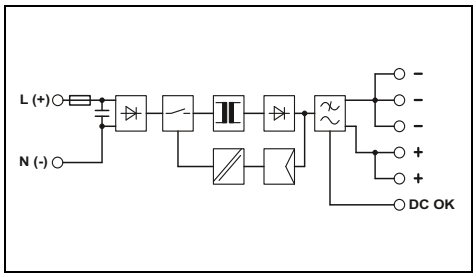
Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/24DC/2	2938730	1

Accessories



**Power supply,
1 AC, 24 V DC, 100 W
NEC Class 2**

Ex:



Technical data

100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
90 V DC ... 350 V DC	
45 Hz ... 65 Hz	
1.3 A (120 V AC) / 0.8 A (230 V AC)	
< 15 A / 2.1 A²s	
> 20 ms (120 V AC) / > 100 ms (230 V AC)	
24 V DC ±1 %	
22.5 V DC ... 26 V DC (> 24 V DC, constant capacity restricted)	
3.8 A / -	
Yes / yes	
2.5 W / 12 W	
> 88 % (for 230 V AC and nominal values)	
< 40 mV_{PP}	
LED, active switching output	
0.4 kg / 67.5 x 99 x 107 mm	
Can be aligned: Horizontally 0 mm, vertically 50 mm	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 815000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
3 kV (routine test) / 3 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	
EN 61000-3-2	

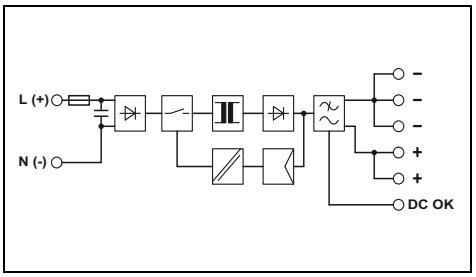
Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/24DC/C2LPS	2866336	1

Accessories

**Power supply,
1 AC, 24 V DC, 4 A**

Ex:



Technical data

100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
90 V DC ... 350 V DC	
45 Hz ... 65 Hz	
1.3 A (120 V AC) / 0.8 A (230 V AC)	
< 15 A / 2.1 A²s	
> 20 ms (120 V AC) / > 100 ms (230 V AC)	
24 V DC ±1 %	
22.5 V DC ... 28.5 V DC (> 24 V DC, constant capacity restricted)	
4 A / 5 A	
Yes / yes	
2.5 W / 12 W	
> 88 % (for 230 V AC and nominal values)	
< 20 mV_{PP}	
LED, active switching output	
0.4 kg / 67.5 x 99 x 107 mm	
Can be aligned: Horizontally 0 mm, vertically 50 mm	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 815000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
3 kV (routine test) / 3 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/24DC/4	2938837	1

Accessories

MINI POWER power supplies – for measurement and control technology

MINI POWER, 1 AC, 5 to 15 V DC

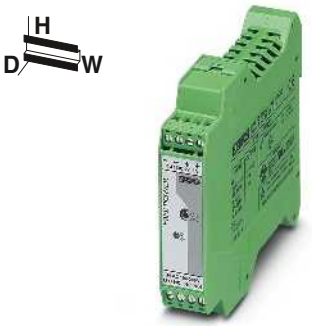
– Easy-to-maintain connection method thanks to coded COMBICON connector
– Remote monitoring of output voltage via switching output

MINI POWER, ±15 V DC

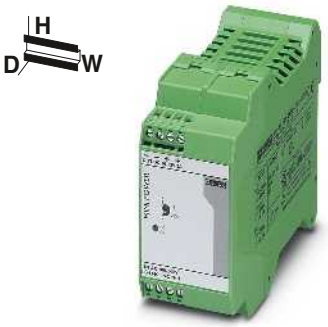
– For supplying operational amplifiers

MINI POWER EX

Corresponds to standard EN 60079-15
– Installation in a potentially explosive area in which category 3G equipment is required (Zone 2).

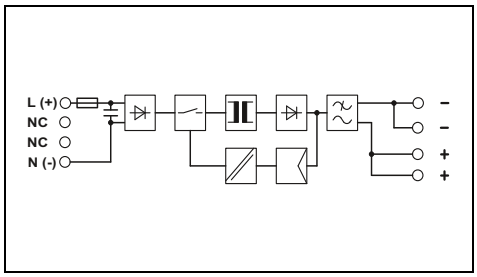


Power supply,
1 AC, 5 V DC, 3 A

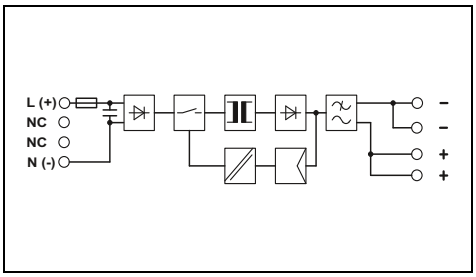


Power supply,
1 AC, 10 - 15 V DC, 2 A

Ex:



Ex:



	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 90 V DC ... 350 V DC	85 V AC ... 264 V AC 90 V DC ... 350 V DC
Frequency range	45 Hz ... 65 Hz	45 Hz ... 65 Hz
Current consumption (nominal load)	0.4 A (120 V AC) / 0.2 A (230 V AC)	0.4 A (120 V AC) / 0.2 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / 1.5 A^2s	< 15 A / 1.7 A^2s
Mains buffering (I_N, typ.)	> 30 ms (120 V AC) / > 140 ms (230 V AC)	> 20 ms (120 V AC) / > 120 ms (230 V AC)
Output data		
Nominal output voltage	5 V DC ±1 %	12 V DC ±1 %
Setting range of the output voltage (U_{Set})	4.5 V DC ... 5.5 V DC (> 5 V DC, constant capacity restricted)	10 V DC ... 15 V DC (> 12 V DC, constant capacity restricted)
Output current / Power Boost	3 A / 5 A	2 A / 2.3 A
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	1 W / 5 W	< 1 W / < 7 W
Efficiency	> 73 % (for 230 V AC and nominal values)	> 86 % (for 230 V AC and nominal values)
Residual ripple	< 40 mV_{PP}	< 20 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.17 kg / 22.5 x 99 x 107 mm	0.25 kg / 45 x 99 x 107 mm
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Plug-in screw connection	Plug-in screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 766000 h (40°C)	> 507000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3 kV (routine test) / 4 kV (type test)	3 kV (routine test) / 4 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**MINI-PS-100-240AC/ 5DC/3**	2938714	1

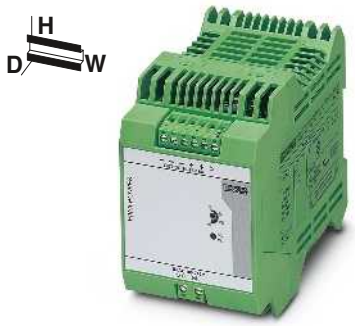
Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/10-15DC/2	2938756	1

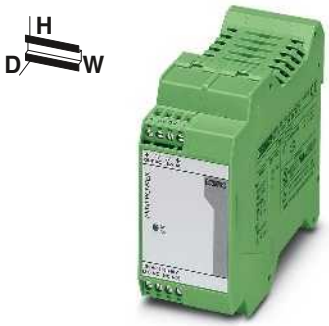
Accessories

DIN rail connector (optional), for routing through the supply voltage and data signal, two pieces are required per device			

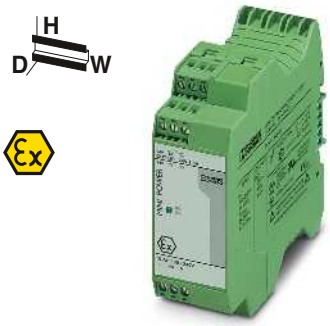
Accessories



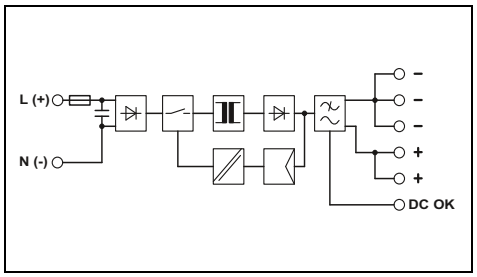
Power supply,
1 AC, 10 - 15 V DC, 8 A

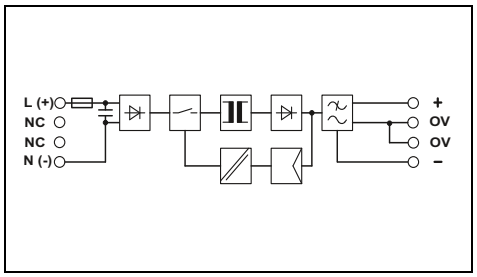


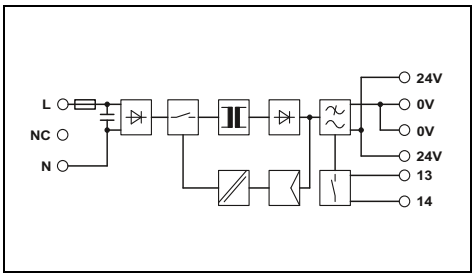
Power supply,
1 AC, ±15 V DC, 1 A
NEC Class 2



Power supply
1 AC, 24 DC, 1.5 A
DIN rail connector optional







Technical data

100 V AC ... 240 V AC 85 V AC ... 264 V AC 90 V DC ... 350 V DC 45 Hz ... 65 Hz 1.3 A (120 V AC) / 0.8 A (230 V AC) < 15 A / 2.1 A²s > 20 ms (120 V AC) / > 20 ms (230 V AC)	100 V AC ... 240 V AC 85 V AC ... 264 V AC 90 V DC ... 350 V DC 45 Hz ... 65 Hz 0.6 A (120 V AC) / 0.4 A (230 V AC) < 35 A / 4 A²s > 30 ms (120 V AC) / > 150 ms (230 V AC)	100 V AC ... 240 V AC 85 V AC ... 264 V AC 45 Hz ... 65 Hz 0.75 A (120 V AC) / 0.45 A (230 V AC) < 15 A / 0.6 A²s > 35 ms (120 V AC) / > 150 ms (230 V AC)
12 V DC ±1 % 10 V DC ... 15 V DC (> 12 V DC, constant capacity restricted)	± 15 V DC ±1 % -	24 V DC ±1 % -
8 A Yes / yes < 2.5 W / < 12 W > 88 % (for 230 V AC and nominal values) < 40 mV_{PP}	1 A / 1.5 A Yes / yes 2 W / 8 W > 80 % (for 230 V AC and nominal values) < 30 mV_{PP}	1.5 A / 2 A Yes / yes 1.5 W / 6.5 W > 84 % (for 230 V AC and nominal values) < 40 mV_{PP}
LED, active switching output	LED	LED, relay contact
0.4 kg / 67.5 x 99 x 107 mm Can be aligned: Horizontally 0 mm, vertically 50 mm Plug-in screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 984000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	0.25 kg / 45 x 99 x 107 mm Can be aligned: Horizontally 0 mm, vertically 50 mm Plug-in screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 500000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	0.25 kg / 35 x 99 x 95 mm Can be aligned: Horizontally 0 mm, vertically 50 mm Plug-in screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 2789000 h (40°C) -25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
3 kV (routine test) / 3 kV (type test) Conformance with EMC Directive 2014/30/EU EN 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2	3 kV (routine test) / 4 kV (type test) Conformance with EMC Directive 2014/30/EU EN 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310 EN 61000-3-2	3 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU EN 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/10-15DC/8	2866297	1

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/2X15DC/1	2938743	1

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS-100-240AC/24DC/1.5/EX	2866653	1

Accessories

Accessories

Accessories

ME 17,5 TBUS 1,5/ 5-ST-3,81 GN	2709561	10

STEP POWER power supplies – for installation distributors and flat control panels

STEP POWER, 1 AC, 24 V DC

– Flexible assembly by simply snapping the product onto the DIN rail or screwing it onto an even surface
– Energy savings thanks to maximum energy efficiency and incredibly low no-load losses
– Wide temperature range from -25°C to +70°C
– Reliable supply thanks to the high MTBF (mean time between failure)

STEP POWER, 24 V DC, 0.5 A

– Slim design with an overall width of just 18 mm (1 pitch)

STEP POWER, 24 V DC, 0.75 A

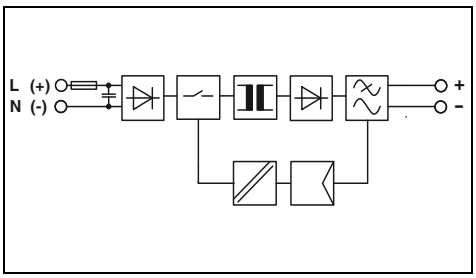
– Meets standard EN 60335-1 for household appliances, suitable for installation in ventilation systems, for example
– Flat design with a depth of just 43 mm

STEP POWER, 48 V AC, 0.5 A

– Connection to 48 V AC operating networks
– Slim design with an overall width of just 18 mm (1 pitch)

Power supply, 1 AC, 24 V DC, 0.5 A NEC Class 2

Ex:



Technical data

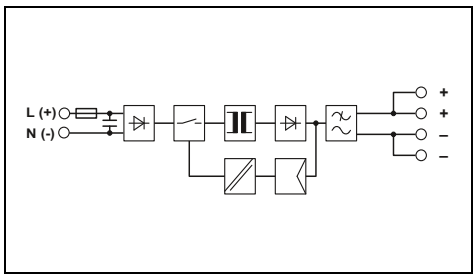
Input data	
Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 95 V DC ... 250 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	0.28 A (120 V AC) / 0.13 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.1 A^2s
Mains buffering (I_N, typ.)	> 15 ms (120 V AC) / > 90 ms (230 V AC)
Output data	
Nominal output voltage	24 V DC ±1 %
Output current	0.5 A
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	< 0.3 W / < 2.2 W
Efficiency	> 84 % (for 230 V AC and nominal values)
Residual ripple	< 20 mV_{PP}
Signaling	
Signaling DC OK	LED
General data	
Weight / Dimensions W x H x D	0.07 kg / 18 x 90 x 61 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1567000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	3.75 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
Budgetary standard	-
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched	**STEP-PS/ 1AC/24DC/0.5**	**2868596**	1

Power supply,
1 AC, 24 V DC, 0.75 A
flat design, NEC Class 2

Ex:



Technical data

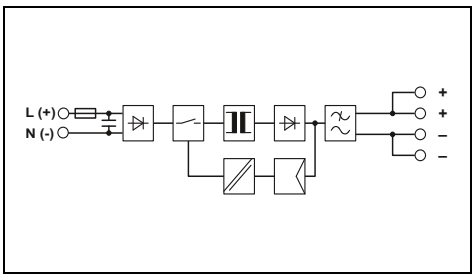
100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
95 V DC ... 250 V DC	
45 Hz ... 65 Hz / 0 Hz	
0.3 A (120 V AC) / 0.25 A (230 V AC)	
< 15 A / < 0.1 A²s	
> 15 ms (120 V AC) / > 70 ms (230 V AC)	
24 V DC ±1 %	
0.75 A	
Yes / yes	
< 0.5 W / < 3.6 W	
> 84 % (for 230 V AC and nominal values)	
< 75 mV_{PP}	
LED	
0.11 kg / 36 x 90 x 43 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 926000 h (40°C)	
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	
3.75 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
IEC 60335-1	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/24DC/0.75/FL	2868622	1

Power supply,
1 AC, 24 V DC, 0.75 A
NEC Class 2

Ex:



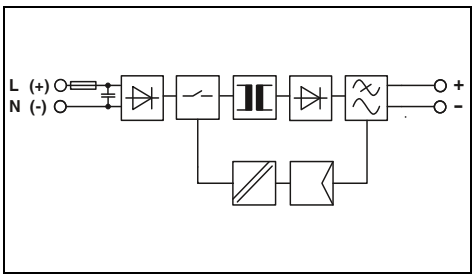
Technical data

100 V AC ... 240 V AC	
85 V AC ... 264 V AC	
95 V DC ... 250 V DC	
45 Hz ... 65 Hz / 0 Hz	
0.3 A (120 V AC) / 0.2 A (230 V AC)	
< 15 A / < 0.1 A²s	
> 15 ms (120 V AC) / > 70 ms (230 V AC)	
24 V DC ±1 %	
0.75 A	
Yes / yes	
0.5 W / 3.6 W	
> 84 % (for 230 V AC and nominal values)	
< 75 mV_{PP}	
LED	
0.11 kg / 36 x 90 x 61 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 926000 h (40°C)	
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	
3.75 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
IEC 60335-1	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/24DC/0.75	2868635	1

Power supply,
48 V AC, 24 V DC, 0.5 A
NEC Class 2



Technical data

48 V AC	
43 V AC ... 52 V AC	
60 V DC ... 80 V DC	
45 Hz ... 65 Hz / 0 Hz	
0.5 A (43 V AC) / 0.45 A (48 V AC)	
< 10 A / < 0.1 A²s	
> 15 ms (48 V AC) / > 20 ms (52 V AC)	
24 V DC ±1 %	
0.5 A	
Yes / yes	
< 0.3 W / < 3.4 W	
> 81 % (for 48 V AC and nominal values)	
< 30 mV_{PP}	
LED	
0.07 kg / 18 x 90 x 61 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / II	
> 1860000 h (40°C)	
-25 °C ... 70 °C (> 55 °C derating: 2.5%/K)	
3.75 kV AC (routine test) / 4 kV AC (type test)	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
-	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310	
EN 61000-3-2	

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/48AC/24DC/0.5	2868716	1

STEP POWER power supplies – for installation distributors and flat control panels

STEP POWER, 1 AC, 24 V DC

– Flexible assembly by simply snapping the product onto the DIN rail or screwing it onto an even surface
– Energy savings thanks to maximum energy efficiency and incredibly low no-load losses
– Wide temperature range from -25°C to +70°C
– Reliable supply thanks to the high MTBF (mean time between failure)

STEP POWER, NEC Class 2

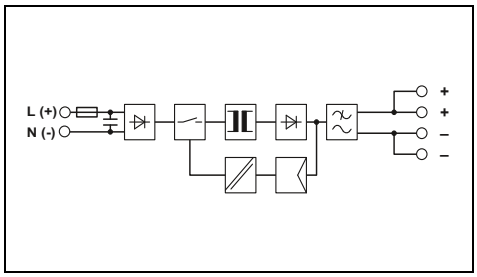
– Output power limited to 100 W: Specifically for applications that require certification according to UL 1310/508 Listed Class 2

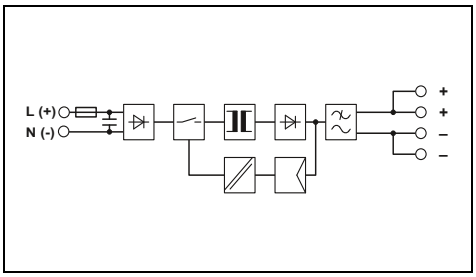
Power supply, 1 AC, 24 V DC, 1.75 A NEC Class 2

Ex:

Power supply, 1 AC, 24 V DC, 2.5 A NEC Class 2

Ex:





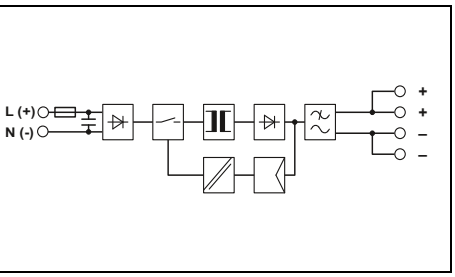
	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 95 V DC ... 250 V DC	85 V AC ... 264 V AC 95 V DC ... 250 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	0.6 A (120 V AC) / 0.3 A (230 V AC)	0.8 A (120 V AC) / 0.4 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.6 A^2s	< 15 A / < 0.6 A^2s
Mains buffering (I_N, typ.)	> 25 ms (120 V AC) / > 150 ms (230 V AC)	> 20 ms (120 V AC) / > 100 ms (230 V AC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	22.5 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	22.5 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current	1.75 A	2.5 A
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	< 0.7 W / 5 W	< 0.7 W / 9.9 W
Efficiency	> 89 % (for 230 V AC and nominal values)	> 86 % (for 230 V AC and nominal values)
Residual ripple	< 60 mV_{PP}	< 80 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.19 kg / 54 x 90 x 61 mm	0.27 kg / 72 x 90 x 61 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1569000 h (40°C)	> 1061000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3.75 kV AC (routine test) / 4 kV AC (type test)	3.75 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	STEP-PS/ 1AC/24DC/1.75	2868648	1	**STEP-PS/ 1AC/24DC/2.5**	2868651	1

DeviceNet

**Power supply,
1 AC, 24 V DC, 100 W
NEC Class 2**

Ex:



Technical data

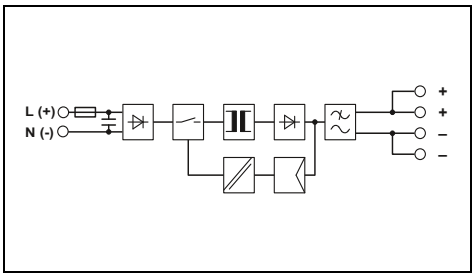
100 V AC ... 240 V AC
85 V AC ... 264 V AC
95 V DC ... 250 V DC
45 Hz ... 65 Hz
1.3 A (120 V AC) / 0.8 A (230 V AC)
< 15 A / < 1 A^2s
> 25 ms (120 V AC) / > 120 ms (230 V AC)
24 V DC ±1 %
22.5 V DC ... 25 V DC (> 24 V DC, constant capacity restricted)
3.8 A
No / No
< 0.7 W / 11.8 W
> 88 % (for 230 V AC and nominal values)
< 80 mV_{PP}
LED
0.33 kg / 90 x 90 x 61 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
IP20 / II
> 897000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/24DC/3.8/C2LPS	2868677	1

**Power supply,
1 AC, 24 V DC, 4.2 A**

Ex:



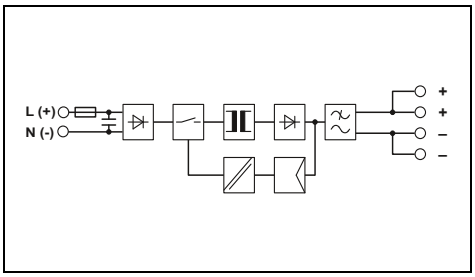
Technical data

100 V AC ... 240 V AC
85 V AC ... 264 V AC
95 V DC ... 250 V DC
45 Hz ... 65 Hz / 0 Hz
1.3 A (120 V AC) / 0.8 A (230 V AC)
< 15 A / < 1 A^2s
> 20 ms (120 V AC) / > 100 ms (230 V AC)
24 V DC ±1 %
22.5 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
4.2 A
Yes / yes
< 0.7 W / 13.2 W
> 88 % (for 230 V AC and nominal values)
< 40 mV_{PP}
LED
0.33 kg / 90 x 90 x 61 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
IP20 / II
> 897000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/24DC/4.2	2868664	1

**Power supply,
1 AC, 24 V DC, 3.5 A
Input up to 277 V AC, NEC Class 2**



Technical data

100 V AC ... 277 V AC
85 V AC ... 305 V AC
95 V DC ... 250 V DC
45 Hz ... 65 Hz / 0 Hz
1.43 A (120 V AC) / 0.75 A (277 V AC)
< 40 A / < 2.8 A^2s
> 25 ms (120 V AC) / > 160 ms (277 V AC)
24 V DC ±1 %
22.5 V DC ... 25 V DC (> 24 V DC, constant capacity restricted)
3.5 A
Yes / yes
< 0.6 W / 11.5 W
> 88 % (for 277 V AC and nominal values)
< 10 mV_{PP}
LED
0.3 kg / 90 x 90 x 61 mm
Alignable: 0 mm horizontally, 30 mm vertically
Screw connection
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
IP20 / II
> 1094000 h (40°C)
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test)
Conformance with EMC Directive 2014/30/EU
IEC 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
DIN VDE 0100-410
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310
EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/277AC/24DC/3.5	2904945	1

STEP POWER power supplies – for installation distributors and flat control panels

STEP POWER, 1 AC, 5 to 48 V DC

– Flexible assembly by simply snapping the product onto the DIN rail or screwing it onto an even surface
– Energy savings thanks to maximum energy efficiency and incredibly low no-load losses
– Wide temperature range from -25°C to +70°C
– Reliable supply thanks to the high MTBF (mean time between failure)

STEP POWER, 5 V DC, 2 A

– Slim design with an overall width of just 18 mm (1 pitch)

STEP POWER, 5 V DC, 6.5 A

– Adjustable output voltage of 4 to 6.5 V DC

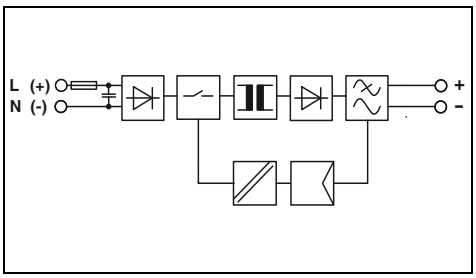
STEP POWER, 15 V DC, 4 A

– Adjustable output voltage of 10 to 16.5 V DC

STEP POWER, 48 V DC, 2 A

– Adjustable output voltage of 30 to 56 V DC

Power supply, 1 AC, 5 V DC, 2 A NEC Class 2



Technical data

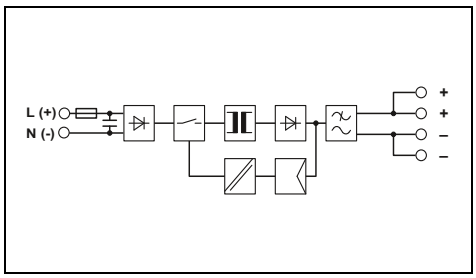
Input data	
Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 95 V DC ... 250 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	0.2 A (120 V AC) / 0.13 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.1 A^2s
Mains buffering (I_N, typ.)	> 25 ms (120 V AC) / > 110 ms (230 V AC)
Output data	
Nominal output voltage	5 V DC ±1 %
Setting range of the output voltage (U_{Set})	-
Output current	2 A
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	< 0.4 W / < 2.6 W
Efficiency	> 81 % (for 230 V AC and nominal values)
Residual ripple	< 50 mV_{PP}
Signaling	
Signaling DC OK	LED
General data	
Weight / Dimensions W x H x D	0.1 kg / 18 x 90 x 61 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1812000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	3.75 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched, 1-phase	**STEP-PS/ 1AC/ 5DC/2**	2320513	1

Power supply,
1 AC, 5 V DC, 6.5 A

Ex:



Technical data

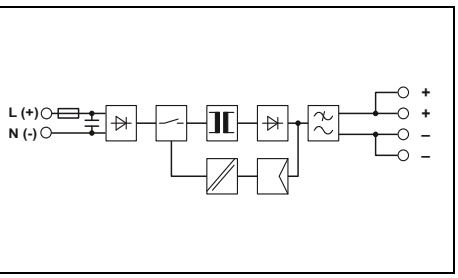
100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 0.5 A (120 V AC) / 0.3 A (230 V AC) < 15 A / < 0.6 A²s > 25 ms (120 V AC) / > 140 ms (230 V AC)
5 V DC ±1 % 4 V DC ... 6.5 V DC (> 5 V DC, constant capacity restricted)
6.5 A Yes / yes < 0.4 W / 8.1 W > 80 % (for 230 V AC and nominal values) < 50 mV_{PP}
LED
0.27 kg / 72 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1111000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/ 5DC/6.5	2868541	1

Power supply,
1 AC, 15 V DC, 4 A

Ex:



Technical data

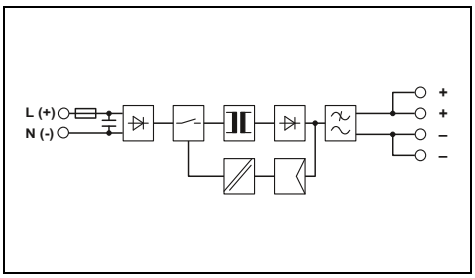
100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 0.8 A (120 V AC) / 0.5 A (230 V AC) < 15 A / < 0.6 A²s > 27 ms (120 V AC) / > 120 ms (230 V AC)
15 V DC ±1 % 10 V DC ... 16.5 V DC (> 15 V DC, constant capacity restricted)
4 A Yes / yes < 0.5 W / 8.6 W > 87 % (for 230 V AC and nominal values) < 55 mV_{PP}
LED
0.27 kg / 72 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1134000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/15DC/4	2868619	1

Power supply,
1 AC, 48 V DC, 2 A

Ex:



Technical data

100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 1.3 A (120 V AC) / 0.8 A (230 V AC) < 15 A / < 1.4 A²s > 20 ms (120 V AC) / > 120 ms (230 V AC)
48 V DC ±1 % 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)
2 A Yes / yes < 0.9 W / 9.6 W > 90 % (for 230 V AC and nominal values) < 30 mV_{PP}
LED
0.33 kg / 90 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1048000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/48DC/2	2868680	1

STEP POWER power supplies – for installation distributors and flat control panels

STEP POWER, 1 AC, 12 V DC

– Flexible assembly by simply snapping the product onto the DIN rail or screwing it onto an even surface
– Energy savings thanks to maximum energy efficiency and incredibly low no-load losses
– Wide temperature range from -25°C to +70°C
– Reliable supply thanks to the high MTBF (mean time between failure)

STEP POWER, 12 V DC, 1.5 A

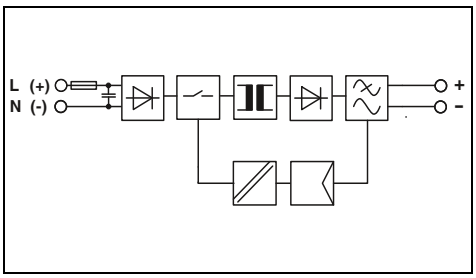
– Meets standard EN 60335-1 for household appliances, suitable for installation in ventilation systems, for example

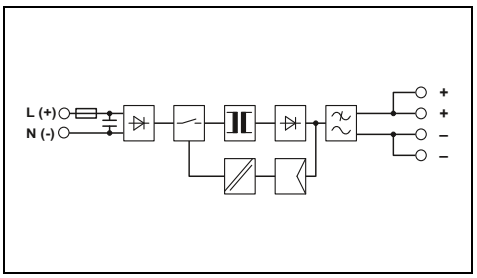
Power supply,
1 AC, 12 V DC, 1 A
NEC Class 2

Ex:

Power supply,
1 AC, 12 V DC, 1.5 A
Flat design, NEC Class 2

Ex:



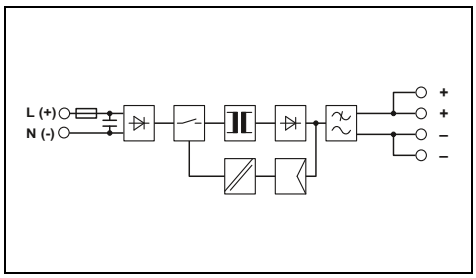


	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC 95 V DC ... 250 V DC	85 V AC ... 264 V AC 95 V DC ... 250 V DC
Frequency range	45 Hz ... 65 Hz / 0 Hz	45 Hz ... 65 Hz / 0 Hz
Current consumption (nominal load)	0.26 A (120 V AC) / 0.13 A (230 V AC)	0.33 A (120 V AC) / 0.18 A (230 V AC)
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.1 A^2s	< 15 A / < 0.1 A^2s
Mains buffering (I_N, typ.)	> 15 ms (120 V AC) / > 90 ms (230 V AC)	> 15 ms (120 V AC) / > 70 ms (230 V AC)
Output data		
Nominal output voltage	12 V DC ±1 %	12 V DC ±1 %
Setting range of the output voltage (U_{Set})	-	-
Output current	1 A	1.5 A
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	< 0.4 W / < 2.8 W	< 0.4 W / < 3.2 W
Efficiency	> 83 % (for 230 V AC and nominal values)	> 84 % (for 230 V AC and nominal values)
Residual ripple	< 20 mV_{PP}	< 75 mV_{PP}
Signaling		
Signaling DC OK	LED	LED
General data		
Weight / Dimensions W x H x D	0.07 kg / 18 x 90 x 61 mm	0.07 kg / 36 x 90 x 43 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection	Screw connection
Connection data solid/stranded/AWG	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1478000 h (40°C)	> 1800000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	3.75 kV AC (routine test) / 4 kV AC (type test)	3.75 kV AC (routine test) / 4 kV AC (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
Budgetary standard	-	IEC 60335-1
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310
Limitation of harmonic line currents	EN 61000-3-2	EN 61000-3-2

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, primary-switched						
	STEP-PS/ 1AC/12DC/1	2868538	1	**STEP-PS/ 1AC/12DC/1.5/FL**	2868554	1

Power supply, 1 AC, 12 V DC, 1.5 A NEC Class 2

Ex:



Technical data

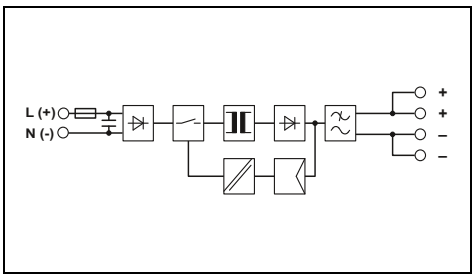
100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 0.3 A (120 V AC) / 0.2 A (230 V AC) < 15 A / < 0.1 A²s > 15 ms (120 V AC) / > 70 ms (230 V AC)
12 V DC ±1 % -
1.5 A Yes / yes < 0.4 W / < 3.2 W > 84 % (for 230 V AC and nominal values) < 75 mV_{PP}
LED
0.11 kg / 36 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1800000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 IEC 60335-1 UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310 EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/12DC/1.5	**2868567**	1

Power supply, 1 AC, 12 V DC, 3 A NEC Class 2

Ex:



Technical data

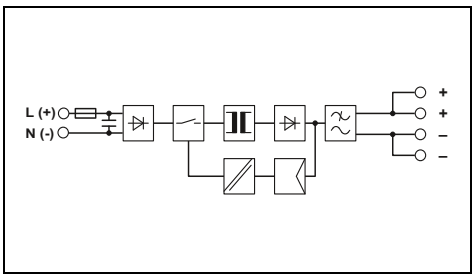
100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 0.6 A (120 V AC) / 0.3 A (230 V AC) < 15 A / < 0.6 A²s > 26 ms (120 V AC) / > 160 ms (230 V AC)
12 V DC ±1 % 10 V DC ... 16.5 V DC (> 12 V DC, constant capacity restricted)
3 A Yes / yes < 0.5 W / 6.4 W > 85 % (for 230 V AC and nominal values) < 40 mV_{PP}
LED
0.19 kg / 54 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1689000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 - UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) , NEC Class 2 as per UL 1310 EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/12DC/3	**2868570**	1

Power supply, 1 AC, 12 V DC, 5 A

Ex:



Technical data

100 V AC ... 240 V AC 85 V AC ... 264 V AC 95 V DC ... 250 V DC 45 Hz ... 65 Hz / 0 Hz 0.8 A (120 V AC) / 0.5 A (230 V AC) < 15 A / < 0.6 A²s > 27 ms (120 V AC) / > 120 ms (230 V AC)
12 V DC ±1 % 10 V DC ... 16.5 V DC (> 12 V DC, constant capacity restricted)
5 A Yes / yes < 0.5 W / 8.6 W > 87 % (for 230 V AC and nominal values) < 55 mV_{PP}
LED
0.27 kg / 72 x 90 x 61 mm Alignable: 0 mm horizontally, 30 mm vertically Screw connection 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12 IP20 / II > 1134000 h (40°C) -25 °C ... 70 °C (> 55° C derating: 2.5%/K)
3.75 kV AC (routine test) / 4 kV AC (type test) Conformance with EMC Directive 2014/30/EU IEC 60950-1/VDE 0805 (SELV) EN 50178/VDE 0160 (PELV) DIN VDE 0100-410 - UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) EN 61000-3-2

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-PS/ 1AC/12DC/5	**2868583**	1

QUINT and MINI DC/DC converters alter the voltage level, regenerate the voltage at the end of long cables, or enable the creation of independent supply systems by means of electrical isolation.

There are numerous fields of application for DC/DC converters. As the name suggests, they convert voltages in order to match different voltage levels to one another. On long supply lines, they raise the voltage to compensate for voltage drops.

DC/DC converters separate circuits from each other by means of electrical isolation and protect the sensitive loads by decoupling them. The primary-switched switching devices have an internal intermediate circuit. This acts as a filter. This means, for example, that grounded and non-grounded circuits can be kept separate. Another advantage is the protection of critical loads from disruptive voltage fluctuations: if, for example, a motor is switched on that requires a high current for the starting torque, there is a brief voltage dip and sensitive loads shut down. The same occurs when loads with high input capacities are switched on. Troubleshooting these temporary faults is often difficult and time-consuming.

DC/DC converters are also ideal in battery-supported power supply networks or solutions with unregulated transformers, when sensitive loads require a stable DC.

QUINT POWER – maximum functionality

Cost-effective selective fuse protection with SFB Technology:

In order to trip miniature circuit breakers magnetically and quickly, power supplies must be able to supply several times the nominal current for a short period. With SFB (Selective Fuse Breaking) Technology, which supplies up to 6 times the nominal current for 12 ms, a dynamic power reserve is available. Faulty current paths are switched off selectively, the fault is located, and important system parts remain in operation.

Preventive function monitoring:

Comprehensive diagnostics are provided through constant monitoring of the input voltage, output voltage, and output current. This preventive monitoring visualizes critical operating states, before errors can occur. Remote monitoring is provided by means of active switching outputs and floating relay contacts.

Power Boost power reserve:

The static power reserve offers up to 1.25 times the nominal current permanently. At ambient temperatures of up to +40°C the Power Boost is continuously available and at higher temperatures it is available for a few minutes. This ensures that both high switch-on currents of capacitive loads, as well as loads with DC/DC converters in the primary circuit can be reliably supplied.

Your web code: #0152

QUINT POWER

The unique SFB Technology and preventive function monitoring maximize the availability of your application.

– Quick tripping of standard circuit breakers with SFB Technology
– Preventive function monitoring
– Reliable starting of heavy loads with Power Boost

QUINT POWER CO with protective coating for extreme requirements

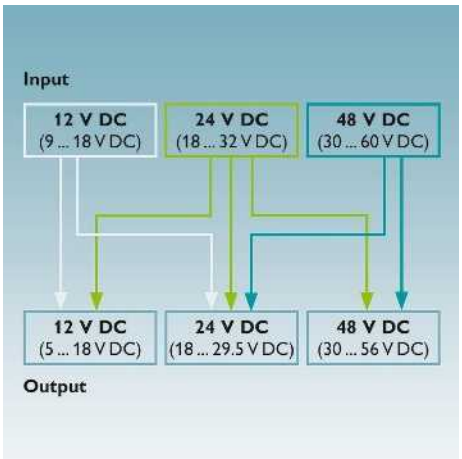
The protective coating on these DC/DC converters protects against dust, corrosive gases, and 100% humidity as well as failure caused by corrosion-related creepage currents and electrochemical migration.

– OVP (overvoltage protection) limits surge voltages to 32 V
– Wide temperature range from -40°C to +70°C

MINI DC/DC converters – for control technology

MINI DC/DC converters come into their own in fields where modular electronics housing has become the standard.

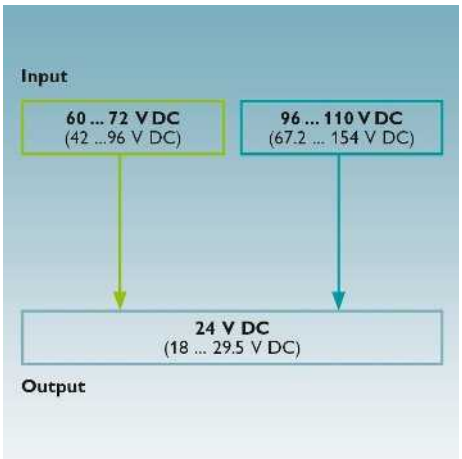
– Maintenance-friendly connection technology with coded COMBICON connectors
– Active function monitoring with switching output for remote monitoring of the output voltage



Voltage levels of QUINT DC/DC converters with 12 to 48 V DC

The QUINT DC/DC converters alter the voltage level:

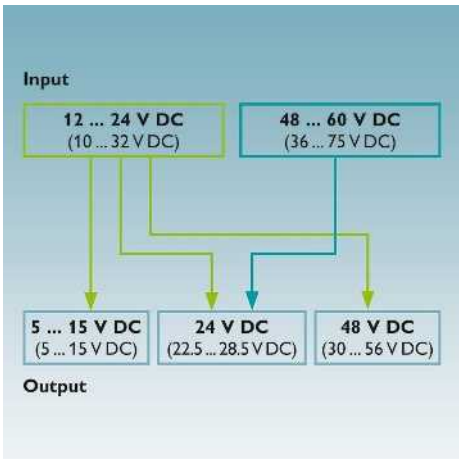
– Input voltages:
  12 V DC (9 ... 18 V DC),
  24 V DC (18 ... 32 V DC),
  48 V DC (30 ... 60 V DC)
– Output voltages:
  12 V DC (5 ... 18 V DC),
  24 V DC (18 ... 29.5 V DC),
  48 V DC (30 ... 56 V DC)



Voltage levels of QUINT DC/DC converters with 60 to 110 V DC

The QUINT DC/DC converters alter the voltage level:

– Input voltages:
  60 to 72 V DC (42 ... 96 V DC),
  96 to 110 V DC (67 ... 154 V DC)
– Output voltages:
  24 V DC (18 ... 29.5 V DC)



Voltage levels of MINI DC/DC converters

The MINI DC/DC converters alter the voltage level:

– Input voltages:
  12 to 24 V DC (10 ... 32 V DC),
  48 to 60 V DC (36 ... 75 V DC)
– Output voltages:
  5 to 15 V DC (5 ...15 V DC),
  24 V DC (22.5 ... 28.5 V DC),
  48 V DC (30 ... 56 V DC)

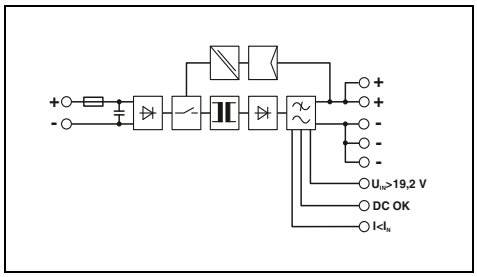
QUINT DC/DC converters

QUINT POWER, 24 V DC input

- Support conversion to various voltage levels
- Constant voltage: output voltage regenerated even at the end of long cables
- Electrical isolation: for setting up independent supply systems
- SFB Technology: fast tripping of standard circuit breakers, thanks to the dynamic power reserve with up to 6 times the nominal current for 12 ms
- Reliable starting of heavy loads thanks to the static Power Boost power reserve with up to 125% of the nominal current
- Preventive function monitoring

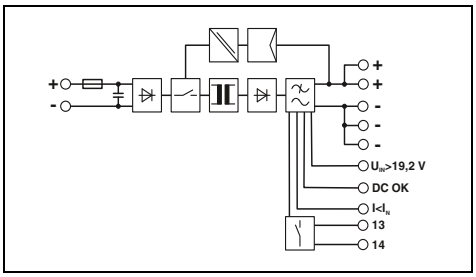
DC/DC converter,
24 V DC / 24 V DC, 5 A

Ex:



DC/DC converter,
24 V DC / 24 V DC, 10 A

Ex:

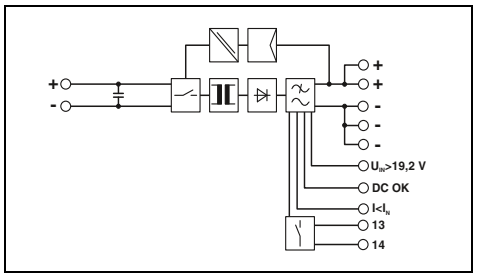


	Technical data	Technical data
Input data		
Nominal input voltage range	24 V DC	24 V DC
Current consumption (Power Boost)	7 A (24 V, I_{BOOST})	14 A (24 V, I_{BOOST})
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.5 A^2s	< 15 A / < 2.7 A^2s
Mains buffering (I_N, typ.)	> 10 ms (24 V DC)	> 12 ms (24 V DC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	5 A / 6.25 A / 30 A	10 A / 12.5 A / 60 A
Magnetic circuit breaker tripping	B2 / B4 / C2	B2 / B4 / B6 / C2 / C4
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	2.4 W / 11.4 W	1.6 W / 24 W
Efficiency	> 92 %	> 92 %
Residual ripple	< 20 mV_{PP}	< 20 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output	LED, active switching output, relay contact
Boost signaling	LED, active switching output	LED, active switching output
U_{IN} signaling	LED, active switching output	LED, active switching output
General data		
Weight / Dimensions W x H x D	0.7 kg / 32 x 130 x 125 mm	0.9 kg / 48 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / III	IP20 / III
MTBF (IEC 61709, SN 29500)	> 890000 h (40°C)	> 763000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)	≤ 95 % (at 25 °C, non-condensing)
Standards/regulations		
Insulation voltage input/output	1 kV (routine test) / 1.5 kV (type test)	1 kV (routine test) / 1.5 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched						
	QUINT-PS/24DC/24DC/ 5	2320034	1	**QUINT-PS/24DC/24DC/10**	2320092	1

DC/DC converter,
24 V DC / 24 V DC, 20 A

Ex:



Technical data

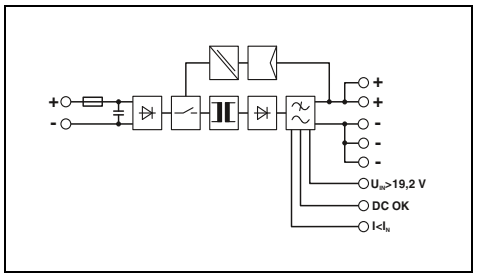
24 V DC	
28 A (24 V, I_{BOOST})	
< 26 A / < 11 A^2s	
> 10 ms (24 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
20 A / 25 A / 120 A	
B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6	
Yes / yes	
2.2 W / 39 W	
> 93 %	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
1.7 kg / 82 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Screw connection	
0.5 - 16 mm^2 / 0.5 - 16 mm^2 / 8 - 6	
0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / III	
> 554000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/24DC/24DC/20	2320102	1

DC/DC converter,
24 V DC / 12 V DC, 8 A

Ex:

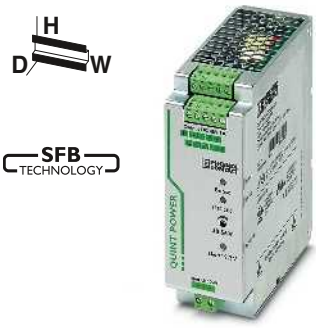


Technical data

24 V DC	
6 A (24 V, I_{BOOST})	
< 15 A / < 0.5 A^2s	
> 10 ms (24 V DC)	
12 V DC ±1 %	
5 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)	
8 A / 10 A / 48 A	
B2 / B4 / C2	
Yes / yes	
2 W / 10.5 W	
> 90 %	
< 20 mV_{PP}	
LED, active switching output	
LED, active switching output	
LED, active switching output	
0.7 kg / 32 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / III	
> 843000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

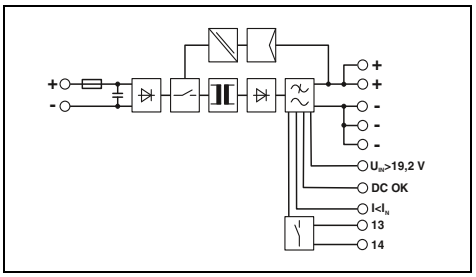
Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/24DC/12DC/ 8	2320115	1



DC/DC converter,
24 V DC / 48 V DC, 5 A

Ex:



Technical data

24 V DC	
14 A (24 V, I_{BOOST})	
< 15 A / 3 A^2s	
> 12 ms (24 V DC)	
48 V DC ±1 %	
30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)	
5 A / 6.25 A / 30 A	
B2 / B4 / C2	
Yes / yes	
5.2 W / 21 W	
> 92.5 %	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
0.9 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / III	
> 761000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/24DC/48DC/ 5	2320128	1

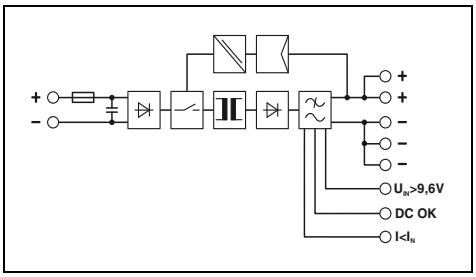
QUINT DC/DC converters

QUINT POWER, 12 V DC input

– Support conversion to various voltage levels
– Constant voltage: output voltage regenerated even at the end of long cables
– Electrical isolation: for setting up independent supply systems
– SFB Technology: fast tripping of standard circuit breakers, thanks to the dynamic power reserve with up to 6 times the nominal current for 12 ms
– Reliable starting of heavy loads thanks to the static Power Boost power reserve with up to 125% of the nominal current
– Preventive function monitoring

DC/DC converter,
12 V DC / 24 V DC, 5 A

Ex:



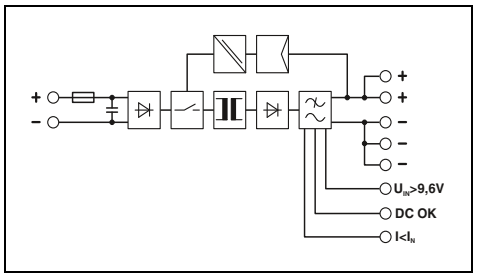
Technical data

Input data	
Nominal input voltage range	12 V DC
Current consumption (Power Boost)	15 A (12 V, I_{BOOST})
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.3 A^2s
Mains buffering (I_N, typ.)	> 3 ms (12 V DC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	5 A / 6.25 A / 30 A
Magnetic circuit breaker tripping	B2 / B4 / C2
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	2 W / 13.5 W
Efficiency	> 90 %
Residual ripple	< 75 mV_{PP}
Signaling	
Signaling DC OK	LED, active switching output
Boost signaling	LED, active switching output
U_{IN} signaling	LED, active switching output
General data	
Weight / Dimensions W x H x D	0.7 kg / 32 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 18 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 18 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / III
MTBF (IEC 61709, SN 29500)	> 1005000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Standards/regulations	
Insulation voltage input/output	1 kV (routine test) / 1.5 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched	**QUINT-PS/12DC/24DC/ 5**	2320131	1

**DC/DC converter,
12 V DC/12 V DC, 8 A**



Technical data

	12 V DC
	12 A (12 V, I_{BOOST})
	< 6 A / < 0.6 A²s
	> 3 ms (12 V DC)
	12 V DC ±1 %
	5 V DC ... 18 V DC (> 12 V DC, constant capacity restricted)
	8 A / 10 A / 48 A
	B2 / B4 / C2
	Yes / yes
	1.5 W / 11.8 W
	> 89 %
	< 20 mV_{PP}
	LED, active switching output
	LED, active switching output
	LED, active switching output
	0.8 kg / 32 x 130 x 125 mm
	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
	Plug-in screw connection
	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
	IP20 / III
	> 920000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	≤ 95 % (at 25 °C, non-condensing)
	1 kV (routine test) / 1.5 kV (type test)
	Conformance with EMC Directive 2014/30/EU
	EN 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410
	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/12DC/12DC/8	**2905007**	1

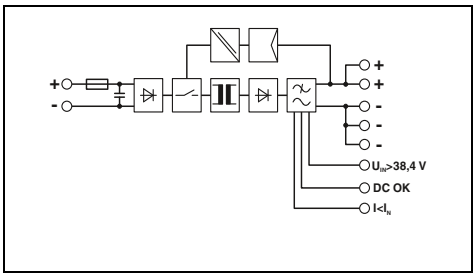
QUINT DC/DC converters

QUINT POWER, 48 V DC to 110 V DC input

- Support conversion to various voltage levels
- Constant voltage: output voltage regenerated even at the end of long cables
- Electrical isolation: for setting up independent supply systems
- SFB Technology: fast tripping of standard circuit breakers, thanks to the dynamic power reserve with up to 6 times the nominal current for 12 ms
- Reliable starting of heavy loads thanks to the static Power Boost power reserve with up to 125% of the nominal current
- Preventive function monitoring

DC/DC converter, 48 V DC / 24 V DC, 5 A

Ex:



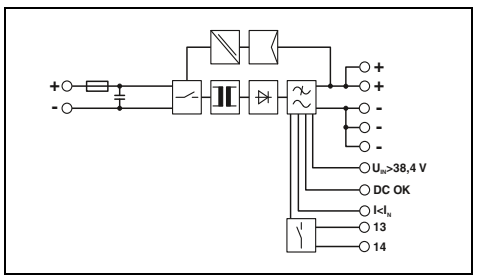
Technical data

Input data	
Nominal input voltage range	48 V DC
Current consumption (Power Boost)	3.5 A (48 V DC)
Inrush current limitation at 25°C / I^2t	< 5 A / < 0.2 A^2s
Mains buffering (I_N, typ.)	> 14 ms (48 V DC)
Output data	
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	5 A / 6.25 A / 30 A
Magnetic circuit breaker tripping	B2 / B4 / C2
Can be connected in parallel/series	Yes / yes
Max. power dissipation (no load/nominal load)	2.7 W / 11 W
Efficiency	> 91.5 %
Residual ripple	< 25 mV_{PP}
Signaling	
Signaling DC OK	LED, active switching output
Boost signaling	LED, active switching output
U_{IN} signaling	LED, active switching output
General data	
Weight / Dimensions W x H x D	0.7 kg / 32 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / III
MTBF (IEC 61709, SN 29500)	> 995000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Standards/regulations	
Insulation voltage input/output	1 kV (routine test) / 1.5 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched	**QUINT-PS/48DC/24DC/ 5**	2320144	1

DC/DC converter,
48 V DC/48 V DC, 5 A



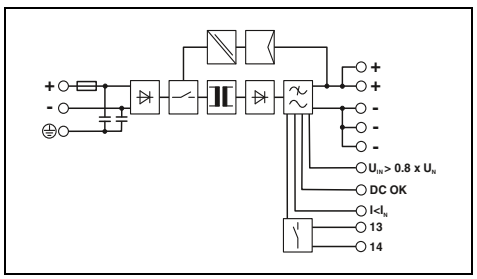
Technical data

48 V DC	
7 A (48 V, I_{BOOST})	
< 6 A / 0.3 A^2s	
> 10 ms (48 V DC)	
48 V DC ±1 %	
30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)	
5 A / 6.25 A / 30 A	
B2 / B4 / C2	
Yes / yes	
2.7 W / 20 W	
> 93 %	
< 20 mV_{PP}	
LED, active switching output	
LED, active switching output	
LED, active switching output	
0.9 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / III	
> 872000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/48DC/48DC/5	**2905008**	1

DC/DC converter,
60 - 72 V DC/24 V DC, 10 A

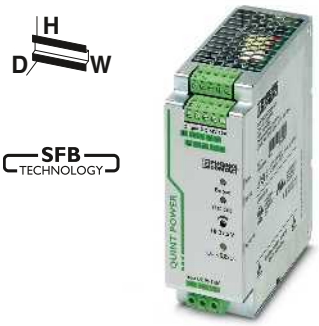


Technical data

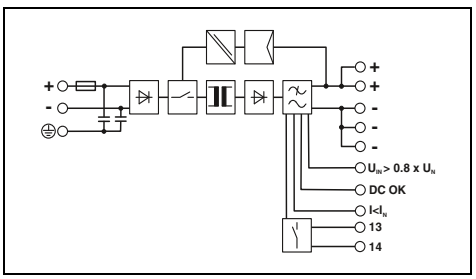
60 V DC ... 72 V DC	
5.6 A (60 V DC) / 4.7 A (72 V DC)	
< 9 A / 0.64 A^2s	
> 10 ms (60 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
10 A / 12.5 A / 60 A	
B2 / B4 / B6	
Yes / yes	
4 W (U_{IN} 60 V DC) / 24 W (U_{IN} 60 V DC)	
> 91 % (U_{IN} 60 V DC / U_{OUT} 24 V DC) / > 91 % (U_{IN} 72 V DC / U_{OUT} 24 V DC)	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
1 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / I	
> 765000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/60-72DC/24DC/10	**2905009**	1



DC/DC converter,
96 - 110 V DC/24 V DC, 10 A



Technical data

96 V DC ... 110 V DC	
3.5 A (96 V DC) / 3.1 A (110 V DC)	
< 10 A / 0.37 A^2s	
> 10 ms (96 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
10 A / 12.5 A / 60 A	
B2 / B4 / B6	
Yes / yes	
4 W (U_{IN} 110 V DC) / 22 W (U_{IN} 110 V DC)	
> 92 % (U_{IN} 96 V DC / U_{OUT} 24 V DC) / > 92 % (U_{IN} 110 V DC / U_{OUT} 24 V DC)	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
0.9 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / I	
> 772000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
≤ 95 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/96-110DC/24DC/10	**2905010**	1

QUINT DC/DC converters for extreme ambient conditions

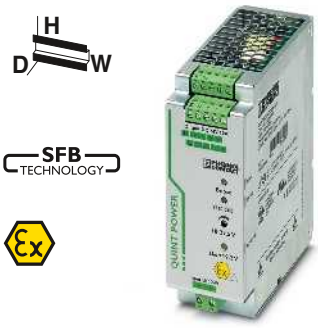
QUINT POWER with protective coating

With ATEX approval for superior system availability under extreme ambient conditions, such as dust, dirt, corrosive gases, and 100% humidity

– Devices compliant with standards EN 60079-15 and EN 60079-0 may be installed in a potentially explosive area
– Suitable for use in Class I, Division 2
– OVP (overvoltage protection) limits surge voltages to 32 V
– Temperature range from -40°C to +70°C, Groups A, B, C, D

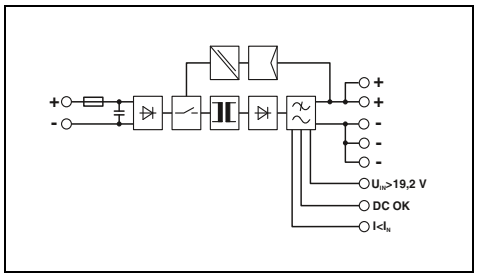
DC/DC converter, with protective coating, 24 V DC/24 V DC, 5 A

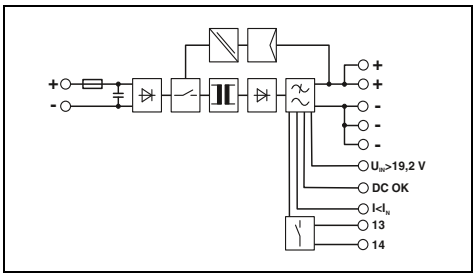
Ex:



DC/DC converter, with protective coating, 24 V DC/24 V DC, 10 A

Ex:



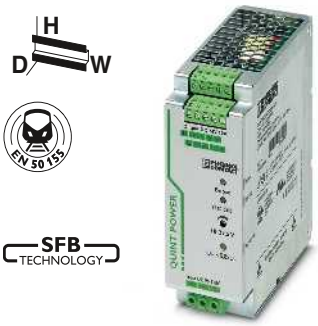


	Technical data	Technical data
Input data		
Nominal input voltage range	24 V DC	24 V DC
Current consumption (Power Boost)	7 A (24 V, I_{BOOST})	14 A (24 V, I_{BOOST})
Inrush current limitation at 25°C / I^2t	< 15 A / < 0.5 A^2s	< 15 A / < 2.7 A^2s
Mains buffering (I_N, typ.)	> 10 ms (24 V DC)	> 12 ms (24 V DC)
Output data		
Nominal output voltage	24 V DC ±1 %	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Output current / Power Boost / SFB (12 ms)	5 A / 6.25 A / 30 A	10 A / 12.5 A / 60 A
Magnetic circuit breaker tripping	B2 / B4 / C2	B2 / B4 / B6 / C2 / C4
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	2.4 W / 11.4 W	1.6 W / 24 W
Efficiency	> 92 %	> 92 %
Residual ripple	< 20 mV_{PP}	< 20 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output	LED, active switching output, relay contact
Boost signaling	LED, active switching output	LED, active switching output
U_{IN} signaling	LED, active switching output	LED, active switching output
General data		
Weight / Dimensions W x H x D	0.7 kg / 32 x 130 x 125 mm	0.9 kg / 48 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Plug-in screw connection	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
Degree of protection / Protection class	IP20 / III	IP20 / III
MTBF (IEC 61709, SN 29500)	> 890000 h (40°C)	> 763000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)
Max. permissible relative humidity (operation)	100 % (at 25 °C, non-condensing)	100 % (at 25 °C, non-condensing)
Standards/regulations		
Insulation voltage input/output	1 kV (routine test) / 1.5 kV (type test)	1 kV (routine test) / 1.5 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410	DIN VDE 0100-410
Rail applications	EN 50121-4 / EN 50155	EN 50121-4 / EN 50155
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

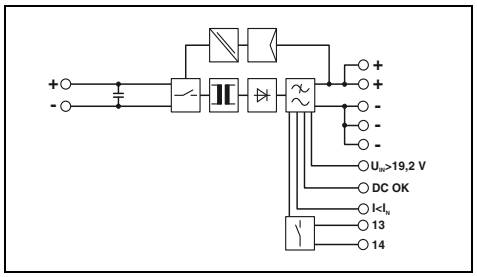
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched, dip-coated						
	QUINT-PS/24DC/24DC/ 5/CO	2320542	1	**QUINT-PS/24DC/24DC/10/CO**	2320555	1

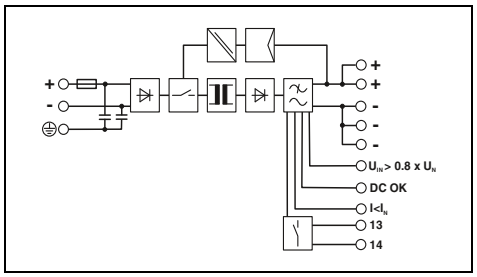
DC/DC converter, with protective coating, 24 V DC/24 V DC, 20 A

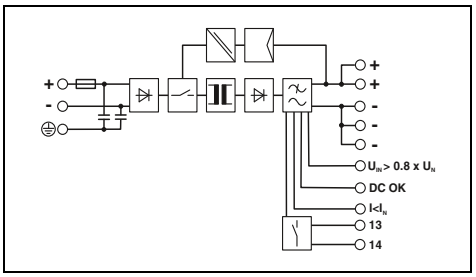
DC/DC converter, with protective coating, 60 - 72 V DC/24 V DC, 10 A



DC/DC converter, with protective coating, 96 - 110 V DC/24 V DC, 10 A







Technical data

24 V DC	
28 A (24 V, I_{BOOST})	
< 26 A / < 11 A^2s	
> 10 ms (24 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
20 A / 25 A / 120 A	
B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6	
Yes / yes	
2.2 W / 39 W	
> 92 %	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
1.7 kg / 82 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Screw connection	
0.5 - 16 mm^2 / 0.5 - 16 mm^2 / 8 - 6	
0.2 - 6 mm^2 / 0.2 - 4 mm^2 / 12 - 10	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / III	
> 554000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K, startup at -40°C type-tested)	
100 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
EN 50121-4 / EN 50155	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/24DC/24DC/20/CO	2320568	1

Technical data

60 V DC ... 72 V DC	
5.6 A (60 V DC) / 4.7 A (72 V DC)	
< 9 A / 0.64 A^2s	
> 10 ms (60 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
10 A / 12.5 A / 60 A	
B2 / B4 / B6	
Yes / yes	
4 W (U_{IN} 60 V DC) / 24 W (U_{IN} 60 V DC)	
> 91 % (U_{IN} 60 V DC / U_{OUT} 24 V DC) / > 91 % (U_{IN} 72 V DC / U_{OUT} 24 V DC)	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
1 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / I	
> 765000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
100 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
EN 50121-4 / EN 50155	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/60-72DC/24DC/10/CO	2905011	1

Technical data

96 V DC ... 110 V DC	
3.5 A (96 V DC) / 3.1 A (110 V DC)	
< 10 A / 0.37 A^2s	
> 10 ms (96 V DC)	
24 V DC ±1 %	
18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)	
10 A / 12.5 A / 60 A	
B2 / B4 / B6	
Yes / yes	
4 W (U_{IN} 110 V DC) / 22 W (U_{IN} 110 V DC)	
> 92 % (U_{IN} 96 V DC / U_{OUT} 24 V DC) / > 92 % (U_{IN} 110 V DC / U_{OUT} 24 V DC)	
< 20 mV_{PP}	
LED, active switching output, relay contact	
LED, active switching output	
LED, active switching output	
0.9 kg / 48 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Plug-in screw connection	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12	
IP20 / I	
> 772000 h (40°C)	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
100 % (at 25 °C, non-condensing)	
1 kV (routine test) / 1.5 kV (type test)	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
DIN VDE 0100-410	
EN 50121-4 / EN 50155	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-PS/96-110DC/24DC/10/CO	2905012	1

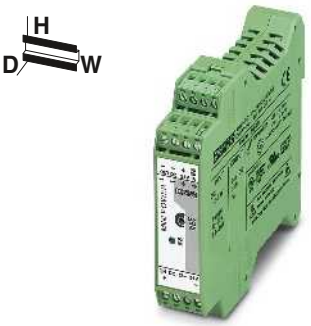
MINI DC/DC converters

MINI POWER, 12 V DC to 60 V DC input

– Support conversion to various voltage levels
– Constant voltage: output voltage regenerated even at the end of long cables
– Electrical isolation: for setting up independent supply systems

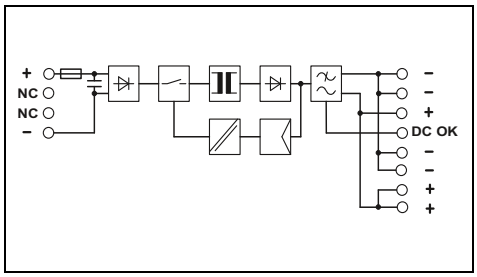
MINI AC power module

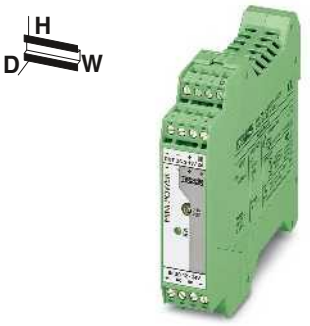
– For connection upstream of MINI DC/DC converters
– The AC voltage of a transformer is rectified and filtered



DC/DC converter,
12 - 24 V DC / 24 V DC, 1 A

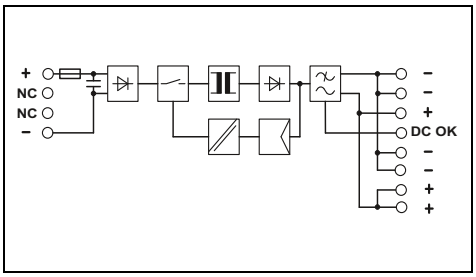
Ex:





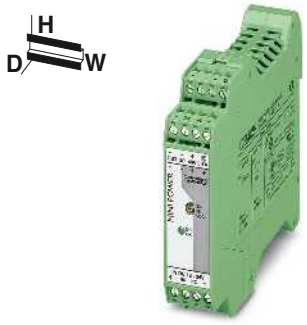
DC/DC converter,
12 - 24 V DC / 5 - 15 V DC, 2 A

Ex:

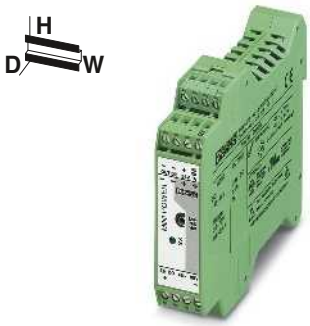


	Technical data	Technical data
Input data		
Nominal input voltage range	12 V DC ... 24 V DC	12 V DC ... 24 V DC
Current consumption (nominal load)	2.6 A (12 V DC) / 1.3 A (24 V DC)	2.3 A (12 V DC) / 1.1 A (24 V DC)
Inrush current limitation at 25°C / I^2t	< 15 A / 1.8 A^2s	< 10 A / 0.2 A^2s
Output data		
Nominal output voltage	24 V DC ±1 %	12 V DC ±1 %
Setting range of the output voltage (U_{Set})	22.5 V DC ... 28.5 V DC (> 24 V DC, constant capacity restricted)	5 V DC ... 15 V DC
Output current	1 A	2 A
Can be connected in parallel/series	Yes / yes	Yes / yes
Max. power dissipation (no load/nominal load)	< 1.2 W / < 5 W	< 1 W / < 4.2 W
Efficiency	> 83 % (at 24 V DC and nominal values)	> 88 % (at 24 V DC and nominal values)
Residual ripple	< 30 mV_{PP}	< 20 mV_{PP}
Signaling		
Signaling DC OK	LED, active switching output	LED, active switching output
General data		
Weight / Dimensions W x H x D	0.2 kg / 22.5 x 99 x 107 mm	0.2 kg / 22.5 x 99 x 107 mm
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Plug-in screw connection	Plug-in screw connection
Input connection data (solid/stranded/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
Output connection data (solid/stranded/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
Signal connection data (solid/stranded/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
Degree of protection / Protection class	IP20 / III	IP20 / III
MTBF (IEC 61709, SN 29500)	> 2569000 h (40°C)	> 2072000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> +60°C derating)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)	≤ 95 % (At +25°C, non-condensing)
Standards/regulations		
Insulation voltage input/output	1 kV (routine test) / 1.5 kV (type test)	1 kV (routine test) / 1.5 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
Safe isolation	DIN VDE 0100-410 , DIN VDE 0106-101	DIN VDE 0100-410 , DIN VDE 0106-101
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

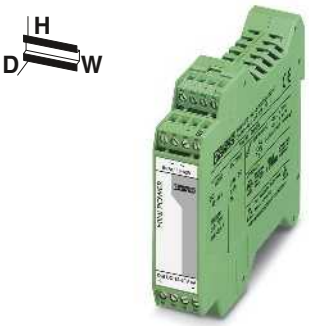
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
DC/DC converter, primary-switched	**MINI-PS- 12- 24DC/24DC/1**	2866284	1	**MINI-PS- 12- 24DC/ 5-15DC/2**	2320018	1



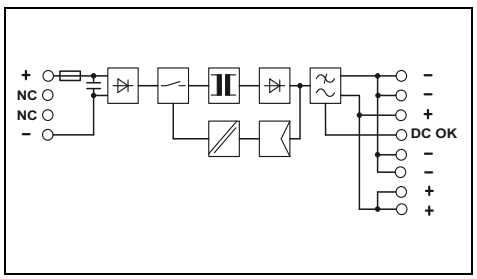
DC/DC converter,
12 - 24 V DC / 48 V DC, 0.7 A

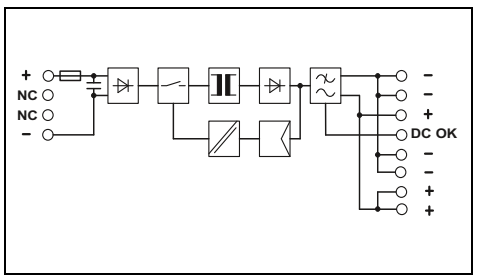


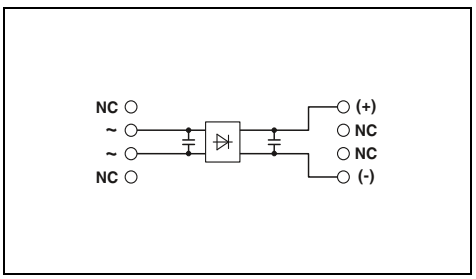
DC/DC converter,
48 - 60 V DC / 24 V DC, 1 A



AC power module for
MINI DC/DC converter







Technical data

	12 V DC ... 24 V DC
	3.2 A (12 V DC) / 1.6 A (24 V DC)
	< 10 A / 0.3 A²s
	48 V DC ±1 %
	30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)
	0.7 A
	Yes / yes
	< 1.5 W / < 4.5 W
	> 87 % (at 24 V DC and nominal values)
	< 20 mV_{PP}
	LED, active switching output
	0.2 kg / 22.5 x 99 x 107 mm
	Can be aligned: Horizontally 0 mm, vertically 50 mm
	Plug-in screw connection
	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
	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
	IP20 / III
	> 1993000 h (40°C)
	-25 °C ... 70 °C (> +60°C derating)
	≤ 95 % (At +25°C, non-condensing)
	1 kV (routine test) / 1.5 kV (type test)
	Conformance with EMC Directive 2014/30/EU
	EN 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410 , DIN VDE 0106-101
	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS- 12- 24DC/48DC/0.7	2320021	1

Technical data

	48 V DC ... 60 V DC
	0.6 A (48 V DC) / 0.5 A (60 V DC)
	< 15 A / 1.8 A²s
	24 V DC ±1 %
	22.5 V DC ... 28.5 V DC (> 24 V DC, constant capacity restricted)
	1 A
	Yes / yes
	< 1.2 W / < 5 W
	> 85 % (at 60 V DC and nominal values)
	< 40 mV_{PP}
	LED, active switching output
	0.2 kg / 22.5 x 99 x 107 mm
	Can be aligned: Horizontally 0 mm, vertically 50 mm
	Plug-in screw connection
	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
	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 14
	IP20 / II
	> 1147000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	≤ 95 % (at 25 °C, non-condensing)
	1 kV (routine test) / 1.5 kV (type test)
	Conformance with EMC Directive 2014/30/EU
	EN 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	DIN VDE 0100-410 , DIN VDE 0106-101
	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS- 48- 60DC/24DC/1	2866271	1

Technical data

	10 V AC ... 42 V AC
	6.5 A
	< 45 A / 8 A²s
	28 V DC ±1 %
	-
	3 A
	Yes / No
	< 0.04 W / < 6.9 W
	> 95.7 % (For 42 V AC and nominal values)
	< 3.6 V_{PP}
	-
	0.16 kg / 22.5 x 99 x 107 mm
	Can be aligned: Horizontally 0 mm, vertically 50 mm
	Plug-in screw connection
	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
	0.2 - 2.5 mm^2 / 0.2 - 2.5 mm^2 / 24 - 12
	- / - / -
	IP20 / III
	> 18175000 h (40°C)
	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	≤ 95 % (at 25 °C, non-condensing)
	1 kV (routine test) / 1.5 kV (type test)
	Conformance with EMC Directive 2014/30/EU
	EN 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	-
	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-PS- 10- 42AC/15-60DC/3	2320199	1

Maximum availability due to redundancy modules

To prevent errors influencing the load in a redundant system and to increase operational reliability, the power supplies must be decoupled from one another using a redundancy module. Phoenix Contact offers various solutions depending on the requirements:

Decoupling with diodes from the QUINT, TRIO, UNO, and STEP ranges

If the power supplies are decoupled, a short circuit at the output of one of the power supply units or in the supply line from the power supply unit to the diode no longer has any affect on the load.

Decoupling, monitoring, and closed-loop control by means of the QUINT ORING active redundancy modules

The QUINT ORING active redundancy modules monitor the entire redundant solution, i.e., the power supply unit voltages, the wiring, decoupling, and the load current. Critical operating states can therefore be detected at an early stage and redundancy can be restored. E.g., incorrect wiring or faulty cables are indicated.

QUINT ORING with ACB Technology doubles the service life of the redundant system:

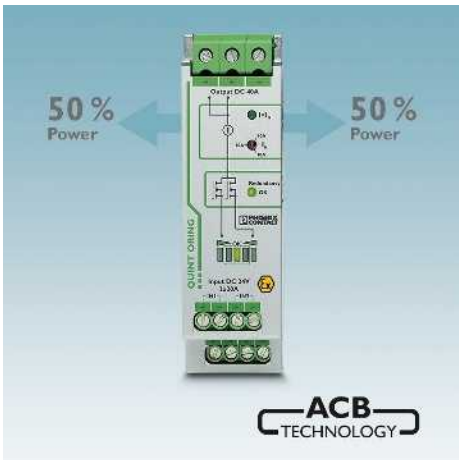
As a result of asymmetries, the load is often supplied by one power supply unit, while the other runs in no-load operation. This results in a thermal overload of the working power supply unit and therefore rapid aging. If the power supply unit is operated at half the nominal current, it remains significantly cooler.
The ACB Technology of the QUINT ORING modules ensures symmetrical loading of the power supplies and thereby up to double the service life of the redundant system.

Decoupling and monitoring by means of the QUINT S-ORING active redundancy modules

The QUINT S-ORING active redundancy modules consistently monitor the redundant system, in combination with the new QUINT POWER power supplies. With QUINT S-ORING, the cable is routed redundantly and separately up to the load.

QUINT S-ORING with protective coating with OVP (overvoltage protection) protects downstream loads from surge voltages greater than 30 V DC.

Your web code: #0153



ACB Technology doubles the service life

The ACB (Auto Current Balancing) Technology ensures symmetrical loading of the power supplies, thereby reducing the operating temperature. This means up to double the service life of the redundant system.

QUINT ORING for maximum system availability

Consistent monitoring of the redundant system, with energy savings of up to 70%.

QUINT ORING
- ACB Technology
- Two positive output terminals
- Voltage limitation to < 32 V DC (+Version)

QUINT S-ORING
- Separate cable routing up to the load
- Voltage limitation to < 30 V DC (+Version)

QUINT DIODE redundancy module

- High system availability, thanks to the robust design
- Safe decoupling of power supplies connected in parallel
- Flexible: nominal voltages of 12 V DC to 48 V DC

TRIO DIODE redundancy module
- Safe decoupling of power supplies connected in parallel
- Quick and easy installation, thanks to Push-in connection technology
- System compatible with TRIO POWER power supplies

UNO DIODE redundancy module
- Consistent redundancy up to the load
- Flexible: nominal voltages of 5 V DC to 24 V DC

STEP DIODE redundancy module
- Space-saving: overall width of just 18 mm
- Consistent redundancy up to the load
- Flexible: nominal voltages of 5 V DC to 24 V DC

QUINT ORING

QUINT ORING, 24 V DC

– Preventive function monitoring
– Consistent redundancy up to the load: the use of two positive output terminals makes it possible to design a redundant wiring concept up to the load
– Double the service life of the redundant solution thanks to even load distribution: the ACB (Auto Current Balancing) Technology automatically and symmetrically distributes the load current to two power supplies operating in parallel.
– Save energy: decoupling is achieved with MOSFETs and results in energy savings of up to 70% compared with conventional diodes.
– OVP (overvoltage protection): surge voltages are limited to 32 V

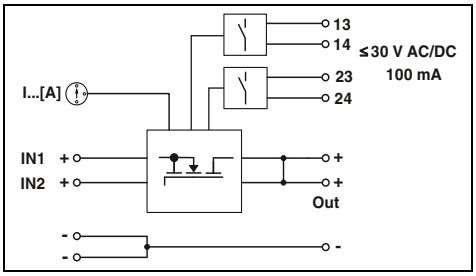
QUINT ORING, with protective coating

With ATEX approval for superior system availability under extreme ambient conditions, such as dust, dirt, corrosive gases, and 100% humidity

– Devices compliant with standards EN 60079-15 and EN 60079-0 may be installed in a potentially explosive area
– Suitable for use in Class I, Division 2

Active redundancy module, with protective coating, 24 V DC, 2 x 10 A, 1 x 20 A

Ex:



Technical data

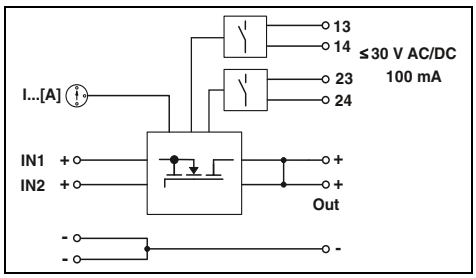
Input data	
Nominal input voltage range	24 V DC
Input voltage range	18 V DC ... 28 V DC
Nominal current	2x 10 A (-25 °C ... 60 °C) 1x 20 A (-25 °C ... 60 °C)
Maximum current	2x 15 A (-25°C ... 40°C) 1x 30 A (-25°C ... 40°C)
Transient surge protection	Varistor
Voltage drop, input/output	0.1 V (I_{OUT} = 20 A)
Max. power dissipation (nominal load)	2 W (I_{OUT} = 20 A)
General data	
Weight / Dimensions W x H x D	0.4 kg / 32 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm² / 0.2 - 2.5 mm² / 14 - 12
Output connection data (solid/stranded/AWG)	0.2 - 6 mm² / 0.2 - 4 mm² / 10
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage: input, output/housing	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Active redundancy module	**QUINT-ORING/24DC/2X10/1X20**	2320173	1

Active redundancy module,
with protective coating,
24 V DC, 2 x 20 A, 1 x 40 A

Ex:



Technical data

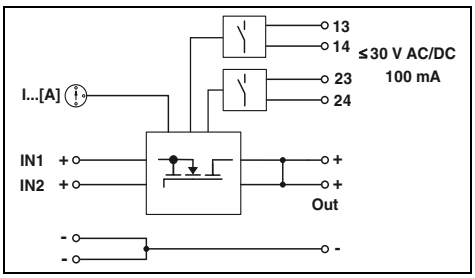
24 V DC	
18 V DC ... 28 V DC	
2x 20 A (-25 °C ... 60 °C)	
1x 40 A (-25 °C ... 60 °C)	
2x 26 A (-25°C ... 40°C)	
1x 52 A (-25°C ... 40°C)	
Varistor	
0.2 V (I_{OUT} = 40 A)	
8 W (I_{OUT} = 40 A)	
0.6 kg / 38 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Screw connection	
0.2 - 6 mm² / 0.2 - 4 mm² / 10	
0.5 - 16 mm² / 0.5 - 16 mm² / 6	
IP20 / III	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
500 V	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-ORING/24DC/2X20/1X40	2320186	1

Active redundancy module
24 V DC, 2 x 40 A, 1 x 80 A

Ex:



Technical data

24 V DC	
18 V DC ... 28 V DC	
2x 40 A (-25 °C ... 60 °C)	
1x 80 A (-25 °C ... 60 °C)	
2x 45 A (-25°C ... 40°C)	
1x 90 A (-25°C ... 40°C)	
Varistor	
0.2 V (I_{OUT} = 80 A)	
16 W (I_{OUT} = 80 A)	
0.9 kg / 66 x 130 x 125 mm	
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically	
Screw connection	
0.5 - 16 mm² / 0.5 - 16 mm² / 6	
0.5 - 35 mm² / 0.5 - 35 mm² / 2	
IP20 / III	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
500 V	
Conformance with EMC Directive 2014/30/EU	
EN 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-ORING/24DC/2X40/1X80	2902879	1

QUINT ORING

new

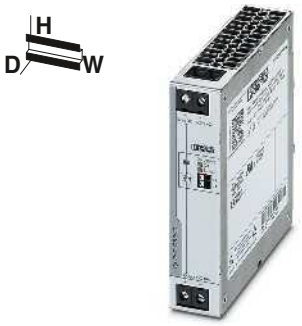
QUINT S-ORING, 12 - 24 V DC

– Consistent redundancy: separate cable routing up to the load
– Preventive function monitoring
– Save energy: disconnection is implemented with MOSFETs and therefore has very low power dissipation
– Suitable for use in Class I, Division 2

QUINT S-ORING with ATEX approval, protective coating

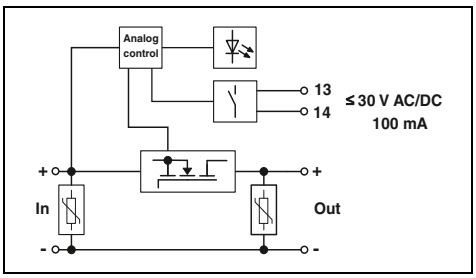
With protective coating for superior system availability under extreme ambient conditions, such as dust, dirt, corrosive gases, and 100% humidity

– OVP (overvoltage protection): surge voltages are limited to 30 V
– Devices compliant with standards EN 60079-15 and EN 60079-0 may be installed in a potentially explosive area



Active redundancy module
12 - 24 V DC, 1 x 40 A

Ex:



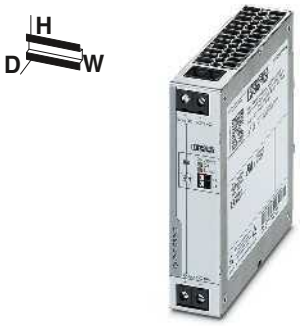
Technical data

Input data	
Nominal input voltage range	12 V DC ... 24 V DC
Input voltage range	8 V DC ... 30 V DC
Nominal current	40 A (-40 °C ... 60 °C)
Input current $I_{Stat.\ Boost}$ / $I_{Dyn.Boost}$ / I_{SFB}	45 A (40°C) / 60 A (5 s) / 215 A (15 ms)
Transient surge protection	Varistor
Voltage drop, input/output	0.1 V
Max. power dissipation (nominal load)	6 W (I_{OUT} = 40 A)
General data	
Weight / Dimensions W x H x D	0.55 kg / 32 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.5 - 16 mm² / 0.5 - 16 mm² / 20 - 6
Output connection data (solid/stranded/AWG)	0.5 - 16 mm² / 0.5 - 16 mm² / 20 - 6
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage: input, output/housing	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

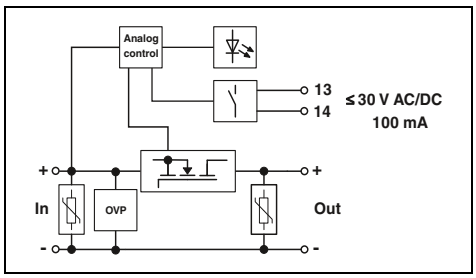
Description	Type	Order No.	Pcs./Pkt.
Active redundancy module	**QUINT4-S-ORING/12-24DC/1X40**	2907752	1

new



Active redundancy module, with protective coating, 12 - 24 V DC, 1 x 40 A

Ex:



Technical data

12 V DC ... 24 V DC
8 V DC ... 26 V DC
40 A (-40 °C ... 60 °C)
45 A (40°C) / 60 A (5 s) / 215 A (15 ms)

Varistor
0.1 V
6.5 W (I_{OUT} = 40 A)

0.4 kg / 32 x 130 x 125 mm
Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Screw connection
0.5 - 16 mm² / 0.5 - 16 mm² / 20 - 6
0.5 - 16 mm² / 0.5 - 16 mm² / 20 - 6
IP20 / III
-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)

500 V
Conformance with EMC Directive 2014/30/EU
EN 60950-1/VDE 0805 (SELV)
EN 50178/VDE 0160 (PELV)
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

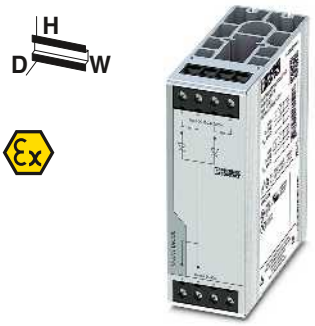
Type	Order No.	Pcs./Pkt.
QUINT4-S-ORING/12-24DC/1X40/+	2907753	1

QUINT DIODE diode module

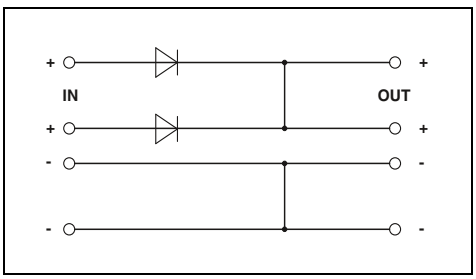
new

QUINT DIODE, 12 - 24 V DC and 48 V DC

– Robust design for currents of up to 60 A
– Consistent redundancy up to the load: the use of two positive output terminals makes it possible to design a redundant wiring concept up to the load
– Consistent wiring with large conductor cross sections, thanks to same size of input and output terminals
– Flexible: nominal voltages of 12 V DC to 48 V DC
– Devices compliant with standards EN 60079-15 and EN 60079-0 may be installed in a potentially explosive area
– Suitable for use in Class I, Division 2



Diode module,
12 - 24 V DC, 2 x 20 A, 1 x 40 A



Technical data

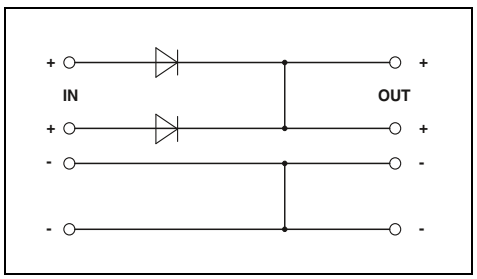
Input data	
Nominal input voltage range	12 V DC ... 24 V DC 12 V DC ... 24 V DC
Input voltage range	10 V DC ... 30 V DC 10 V DC ... 30 V DC
Nominal current	2x 20 A (-25 °C ... 60 °C) 1x 40 A (-25 °C ... 60 °C)
Maximum current	2x 30 A (-25°C ... 40°C) 1x 60 A (-25°C ... 40°C)
Transient surge protection	Varistor
Voltage drop, input/output	0.5 V
Max. power dissipation (nominal load)	10 W (I_{OUT} = 20 A)
General data	
Weight / Dimensions W x H x D	0.75 kg / 50 x 130 x 125 mm
Assembly instructions	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
Output connection data (solid/stranded/AWG)	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage: input, output/housing	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Diode module			
	QUINT4-DIODE/12-24DC/2X20/1X40	2907719	1

new

Diode module,
48 V DC, 2x 20 A, 1x 40 A



Technical data

	48 V DC
	48 V DC
	30 V DC ... 56 V DC
	30 V DC ... 56 V DC
	2x 20 A (-25 °C ... 60 °C)
	1x 40 A (-25 °C ... 60 °C)
	2x 30 A (-25°C ... 40°C)
	1x 60 A (-25°C ... 40°C)
	Varistor
	0.7 V
	14 W (I_{OUT} = 20 A)
	0.75 kg / 50 x 130 x 125 mm
	Alignable: 5 mm horizontally, 15 mm next to active components, 50 mm vertically
	Screw connection
	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
	IP20 / III
	-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)
	500 V
	Conformance with EMC Directive 2014/30/EU
	EN 60950-1/VDE 0805 (SELV)
	EN 50178/VDE 0160 (PELV)
	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-DIODE/48DC/2X20/1X40	2907720	1

TRIO DIODE, UNO DIODE, and STEP DIODE diode modules

TRIO DIODE

– Space-saving: overall width of just 35 mm and 41 mm
– Safe decoupling of power supplies connected in parallel
– Quick and easy installation, thanks to Push-in connection technology
– System compatible with TRIO POWER power supplies

UNO DIODE

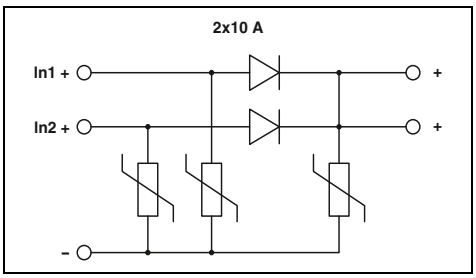
– Space-saving: overall width of just 22.5 mm
– Consistent redundancy up to the load: the use of two positive output terminals makes it possible to design a redundant wiring concept up to the load
– Flexible: nominal voltages of 5 V DC to 24 V DC

STEP DIODE

– Space-saving: overall width of just 18 mm
– Consistent redundancy up to the load: the use of two positive output terminals makes it possible to design a redundant wiring concept up to the load
– Flexible: nominal voltages of 5 V DC to 24 V DC

new

Diode module,
12 ... 24 V DC, 2 x 10 A, 1 x 20 A



Technical data

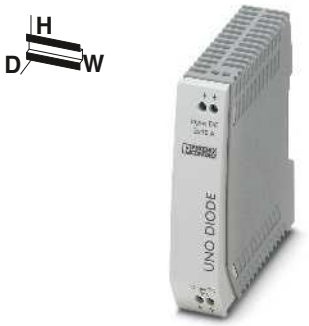
Input data	
Nominal input voltage range	12 V DC ... 24 V DC
Input voltage range	10 V DC ... 30 V DC
Nominal current	2x 10 A (-25 °C ... 60 °C) 1x 20 A (-25 °C ... 60 °C)
Maximum current	2x 15 A (-25°C ... 40°C) 1x 30 A (-25°C ... 40°C)
Transient surge protection	Varistor
Voltage drop, input/output	0.5 V
Max. power dissipation (nominal load)	5 W (I_{OUT} = 10 A)
General data	
Weight / Dimensions W x H x D	0.4 kg / 35 x 130 x 115 mm
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations	
Insulation voltage: input, output/housing	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

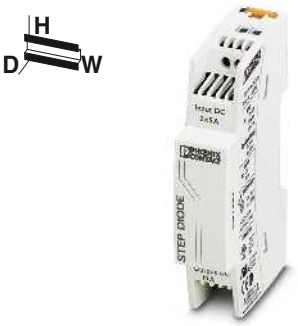
Description	Type	Order No.	Pcs./Pkt.
Redundancy module			
	TRIO2-DIODE/12-24DC/2X10/1X20	2907380	1

new

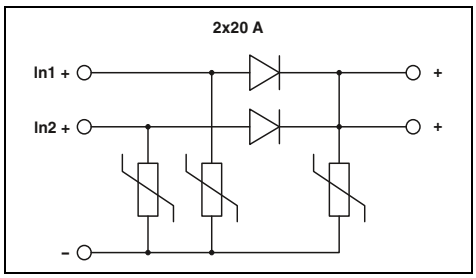
Diode module,
12 ... 24 V DC, 2 x 20 A, 1 x 40 A

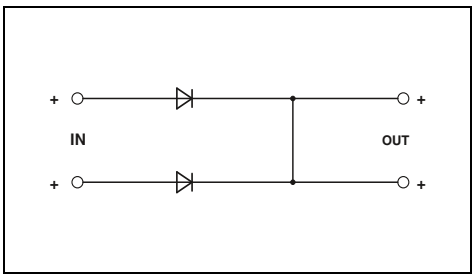


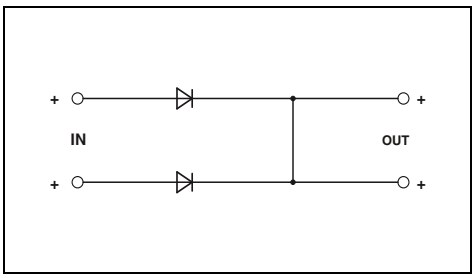
Diode module,
5 ... 24 V DC, 2 x 10 A, 1 x 20 A



Diode module
5 - 24 V DC, 2x 5 A, 1x 10 A







Technical data

12 V DC ... 24 V DC	
10 V DC ... 30 V DC	
2x 20 A (-25 °C ... 60 °C)	
1x 40 A (-25 °C ... 60 °C)	
2x 25 A (-25°C ... 40°C)	
1x 50 A (-25°C ... 40°C)	
Varistor	
0.5 V	
10 W (I_{OUT} = 20 A)	
0.4 kg / 41 x 130 x 115 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Push-in connection	
0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12	
0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14	
IP20 / III	
-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
500 V	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950	

Ordering data

Type	Order No.	Pcs./Pkt.
TRIO2-DIODE/12-24DC/2X20/1X40	2907379	1

Technical data

5 V DC ... 24 V DC	
4.5 V DC ... 30 V DC	
2x 10 A (-25°C ... 55°C)	
1x 20 A (-25°C ... 55°C)	
-	
-	
Varistor	
0.5 V	
5 W (I_{OUT} = 10 A)	
0.2 kg / 22.5 x 90 x 84 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14	
0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14	
IP20 / III	
-25 °C ... 70 °C (> 55 °C derating: 2.5%/K)	
500 V	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950	

Ordering data

Type	Order No.	Pcs./Pkt.
UNO-DIODE/5-24DC/2X10/1X20	2905489	1

Technical data

5 V DC ... 24 V DC	
5 V DC ... 24 V DC	
4.5 V DC ... 30 V DC	
2x 5 A (-25°C ... 55°C)	
1x 10 A (-25°C ... 55°C)	
-	
-	
Transil diode	
0.5 V	
2.5 W (I_{OUT} = 5 A)	
0.1 kg / 18 x 90 x 61 mm	
Alignable: 0 mm horizontally, 30 mm vertically	
Screw connection	
0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	
0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	
IP20 / III	
-25 °C ... 70 °C (> 55° C derating: 2.5%/K)	
500 V	
Conformance with EMC Directive 2014/30/EU	
IEC 60950-1/VDE 0805 (SELV)	
EN 50178/VDE 0160 (PELV)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950	

Ordering data

Type	Order No.	Pcs./Pkt.
STEP-DIODE/5-24DC/2X5/1X10	2868606	1

Mounting on S7-300 rail

To supply a SIMATIC® S7-300 controller, QUINT POWER 2.5 A, 5 A, and 10 A are mounted on the S7 rail using a QUINT-PS-ADAPTER-S7.

No further accessories are required for fastening.

	Technical data	Technical data
Dimensions W x H x D	74 / 130 / 11 mm	104 / 130 / 11 mm
Material	Aluminum	Aluminum

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Adapter for S7-300 rail mounting, for: QUINT-PS/1AC/24DC/3.5 QUINT-PS/1AC/24DC/5 QUINT-PS/3AC/24DC/5	**QUINT-PS-ADAPTERS7/1**	2938196	1			
Adapter for S7-300 rail mounting, for: QUINT-PS/1AC/24DC/10 QUINT-PS/3AC/24DC/10 QUINT-PS/3AC/24DC/20				**QUINT-PS-ADAPTERS7/2**	2938206	1

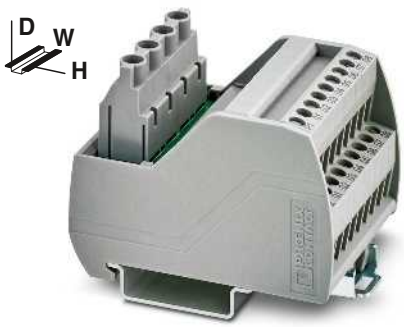
Fan and potential distributor

With the standard power supply mounting position, the temperature range increases by 10 K (max. ambient temperature of 70°C), when the mounting position is rotated, position-dependent derating no longer applies.

– Tool-free mounting

Potential distributor

Further modules can be found in Catalog 5, interface technology and switching devices



With screw connection and 2 potential levels

	Technical data	Technical data
Dimensions W x H x D	41 / 27 / 42.2 mm	50 / 65.5 / 50 mm

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Fan for QUINT POWER SFB, 24 V DC	**QUINT-PS/FAN/4**	2320076	1			
VARIOFACE module, with two busbars (P1, P2) for potential distribution, per potential: 2 power terminal blocks/8 distributor terminal blocks 2 power terminal blocks/12 distributor terminal blocks 2 power terminal blocks/16 distributor terminal blocks 2 power terminal blocks/24 distributor terminal blocks				 **VIP-2/SC/PDM-2/16** **VIP-2/SC/PDM-2/24** **VIP-2/SC/PDM-2/32** **VIP-2/SC/PDM-2/48**[1]	 2315256 2315269 2315272 2903717	 1 1 1 1

Universal wall adapter

Adapter for mounting on even surfaces

	Technical data	Technical data
Dimensions W x H x D	52 / 182 / 9 mm	25 / 130 / 17 mm
Material	Steel, powder-coated	Steel, powder-coated

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Universal wall adapter, for direct wall mounting of the TRIO-PS (from 10 A), QUINT-PS, QUINT-DC-UPS, QUINT-BUFFER power supplies	**UWA 182/52**	2938235	1			
Universal wall adapter, for direct wall mounting of the QUINT-PS/1AC/24DC/40 and QUINT-UPS/1AC/1AC/500VA power supplies				**UWA 130**	2901664	1

Plug-in thermomagnetic circuit breakers

- Device circuit breakers for protecting against overcurrents and short circuits
- SFB characteristic curve enables longer cables and tripping times of < 10 ms
- Maximum ease of maintenance thanks to the two-piece design
- Further circuit breakers can be found on page 307 onwards

Notes:

For additional technical data, drawings, and accessories, please visit phoenixcontact.net/products.

Can be plugged in, SFB characteristic curve

	Technical data
Dimensions W/H/D	12.3 mm / 90 mm / 77.3 mm
Degree of protection	IP30 (Actuation area)

		Ordering data		
Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, plug-in, 1-pos., signal contact 1 PDT				
	0.5 A	**CB TM1 0.5A SFB P**	2800835	1
	1 A	**CB TM1 1A SFB P**	2800836	1
	2 A	**CB TM1 2A SFB P**	2800837	1
	3 A	**CB TM1 3A SFB P**	2800838	1
	4 A	**CB TM1 4A SFB P**	2800839	1
	5 A	**CB TM1 5A SFB P**	2800840	1
	6 A	**CB TM1 6A SFB P**	2800841	1

	Accessories		
Base element, for accommodating CB TM.../CB E... device circuit breakers			
With Push-in connection technology	**CB 1/6-2/4 PT-BE**	2800929	10
With screw connection technology	**CB 1/10-1/10 UT-BE**	2801305	10

The intelligent UPS system ensures superior system availability

Uninterruptible power supplies (UPS) continue to deliver power even if the supply network goes down. An uninterruptible solution consists of the three function units shown:

– Power supply
– UPS module
– Energy storage

QUINT UPS

IQ technology is the key to an intelligent power supply solution. The uninterruptible power supply monitors and optimizes the energy storage. Avoid interruptions when working with the intelligent UPS for non-stop power.

– You know the state of charge and remaining runtime of your energy storage
– You are warned about failures at an early stage and have time to prevent them
– You can maximize the service life of the energy storage
– You can transfer all relevant information to your computer and higher-level controllers

Practical example

An industrial PC must be continuously supplied with 24 V DC.

Previous solution:

The UPS with 3.4 Ah energy storage buffers 24 V DC / 5 A for 20 minutes under optimum conditions.

Can the energy storage actually bridge this time?

The state of charge, performance, and remaining runtime of the energy storage are unknown.

Solution with QUINT UPS:

The intelligent UPS determines all relevant energy storage states. This ensures the crucial transparency required to guarantee the stability of the supply and optimum use of the energy storage at all times.

The intelligent battery management detects the current state of charge of the connected energy storage and uses this to calculate the remaining runtime.

The QUINT UPS also indicates whether the buffer time is actually 20 minutes. As soon as an adjustable threshold value is reached, a warning message is sent via the floating relay contact, the software or directly to higher-level controllers. The IPC continues working for as long as possible and is shut down before the battery voltage runs out.

Space-saving versions

To save space in the control cabinet or to retrofit existing systems easily, UPS versions with integrated energy storage or integrated power supply are recommended.

Selection guide

Find the right UPS for your application based on the buffer time and load current. Please refer to the color selection tables on pages:

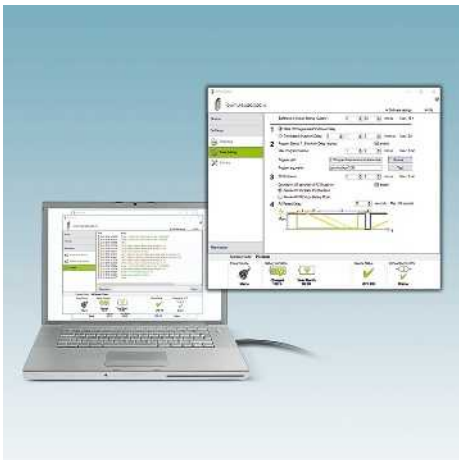
– 272
– 278
– 292

Your web code: #0154

IQ technology

The IQ technology is intuitive and provides you with information as soon as it is required.

– Intelligent battery management with SOC (state of charge), detects the current state of charge and the remaining runtime, and SOH (state of health), determines the remaining life expectancy of the energy storage and warns of failure at an early stage
– Intelligent battery control
– Intelligent charging



Signaling and configuration

The UPS-CONF configuration and management software allows you to monitor and configure your UPS system. The software can be downloaded free of charge at: phoenixcontact.net/products.

– Flexible adaptation of QUINT UPS behavior to individual requirements
– Monitoring and data recorder

Communication

The data cables allow you to integrate the UPS module into your application. You can therefore benefit from all the advantages of IQ technology and be kept informed of the state of your UPS solution. The information provided by QUINT UPS can, for example, be forwarded to higher-level controllers via Ethernet or be implemented directly in control solutions from Phoenix Contact.

AC UPS

The AC UPS delivers a pure sine curve at the output. The sine generated in battery operation is synchronous with the mains previously used for supply.

QUINT UPS with IQ technology

– Optimum use of the buffer time (SOC) and preventive monitoring of the energy storage (SOH)

TRIO AC UPS

– Space-saving, as the UPS module and energy storage are combined in one housing

UPS with integrated energy storage

Particularly space-saving and easy to retrofit, the UPS module and energy storage are combined in the same housing.

– QUINT UPS: energy storage with lead AGM technology
– STEP UPS: LiPo-based energy storage
– UNO UPS: energy storage with lead AGM technology
– QUINT BUFFER buffer module and QUINT CAP: capacitor-based energy storage

UPS with integrated power supply

The UPS module and power supply in a single housing is a space-saving solution. Only one energy storage is required to complete the UPS system.

– MINI UPS: for 24 or 12 V DC
– TRIO UPS: for 24 DC

Selecting the energy storage for QUINT DC-UPS

You can always find the ideal solution for superior system availability with the new modular system for uninterruptible power supplies. The various storage media feature a wide range of different properties: long service life or very long buffer time, no maintenance or use at extreme ambient temperatures. Whatever your requirements, we offer the ideal energy storage.

Your advantages

Fast installation
- Automatic detection of the energy storage by QUINT UPS
- Tool-free replacement during operation

Maximum availability
- Constant communication with QUINT UPS for continuous monitoring and intelligent management

Extremely long service life
- Optimum charging characteristic according to the technology and ambient conditions

Type	Buffer time Typical	Temperature	Service life at +20°C	Service life at +50°C	Charging cycles at +20°C	Weight (standardized)
UPS-CAP…	< 5 min	**-40 to 60°C**	**> 20 years**	**8 years**	**> 500,000**	**0.4 kg**
UPS-BAT/LI-ION…	> 40 min	-20 to 60°C	15 years	2 years	**7,000**	**0.45 kg**
UPS-BAT/VRLA-WTR…	**> 5 h**	**-25 to 60°C**	12 years	1.5 years	300	1.3 kg
UPS-BAT/VRLA…	**> 8 h**	0 to 40°C	6 to 9 years	1 year	250	1 kg

UPS-BAT/VRLA...
(Valve Regulated Lead Acid)

- Maximum buffer times
- Lead AGM (Absorbent Glass Mat) technology

UPS-BAT/VRLA-WTR...
(Valve Regulated Lead Acid/ Wide Temperature Range)

- Maximum buffer times at extreme temperatures
- Pure lead AGM (Absorbent Glass Mat) technology

UPS-BAT/LI-ION...

- Long service life with long buffer times
- Low weight
- Lithium iron phosphate technology

UPS-CAP (Capacitor)

- Maximum service life
- Maintenance-free double layer capacitors

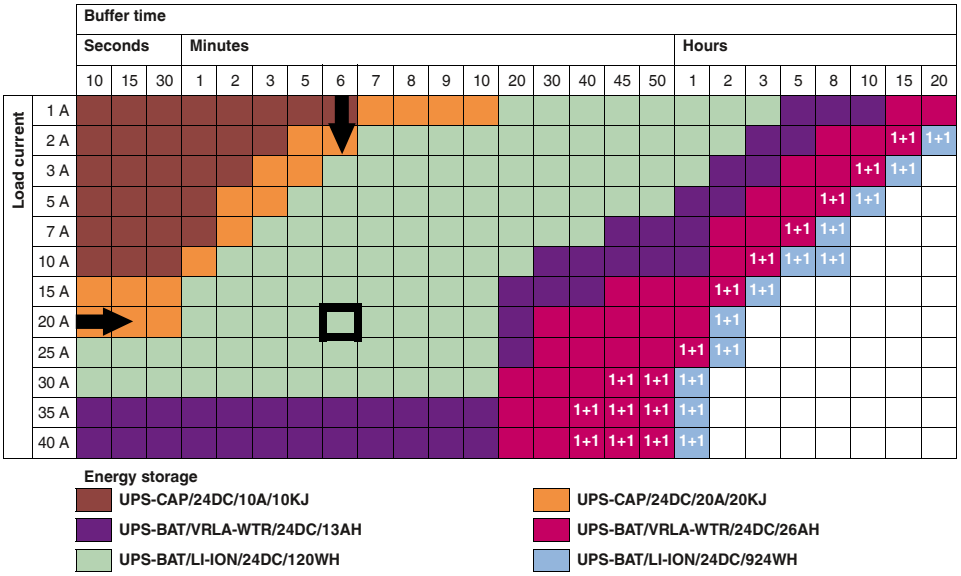
Buffer times for QUINT DC-UPS

Buffer times of energy storage devices with double-layer capacitors and lithium iron phosphate and pure lead AGM technology with a large temperature range

Select your **UPS-BAT** and **UPS-CAP** for 24 V DC applications here.

Example: 20 A needs to be buffered for 6 minutes.

Solution:
UPS-BAT/LI-ION/24DC/120WH



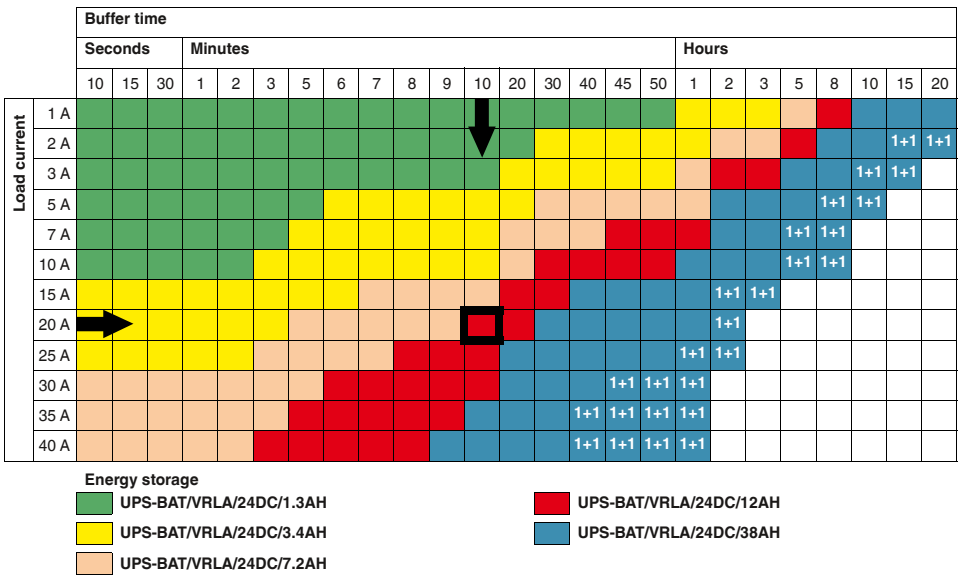
1+1 … Two energy storage devices of the same capacity are required in this case.
The data is based on an ambient temperature of +20°C.

Buffer times of energy storage devices with lead AGM technology

Select your UPS-BAT for 24 V DC applications here.

Example: 20 A needs to be buffered for 10 minutes.

Solution:
UPS-BAT/VRLA/24DC/12AH



1+1 … Two energy storage devices of the same capacity are required in this case.
The data is based on an ambient temperature of +20°C.

QUINT UPS for DC applications

The UPS module for 24 V DC with output currents ranging from 5 to 40 A allows you to create a custom solution combining power supply, UPS module, and energy storage.

Optimum use of the buffer time and preventive monitoring of the energy storage:
– Detects the current state of charge of the energy storage and calculates the remaining runtime
– Calculates the current life expectancy of the energy storage

Substantial power reserve:
– For mains and battery operation
– Power Boost static power reserve
– Dynamic power reserve with SFB (Selective Fuse Breaking) Technology

Fast battery charging:
– Adaptive current management charges the energy storage twice as fast as before, while simultaneously providing sufficient energy for the loads.

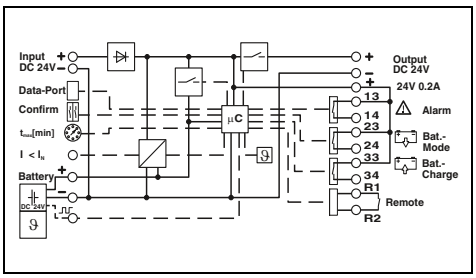
Extensive signaling and parameterization:
– Floating relay contacts
– Data port
– Parameterization with memory module

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 273.

Uninterruptible power supply, 24 V DC / 24 V DC, 5 A

Ex:



Technical data

Input data	
Nominal input voltage range	24 V DC
Input voltage range	18 V DC ... 30 V DC
Max. current consumption	9.4 A (Maximum, mains operation)
Output data (mains operation)	
Nominal output voltage	24 V DC
Output voltage range	18 V DC ... 30 V DC
Degree of efficiency	> 98 % (Mains operation, with charged energy storage)
Output current with convection cooling	
- Nominal output current I_N (continual)	5 A (-25 °C ... 60 °C)
- SFB Technology (12 ms)	30 A (-25 °C ... 60 °C)
- Power Boost I_{Boost} (continual)	7.5 A (-25°C ... 40°C)
Output data (battery operation)	
Nominal output voltage	24 V DC
Output voltage range	19.2 V DC ... 27.6 V DC ($U_{OUT} = U_{BAT}$ - 0.5 V DC)
Output current with convection cooling	
- SFB Technology (15 ms)	32.5 A (-25 °C ... 60 °C)
- Power Boost I_{Boost} (continual)	7.5 A (-25°C ... 40°C)
Energy storage	
Nominal voltage U_N	24 V DC
End-of-charge voltage	24 V DC ... 29 V DC (temperature compensated)
Nominal capacity range	0.8 Ah ... 140 Ah
Max. charging current	0.2 A ... 1.36 A
Signaling	
Signaling	LED, relay contact, interface/software
Interfaces	IFS (Interface system data port)
General data	
Weight / Dimensions W x H x D	0.5 kg / 35 x 130 x 125 mm
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 20 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 20 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Derating	60 °C ... 70 °C (2.5%/K)
Max. permissible relative humidity (operation)	≤ 95 % (25°C, non-condensing)
Standards/regulations	
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

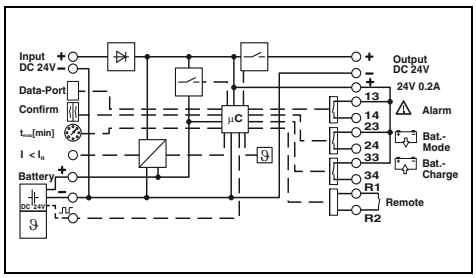
Ordering data

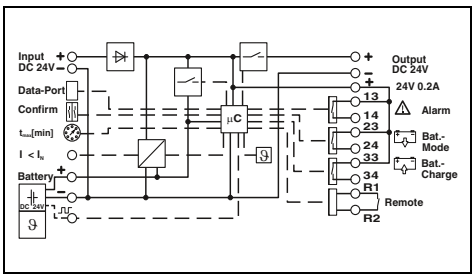
Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**QUINT-UPS/24DC/24DC/5**	2320212	1

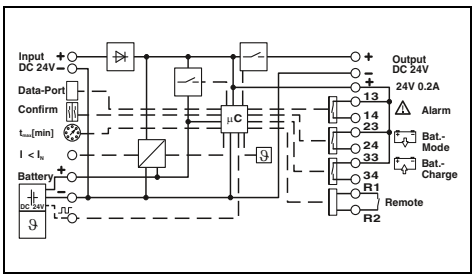
Uninterruptible power supply, 24 V DC / 24 V DC, 10 A

Uninterruptible power supply, 24 V DC / 24 V DC, 20 A

Uninterruptible power supply, 24 V DC / 24 V DC, 40 A







Technical data

Input voltage range	24 V DC 18 V DC ... 30 V DC
Input current	19 A (Maximum, mains operation)
Efficiency	24 V DC 18 V DC ... 30 V DC > 98 % (Mains operation, with charged energy storage)
Output current	10 A (-25 °C ... 60 °C) 60 A (-25 °C ... 60 °C) 15 A (-25°C ... 40°C)
Output voltage range	24 V DC 19.2 V DC ... 27.6 V DC (U_{OUT} = U_{BAT} - 0.5 V DC)
Charging current	65 A (-25 °C ... 60 °C) 15 A (-25°C ... 40°C)
Battery voltage	24 V DC 24 V DC ... 29 V DC (temperature compensated)
Battery capacity	1.3 Ah ... 140 Ah
Battery charging current	0.2 A ... 2.88 A
Interface	LED, relay contact, interface/software IFS (Interface system data port)
Dimensions	0.5 kg / 35 x 130 x 125 mm
Connection method	Plug-in screw connection
Connection data	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12 0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Derating	60 °C ... 70 °C (2.5%/K)
Permissible humidity (operation)	≥ 95 % (25°C, non-condensing)
Standards/regulations	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-UPS/ 24DC/ 24DC/10	2320225	1

Technical data

Input voltage range	24 V DC 18 V DC ... 30 V DC
Input current	32.9 A (Maximum, mains operation)
Efficiency	24 V DC 18 V DC ... 30 V DC > 98 % (Mains operation, with charged energy storage)
Output current	20 A (-25 °C ... 60 °C) 120 A (-25 °C ... 60 °C) 26 A (-25°C ... 40°C)
Output voltage range	24 V DC 19.2 V DC ... 27.6 V DC (U_{OUT} = U_{BAT} - 0.5 V DC)
Charging current	120 A (-25 °C ... 60 °C) 27 A (-25°C ... 40°C)
Battery voltage	24 V DC 24 V DC ... 29 V DC (temperature compensated)
Battery capacity	3 Ah ... 200 Ah
Battery charging current	0.2 A ... 5 A
Interface	LED, relay contact, interface/software IFS (Interface system data port)
Dimensions	0.6 kg / 40 x 130 x 125 mm
Connection method	Screw connection
Connection data	0.2 - 6 mm² / 0.2 - 4 mm² / 12 - 10 0.2 - 6 mm² / 0.2 - 4 mm² / 12 - 10 0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Derating	60 °C ... 70 °C (2.5%/K)
Permissible humidity (operation)	≤ 95 % (25°C, non-condensing)
Standards/regulations	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-UPS/ 24DC/ 24DC/20	2320238	1

Technical data

Input voltage range	24 V DC 18 V DC ... 30 V DC
Input current	51.9 A (Maximum, mains operation)
Efficiency	24 V DC 18 V DC ... 30 V DC > 99 % (Mains operation, with charged energy storage)
Output current	40 A (-25 °C ... 50 °C) 215 A (-25 °C ... 60 °C) 45 A (-25°C ... 40°C)
Output voltage range	24 V DC 19.2 V DC ... 27.6 V DC (U_{OUT} = U_{BAT} - 0.5 V DC)
Charging current	215 A (-25 °C ... 60 °C) 45 A (-25°C ... 40°C)
Battery voltage	24 V DC 24 V DC ... 29 V DC (temperature compensated)
Battery capacity	7 Ah ... 200 Ah
Battery charging current	0.2 A ... 5 A
Interface	LED, relay contact, interface/software IFS (Interface system data port)
Dimensions	0.7 kg / 47 x 130 x 125 mm
Connection method	Screw connection
Connection data	0.5 - 16 mm² / 0.5 - 16 mm² / 8 - 6 0.5 - 16 mm² / 0.5 - 16 mm² / 8 - 6 0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection	IP20 / III
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Derating	60 °C ... 70 °C (2.5%/K)
Permissible humidity (operation)	≤ 95 % (25°C, non-condensing)
Standards/regulations	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-UPS/ 24DC/ 24DC/40	2320241	1

QUINT UPS for DC applications with dual output voltage

The UPS module for two output voltages, 12 and 24 V DC, allows you to create a custom solution combining power supply, UPS module, and energy storage.
– Flexible and space-saving thanks to the two output voltages in one unit

Optimum use of the buffer time and preventive monitoring of the energy storage:
– Detects the current state of charge of the energy storage and calculates the remaining runtime
– Calculates the current life expectancy of the energy storage

Substantial power reserve:
– For mains and battery operation
– Power Boost static power reserve
– Dynamic power reserve with SFB (Selective Fuse Breaking) Technology

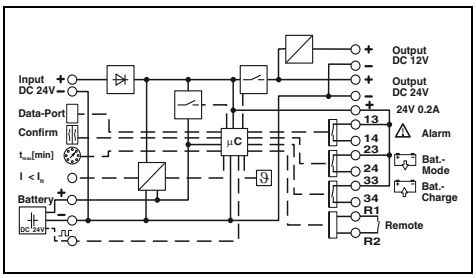
Fast battery charging:
– Adaptive current management charges the energy storage twice as fast as before, while simultaneously providing sufficient energy for the loads.

Extensive signaling and parameterization:
– Floating relay contacts
– Data port
– Parameterization with memory module

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 273.

Uninterruptible power supply, 24 V DC/12 V DC, 5 A and 24 V DC, 10 A



Technical data

Input data		
Input voltage	24 V DC	
Input voltage range	18 V DC ... 30 V DC	
Max. current consumption	16 A	
Output data (mains operation)	12 V DC	24 V DC
Nominal output voltage	12 V DC	24 V DC
Output voltage range		18 V DC ... 30 V DC ($U_{OUT} = U_{IN}$ - 0.5 V DC)
Efficiency (typ.)	> 93 % (Mains operation, with charged energy storage)	> 98 % (Mains operation, with charged energy storage)
Output current with convection cooling ($P_{max} = P_{12\,V} + P_{24\,V} = 360$ W)		
- Nominal output current I_N (continual)	5 A (-25 °C ... 60 °C)	10 A (-25 °C ... 60 °C)
- SFB Technology (15 ms)	-	60 A (-25 °C ... 60 °C)
- Power Boost I_{Boost} (continual)	7.5 A (-25°C ... 40°C)	15 A (-25°C ... 40°C)
Output data (battery operation)	12 V DC	24 V DC
Nominal output voltage	12 V DC	24 V DC
Output voltage range	-	19.2 V DC ... 27.6 V DC ($U_{OUT} = U_{BAT}$ - 0.5 V DC)
Output current with convection cooling ($P_{max} = P_{12\,V} + P_{24\,V} = 360$ W)		
- Nominal output current I_N (continual)	5 A (-25 °C ... 60 °C)	10 A (-25 °C ... 60 °C)
- SFB Technology (15 ms)	-	65 A (-25 °C ... 60 °C)
- Power Boost I_{Boost} (continual)	7.5 A (-25°C ... 40°C)	15 A (-25°C ... 40°C)
Energy storage		
Nominal voltage U_N	24 V DC	
End-of-charge voltage	24 V DC ... 29 V DC (temperature compensated)	
Nominal capacity range	1.3 Ah ... 140 Ah	
Max. charging current	0.2 A ... 2.88 A	
Signaling		
Signaling	LED, relay contact, interface/software	
Interfaces	IFS (Interface system data port)	
General data		
Weight / Dimensions W x H x D	0.6 kg / 35 x 130 x 125 mm	
Connection method	Plug-in screw connection	
Connection data input/output solid/stranded/AWG	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12	
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	
Degree of protection / Protection class	IP20 / III	
Ambient temperature (operation)	-25 °C ... 70 °C	
Derating	60 °C ... 70 °C (2.5%/K)	
Standards/regulations		
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**QUINT-UPS/ 24DC/12DC/5/24DC/10**	2320461	1

Selecting the energy storage for AC-UPS

You can always find the ideal solution for superior system availability with the new modular system for uninterruptible power supplies. The various storage media feature a wide range of different properties: long service life or very long buffer time, no maintenance or use at extreme ambient temperatures. Whatever your requirements, we offer the ideal energy storage.

Your advantages

Fast installation
- Automatic detection of the energy storage by QUINT UPS
- Tool-free replacement during operation

Maximum availability
- Constant communication with QUINT UPS for continuous monitoring and intelligent management

Extremely long service life
- Optimum charging characteristic according to the technology and ambient conditions

Type	Buffer time Typical	Temperature	Service life at +20°C	Service life at +50°C	Charging cycles at +20°C	Weight (standardized)
UPS-CAP…	< 5 min	-40 to 60°C	> 20 years	8 years	> 500,000	0.4 kg
UPS-BAT/LI-ION…	> 40 min	-20 to 60°C	15 years	2 years	7,000	0.45 kg
UPS-BAT/VRLA-WTR…	> 5 h	-25 to 60°C	12 years	1.5 years	300	1.3 kg
UPS-BAT/VRLA…	> 8 h	0 to 40°C	6 to 9 years	1 year	250	1 kg

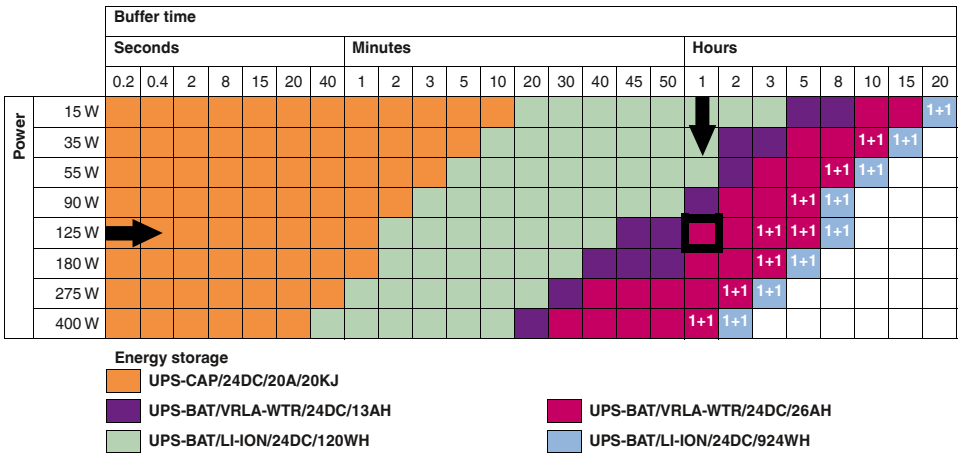
Buffer times for QUINT AC-UPS

Buffer times of energy storage devices with double-layer capacitors and lithium iron phosphate and pure lead AGM technology with a large temperature range

Select the **UPS-BAT** and **UPS-CAP** for your QUINT AC-UPS / 500 VA (120/230 V AC applications) here.

Example: 125 W needs to be buffered for one hour.

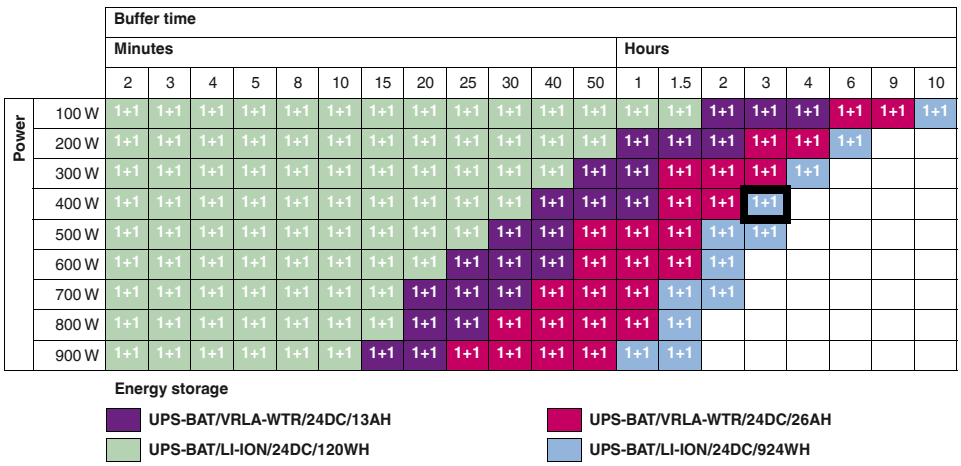
Solution:
UPS-BAT/VRLA-WTR/24DC/26AH



Select the **UPS-BAT** for your QUINT AC-UPS / 1000 VA (120/230 V AC applications) here.

Example: 400 W needs to be buffered for three hours.

Solution:
2x UPS-BAT/LI-ION/24DC/924WH



1+1 … Two energy storage devices of the same capacity are required in this case.
The data is based on an ambient temperature of +20°C.

Buffer times for QUINT AC-UPS

Buffer times of energy storage devices with lead AGM technology

Select the **UPS-BAT/VRLA** for your QUINT AC-UPS / 500 VA (120/230 V AC applications) here.

Example: 125 W needs to be buffered for one hour.

Solution:
UPS-BAT/VRLA/24DC/12AH

Power	Buffer time: Seconds							Minutes										Hours							
	0.2	0.4	2	8	15	20	40	1	2	3	5	10	20	30	40	45	50	1	2	3	5	8	10	15	20
15 W																									1+1
35 W																								1+1	
55 W																							1+1		
90 W																						1+1			
125 W																					1+1	1+1			
180 W																					1+1				
275 W																			1+1	1+1					
400 W																			1+1						

Energy storage
- UPS-BAT/VRLA/24DC/3.4AH
- UPS-BAT/VRLA/24DC/7.2AH
- UPS-BAT/VRLA/24DC/12AH
- UPS-BAT/VRLA-WTR/24DC/38AH

Select the **UPS-BAT/VRLA** for your QUINT AC-UPS / 1000 VA (120/230 V AC applications) here.

Example: 400 A needs to be buffered for 30 minutes.

Solution:
2x UPS-BAT/VRLA/24DC/12AH

Power	Buffer time: Minutes												Hours							
	2	3	4	5	8	10	15	20	25	30	40	50	1	1.5	2	3	4	6	9	10
100 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
200 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1		
300 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1			
400 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1				
500 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1					
600 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1						
700 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1						
800 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1							
900 W	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1							

Energy storage
- UPS-BAT/VRLA/24DC/3.4AH
- UPS-BAT/VRLA/24DC/7.2AH
- UPS-BAT/VRLA/24DC/12AH
- UPS-BAT/VRLA-WTR/24DC/38AH

1+1 … Two energy storage devices of the same capacity are required in this case.
The data is based on an ambient temperature of +20°C.

Buffer times for TRIO AC-UPS with integrated energy storage

Power	Buffer time: Minutes												Hours	
	1	1.5	2	4	6	8	10	15	20	30	40	50	1	1.5
50 W												1+1	1+1	1+1
100 W										1+1	1+1	1+1		
150 W								1+1	1+1	1+1				
200 W							1+1	1+1	1+1					
250 W						1+1	1+1	1+1						
300 W					1+1	1+1	1+1							
400 W				1+1	1+1	1+1								
500 W			1+1	1+1	1+1									
600 W		1+1	1+1	1+1										

1+1 … An additional energy storage device of the same capacity (3.4 AH) of type UPS-BAT/VRLA/24DC/3.4AH (2320306) or QUINT-BAT/24DC/3.4AH (2866349) is required in this case.
The data is based on an ambient temperature of +20°C.

QUINT UPS for AC applications

The QUINT UPS delivers a pure sine curve at the output for AC applications. The sine generated in battery operation is synchronous with the mains previously used for supply. The QUINT AC-UPS for 120 V AC/230 V AC with 400 W/500 VA power can be combined with all UPS-CAP and UPS-BAT energy storage devices.

Optimum use of the buffer time and preventive monitoring of the energy storage:
- Detects the current state of charge of the energy storage and calculates the remaining runtime
- Calculates the current life expectancy of the energy storage

Worldwide use:
- Input voltages from 96 to 264 V AC
- Storage of the level and frequency of the input voltage, in the event of mains failure, the output is automatically supplied with 120 V AC/60 Hz or 230 V AC/50 Hz
- Manual voltage pre-selection possible

Maximum energy efficiency:
- Offline operation: 98% efficiency for charged energy storage
- Power factor cos phi 0.8

Extensive signaling and parameterization:
- Switching outputs
- USB interface
- Data port
- Parameterization with memory module

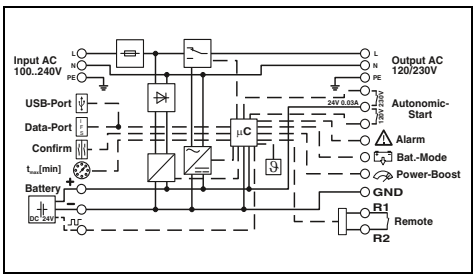
Simplified startup:
- The UPS can be switched on without a power supply network (cold restart)

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 278

Uninterruptible power supply, 1 AC / 1 AC, 500 VA

Ex:



Technical data

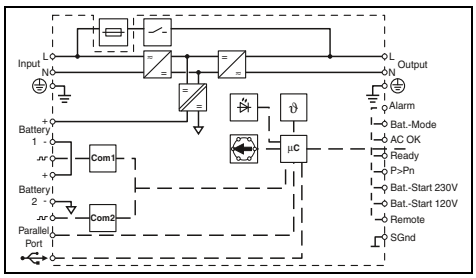
General input data		
Input voltage range	180 V AC ... 264 V AC	
Frequency range	45 Hz ... 65 Hz	
Activation threshold	U_N ±10 %. Can be configured using UPS-CONF software.	
Input data	120 V AC	230 V AC
Nominal input voltage	120 V AC	230 V AC
Input voltage range AC	102 V AC ... 138 V AC	196 V AC ... 264 V AC
Nominal frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Max. current consumption ($I_{IN} = I_{CHARGE} + I_{BOOST}$)	6.8 A	3.7 A
General output data		
Nominal power / Apparent power	400 W / 500 VA	
Derating	> 50 °C ... 70 °C (2.5%/K)	
Switch-over time	< 10 ms	
Efficiency (typ.)	> 98 % (Mains operation)	
Output data (mains operation)	120 V AC	230 V AC
Nominal output voltage	120 V AC	230 V AC
Output voltage range	102 V AC ... 138 V AC	196 V AC ... 264 V AC
- Nominal output current I_N (continual)	4.3 A (-25 °C ... 70 °C)	2.2 A (-25 °C ... 70 °C)
- Power Boost I_{Boost} (continual)	5.2 A (-25 °C ... 70 °C)	2.7 A (-25 °C ... 70 °C)
Output data (battery operation)	120 V AC	230 V AC
Nominal output voltage	120 V AC	230 V AC
- Nominal output current I_N (continual)	4.3 A (-25 °C ... 50 °C)	2.2 A (-25 °C ... 50 °C)
- Power Boost I_{Boost} (5 s)	5.2 A (-25 °C ... 50 °C)	2.7 A (-25 °C ... 50 °C)
Energy storage		
Nominal voltage U_N	24 V DC	
End-of-charge voltage	25 V DC ... 30 V DC (temperature compensated)	
Nominal capacity range	3 Ah ... 200 Ah	
Max. charging current	0.2 A ... 2 A	
Signaling		
Signaling	LED, active switching outputs, interface/software	
Interfaces	IFS (Interface system data port) , MINI-USB type B	
General data		
Classification according to IEC 62040-3	VFD-SS-311	
Weight / Dimensions W x H x D	2.2 kg / 125 x 130 x 125 mm	
Connection method	Screw connection	
Connection data input/output solid/stranded/AWG	1.5 - 6 mm² / 1.5 - 4 mm² / 18 - 10	
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 10	
Degree of protection / Protection class	IP20 / I	
Ambient temperature (operation)	-25 °C ... 70 °C (> 50 °C derating: 2.5%/K)	
Standards/regulations		
UL approvals	UL/C-UL Recognized UL 1778	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**QUINT-UPS/ 1AC/ 1AC/500VA**	2320270	1

new

**Uninterruptible power supply,
1 AC / 1 AC, 1 KVA**



Technical data

96 V AC ... 264 V AC	
45 Hz ... 65 Hz	
Can be configured using UPS-CONF software	
120 V AC	230 V AC
120 V AC	230 V AC
96 V AC ... 144 V AC	184 V AC ... 264 V AC
60 Hz	50 Hz
13 A	7 A
900 W / 1000 VA	
> 60 °C (2.5 %/K)	
0 ms	
> 92 % (with charged energy storage)	
120 V AC	230 V AC
120 V AC	230 V AC
8.3 A (-25 °C ... 70 °C)	4.4 A (-25 °C ... 70 °C)
13 A (-25 °C ... 70 °C)	7 A (-25 °C ... 70 °C)
120 V AC	230 V AC
120 V AC	230 V AC
8.3 A (-25 °C ... 70 °C)	4.4 A (-25 °C ... 70 °C)
13 A (-25 °C ... 70 °C)	7 A (-25 °C ... 70 °C)
2x 24 V DC	
50 V DC ... 60 V DC (temperature compensated)	
7.2 Ah ... 190 Ah	
5 A	
LED, active switching output	
MINI-USB type B, lockable	
VFI-SS-111	
5 kg / 290 x 130 x 125 mm	
Screw connection	
0.2 - 6 mm² / 0.2 - 4 mm² / 30 - 10	
0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16	
IP20 / I	
-40 °C ... 70 °C (> 60 °C derating: 2.5%/K)	
UL/C-UL Recognized UL 1778	

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-UPS/1AC/1AC/1KVA	2320283	1

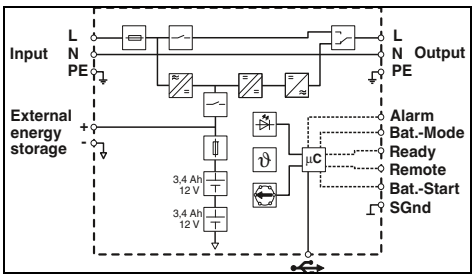
TRIO UPS for AC applications

The TRIO UPS delivers a pure sine curve at the output for AC applications. The sine generated in battery operation is synchronous with the mains previously used for supply. Supply AC loads reliably with the new TRIO-UPS-2G uninterruptible power supplies for the DIN rail.

– Space-saving: UPS module and energy storage are combined in one housing
– Long buffer times with integrated VRLA energy storage, can be extended with additional energy storage
– USB interface for connection to higher-level controllers, such as industrial PCs
– Startup from energy storage possible, even without mains input

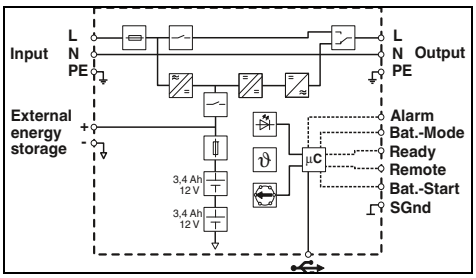
new

Uninterruptible power supply, 1 AC / 1 AC, 750 VA



new

Uninterruptible power supply, 1 AC / 1 AC, 750 VA



	Technical data	Technical data
Input data		
Input voltage range	184 V AC ... 264 V AC	96 V AC ... 138 V AC
Frequency range	45 Hz ... 55 Hz	55 Hz ... 65 Hz
Max. current consumption	3 A	6 A
General output data		
Input fuse	10 A 400 V gRL	10 A 400 V gRL
General output data		
Apparent power / Nominal power	750 VA / 600 W	750 VA / 600 W
Switch-over time	< 10 ms	< 10 ms
Efficiency	> 95 % (with charged energy storage)	> 95 % (with charged energy storage)
Classification according to IEC 62040-3	VFD-SS-311	VFD-SS-311
Output data (mains operation)		
Nominal output voltage	230 V AC	120 V AC
Output current	3 A	6 A
Output data (battery operation)		
Nominal output voltage	230 V AC	120 V AC
Output current	3 A	6 A
Form of output voltage	Pure sine	Pure sine
Energy storage		
Accumulator type	2x Panasonic UP-VW1220P1	2x Panasonic UP-VW1220P1
Buffer period	20 min. (100 W) / 4 min. (300 W) / 1 min. (600 W)	20 min. (100 W) / 4 min. (300 W) / 1 min. (600 W)
Signaling		
LED signaling	AC OK, Alarm, Battery Mode	AC OK, Alarm, Battery Mode
Transistor switching output	Alarm, Battery Mode, Ready	Alarm, Battery Mode, Ready
Floating signal contact	-	-
General data		
Weight / Dimensions W x H x D	5.7 kg / 210 x 170 x 136 mm	5.7 kg / 210 x 170 x 136 mm
Connection method	Push-in connection	Push-in connection
Input connection data (solid/stranded/AWG)	0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 4 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection battery	0.2 - 10 mm² / 0.2 - 6 mm² / 24 - 8	0.2 - 10 mm² / 0.2 - 6 mm² / 24 - 8
Signal connection data (solid/stranded/AWG)	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16
Degree of protection / Protection class	IP20 / I	IP20 / I
MTBF (IEC 61709, SN 29500)	-	-
Ambient temperature (operation)	0 °C ... 40 °C	0 °C ... 40 °C
Ambient temperature (storage/transport)	-15 °C ... 40 °C (with charged energy storage)	-15 °C ... 40 °C (with charged energy storage)
Standards/regulations		
UL approvals	-	UL/C-UL Recognized UL 1778

Description	Ordering data: Type	Order No.	Pcs./Pkt.	Ordering data: Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**TRIO-UPS-2G/1AC/1AC/230V/750VA**	2905909	1	**TRIO-UPS-2G/1AC/1AC/120V/750VA**	2905908	1

USB data cable

MINI-SCREW-USB-DATACABLE

– For communication between the uninterruptible power supply and the UPS CONF configuration software
– Can be locked according to UL requirements

	Ordering data		
Description	Type	Order No.	Pcs./Pkt.
Data cable for communication between higher-level controllers and uninterruptible power supplies Cable length: 3 m	**MINI-SCREW-USB-DATACABLE**	2908217	1

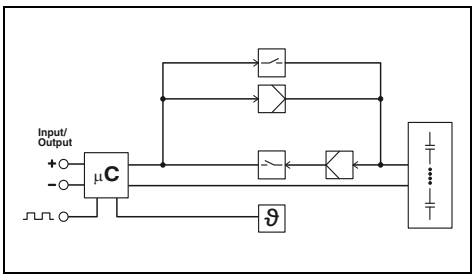
Energy storage for QUINT UPS

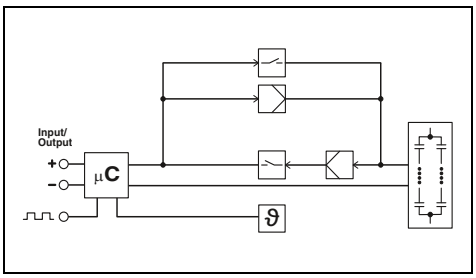
Maintenance-free CAP UPS

– Double-layer capacitors
– Life expectancy:
  > 20 years (20°C), > 8 years (50°C)
– Communication with QUINT UPS
– Integrated temperature sensor
– Works reliably, even under extreme ambient temperatures of -40°C to +60°C

Maintenance-free energy storage, 24 V DC, 10 A, 10 kJ

Maintenance-free energy storage, 24 V DC, 20 A, 20 kJ





	Technical data	Technical data
Input data		
Nominal capacity	0.1 Ah	0.2 Ah
Output data		
Nominal output voltage	24 V DC	24 V DC
Output voltage range	22 V DC ... 27 V DC	22 V DC ... 27 V DC
Output current	10 A	20 A
Output fuse	1x 25 A (internal)	2x 25 A (internal)
Can be connected in parallel/series	No / No	No / No
Buffer period	6 min. (1 A) / 33 s (10 A)	12 min. (1 A) / 33 s (20 A)
General data		
Storage medium	Double-layer capacitor	Double-layer capacitor
Weight / Dimensions W x H x D	1.7 kg / 126 x 130 x 126 mm	2.9 kg / 150 x 130 x 176 mm
Degree of protection / Protection class	IP20 / III	IP20 / III
Ambient temperature (operation)	-40 °C ... 60 °C	-40 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 60 °C	-40 °C ... 60 °C
Service life	20 years (20 °C)	20 years (20 °C)
Standards/regulations		
UL approvals	UL/C-UL Recognized UL 60950	UL/C-UL Recognized UL 60950

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Energy storage						
	UPS-CAP/24DC/10A/10KJ	2320377	1	**UPS-CAP/24DC/20A/20KJ**	2320380	1

Energy storage for QUINT UPS

new

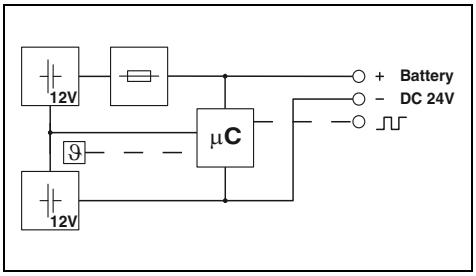
UPS-BAT/LI-ION for long service life with long buffer times

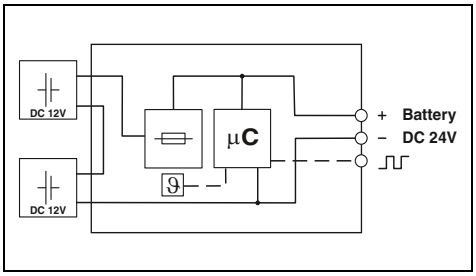
– Lithium iron phosphate technology
– Works reliably, even under extreme ambient temperatures of -20 to +60°C
– Communication with QUINT UPS
– Integrated temperature sensor for optimum charging
– Battery can be changed without tools

LI-ION energy storage, 120 Wh

LI-ION energy storage, 924 Wh

Ex:





	Technical data	Technical data
Input data/output data		
Nominal input voltage	24 V DC	24 V
Nominal capacity	120 Wh	924 Wh
Output current	30 A	45 A
Output fuse	1x 30 A ATOF 32V (breaking capacity 1000 A)	2x 25 A ATOF 32V (breaking capacity 1000 A)
Can be connected in parallel/series	Yes / No	Yes / No
Buffer period	14 min. (20 A)	105 min. (20 A (20 °C)) / 50 min. (40 A (20 °C))
General data		
Storage medium	LI-ION, 120 Wh	LI-ION, 924 Wh
Weight / Dimensions W x H x D	2.9 kg / 135 x 202 x 110 mm	12.9 kg / 264 x 224 x 197 mm
Degree of protection / Protection class	IP20 / III	IP20 / III
Ambient temperature (operation)	-20 °C ... 60 °C	-25 °C ... 60 °C
Service life	-	15 years (20 °C)
Standards/regulations		
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	-

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Energy storage						
	UPS-BAT/LI-ION/24DC/120WH	2320351	1	**UPS-BAT/LI-ION/24DC/924WH**	2908232	1

Energy storage for QUINT UPS

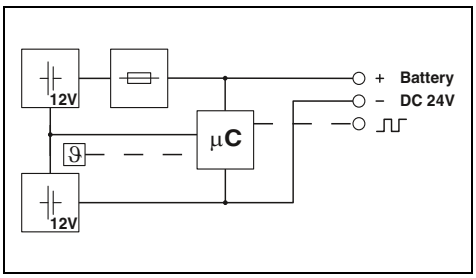
UPS BAT/VRLA for maximum buffer times

- Lead AGM (Absorbent Glass Mat) technology
- Ambient temperatures from 0 to +40°C
- Long buffer times for high currents
- Communication with QUINT UPS
- Integrated temperature sensor for optimum charging
- Battery can be changed without tools

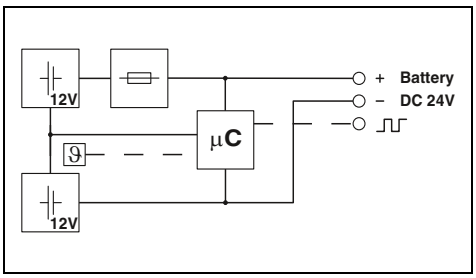
VRLA energy storage, 1.3 Ah

VRLA energy storage, 3.4 Ah

Ex:



Ex:



	Technical data	Technical data
Input data/output data		
Nominal input voltage	24 V DC	24 V DC
Nominal capacity	1.3 Ah	3.4 Ah
Output current	15 A	25 A
Output fuse	1x 15 A	1x 25 A
Can be connected in parallel/series	Yes / No	Yes / No
Buffer period	20 min. (2 A) / 5 min. (5 A)	4.5 min. (20 A) / 3 min. (25 A)
General data		
Storage medium	Lead rechargeable battery module	Lead rechargeable battery module
Weight / Dimensions W x H x D	1.7 kg / 54 x 157 x 113 mm	3.3 kg / 85 x 191 x 110 mm
Degree of protection / Protection class	IP20 / III	IP20 / III
Ambient temperature (operation)	0 °C ... 40 °C	0 °C ... 40 °C
Service life	-	6 years ... 9 years (20 °C)
Standards/regulations		
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

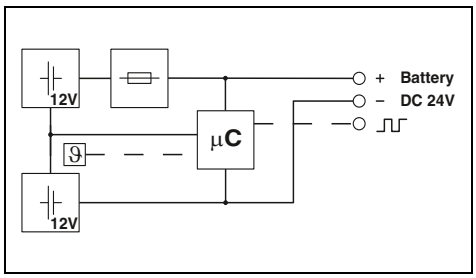
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Energy storage						
	UPS-BAT/VRLA/24DC/1.3AH	2320296	1	**UPS-BAT/VRLA/24DC/3.4AH**	2320306	1
	Accessories			**Accessories**		
Fuse	**FUSE 15A/32V FK1**	2908360	2	**FUSE 25A/32V ATOF**	2908366	2
Mounting set						
Mounting set						

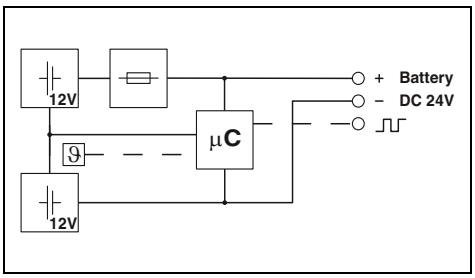
VRLA energy storage,
7.2 Ah

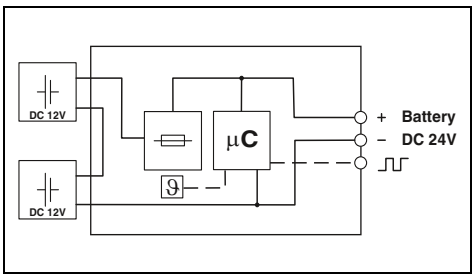
VRLA energy storage,
12 Ah

VRLA energy storage,
38 Ah

Ex:







Technical data

24 V DC	
7.2 Ah	
50 A	
2x 25 A	
Yes / No	
10 min. (20 A) / 3 min. (40 A)	
Lead rechargeable battery module	
5.9 kg / 135 x 202 x 110 mm	
IP20 / III	
0 °C ... 40 °C	
6 years ... 9 years (20 °C)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
UPS-BAT/VRLA/24DC/7.2AH	2320319	1

Accessories

FUSE 25A/32V ATOF	2908366	2

Technical data

24 V DC	
12 Ah	
50 A	
2x 25 A	
Yes / No	
22.5 min. (20 A) / 9 min. (40 A)	
Lead rechargeable battery module	
8.9 kg / 202 x 202 x 110 mm	
IP20 / III	
0 °C ... 40 °C	
6 years ... 9 years (20 °C)	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
UPS-BAT/VRLA/24DC/12AH	2320322	1

Accessories

FUSE 25A/32V ATOF	2908366	2

Technical data

24 V DC	
38 Ah	
45 A	
2x 25 A ATOF 32V	
Yes / No	
72 min. (20 A) / 35 min. (40 A)	
Lead rechargeable battery module	
26 kg / 330 x 221 x 197 mm	
IP20 / III	
0 °C ... 40 °C	
-	
UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	

Ordering data

Type	Order No.	Pcs./Pkt.
UPS-BAT/VRLA/24DC/38AH	2320335	1

Accessories

FUSE 25A/32V ATOF	2908366	2
BATTERY MOUNTING KIT	2320788	1
BATTERY MOUNTING CASE	2320458	1

Energy storage for QUINT UPS

UPS BAT/VRLA-WTR for temperatures from -25 to +60°C

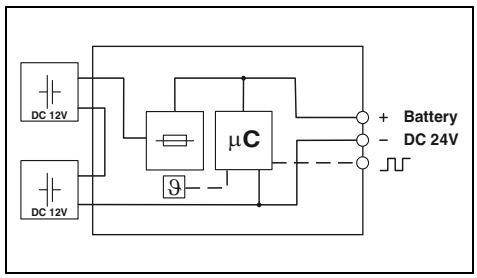
– Pure lead AGM technology
– Communication with QUINT UPS
– Integrated temperature sensor for optimum charging

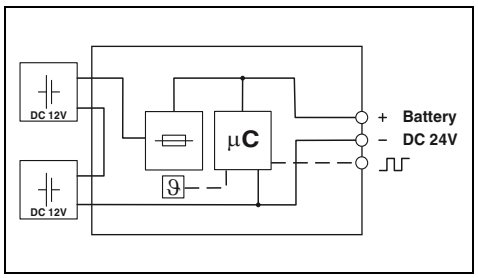
Energy storage with wide temperature range 24 V DC, 13 Ah

Ex:

Energy storage with wide temperature range 24 V DC, 26 Ah

Ex:





	Technical data	Technical data
Input data/output data		
Nominal input voltage	24 V DC	24 V DC
Nominal capacity	13 Ah	26 Ah
Output current	45 A	45 A
Output fuse	2x 25 A ATOF 32V	2x 25 A ATOF 32V
Can be connected in parallel/series	Yes / No	Yes / No
Buffer period	50 min. (10 A) / 10 min. (40 A)	120 min. (10 A) / 30 min. (40 A)
General data		
Storage medium	Pure lead AGM	Pure lead AGM
Weight / Dimensions W x H x D	10.8 kg / 172 x 177 x 178 mm	21.6 kg / 358 x 174 x 169 mm
Degree of protection / Protection class	IP20 / III	IP20 / III
Ambient temperature (operation)	-25 °C ... 60 °C	-25 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 60 °C	-40 °C ... 60 °C
Service life	-	-
Standards/regulations		
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950
GL approvals	Germanischer Lloyd (EMC 2), ABS, DNV	Germanischer Lloyd (EMC 2), ABS, DNV

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Energy storage			
	UPS-BAT/VRLA-WTR/24DC/13AH	2320416	1

Accessories

Fuse	**FUSE 25A/32V ATOF**	2908366	2
Mounting set	**BATTERY MOUNTING KIT**	2320788	1
Mounting set	**BATTERY MOUNTING CASE**	2320458	1

Ordering data

Type	Order No.	Pcs./Pkt.
UPS-BAT/VRLA-WTR/24DC/26AH	2320429	1

Accessories

FUSE 25A/32V ATOF	2908366	2
BATTERY MOUNTING KIT	2320788	1
BATTERY MOUNTING CASE	2320458	1

Mounting accessories

Battery mounting kit

– For attaching individual battery blocks to a mounting plate
– Consists of four powder-coated metal brackets and a fabric lashing strap

Battery mounting case

– Battery frame for universal wall or surface mounting of battery blocks and electronics

DNV GL

Description	Ordering data		
	Type	Order No.	Pcs./Pkt.
Mounting set			
	BATTERY MOUNTING KIT	2320788	1

DNV GL

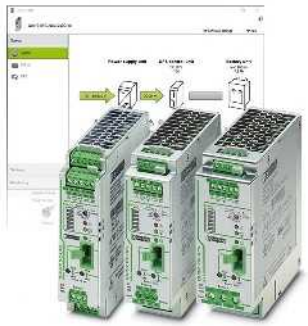
Ordering data		
Type	Order No.	Pcs./Pkt.
BATTERY MOUNTING CASE	2320458	1

Configuration software for QUINT UPS

The UPS CONF configuration software can be downloaded free of charge from our homepage. Remember to order the IFS-USB-DATACABLE as well in order to use the software.

Supported operating systems:
– Windows 8.1 (32 and 64-bit)
– Windows 8.0 (32 and 64-bit)
– Windows 7 (32 and 64-bit)
– Windows 10 (32 and 64-bit)

Minimum requirements:
– Display: 800 x 600, 256 colors
– Processor: 400 MHz, Pentium processor or similar
– RAM: 96 MB



Description	Ordering data		
	Type	Order No.	Pcs./Pkt.
Configuration software for QUINT UPS	**UPS-CONF**	2320403	1

Accessories for QUINT UPS and TRIO DC-UPS

IFS-USB-DATACABLE
– For communication between the uninterruptible power supply and the UPS CONF configuration software

IFS-CONFSTICK
– For storing the values you have configured and quickly transferring them to other uninterruptible power supplies

Memory module

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Programming adapter for configuring modules with S-PORT interface Cable length: 3 m	**IFS-USB-DATACABLE**	2320500	1			
Multi-functional memory module for the Interface system						
- Flat design				**IFS-CONFSTICK**	2986122	1
- Tall design				**IFS-CONFSTICK-L**	2901103	1

Accessories for QUINT UPS and TRIO DC-UPS

IFS-RS232-DATACABLE
– For Modbus communication with the RS-232 interface
– Connection to the Phoenix Contact COM server for Ethernet communication
– Communicate directly with higher-level controllers, such as Phoenix Contact ILC or RFC, or use as a gateway

IFS-MINI-DIN-DATACABLE
– For direct communication with the ILC from the Phoenix Contact Inline system

IFS-OPEN-END-DATACABLE
– Open cable for flexible communication

QUINT UPS function blocks
– For further processing of information communicated via data cables
– For PC Worx software
– Free download at phoenixcontact.net/products

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Data cable for communication between higher-level controllers and QUINT UPS uninterruptible power supplies, cable length: 2 m			
Modbus communication	**IFS-RS232-DATACABLE**	2320490	1
Direct communication	**IFS-MINI-DIN-DATACABLE**	2320487	1
Flexible communication	**IFS-OPEN-END-DATACABLE**	2320450	1

Accessories for QUINT UPS and TRIO DC-UPS

IFS-BT-PROG-ADAPTER
– For wireless communication between the uninterruptible power supply and the UPS CONF configuration software

Bluetooth adapter

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Bluetooth programming adapter, with USB and S-PORT interface			
	IFS-BT-PROG-ADAPTER	2905872	1

Selection of UPS modules with integrated energy storage or integrated power supply

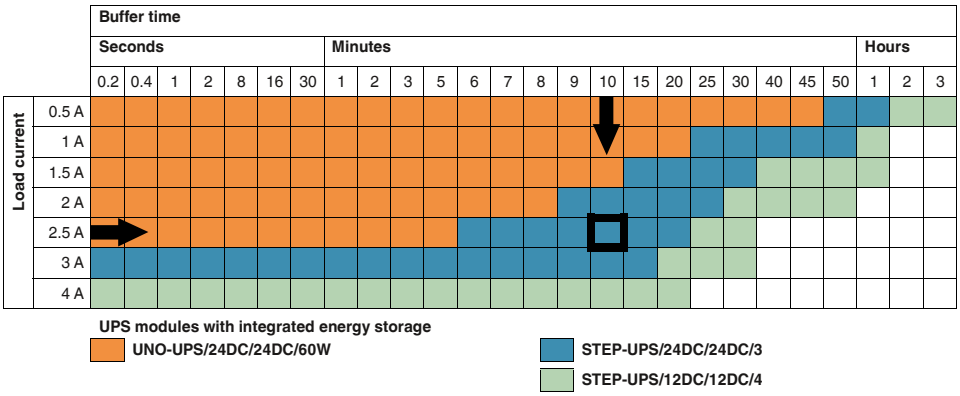
To save space in the control cabinet or to retrofit existing systems easily, UPS versions with integrated energy storage (QUINT, UNO, and STEP) or integrated power supply (MINI and TRIO) are recommended.

Buffer times for UNO UPS and STEP UPS

Select your UPS solution here.

Example: 2.5 A needs to be buffered for 10 minutes:

Solution:
STEP-UPS/24DC/24DC/3



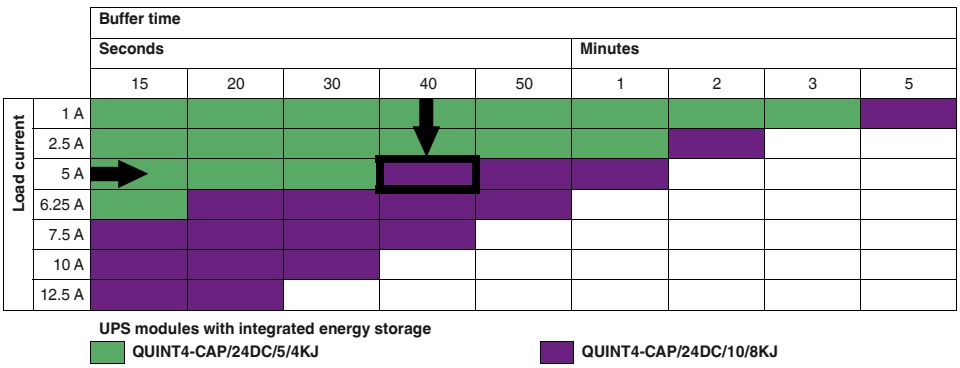
The data is based on an ambient temperature of +20°C.

Buffer times for QUINT CAP

Select your UPS solution here.

Example: 5 A needs to be buffered for 40 seconds:

Solution:
QUINT4-CAP/24DC/10/8KJ



The data is based on an ambient temperature of +25°C.

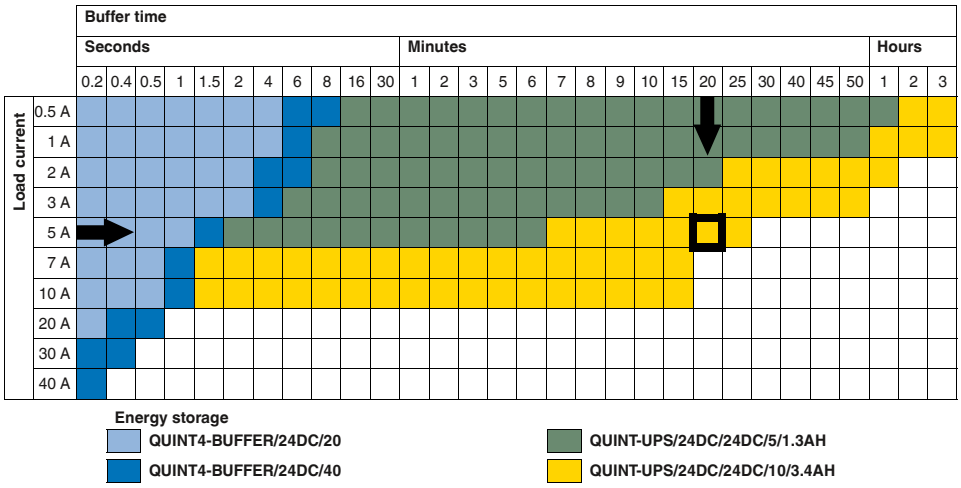
Buffer times for QUINT UPS and QUINT BUFFER

Particularly space-saving: UPS module and energy storage combined in one housing. You simply need to connect a power supply upstream.

Select your QUINT UPS or QUINT BUFFER here.

Example: 5 A needs to be buffered for 20 minutes.

Solution:
QUINT-UPS/24DC/24DC/10/3.4AH



The data is based on an ambient temperature of +20°C.

Buffer times for MINI UPS and TRIO UPS

Particularly space-saving: UPS module and power supply combined in one housing. You simply need to connect an energy storage device upstream.

MINI UPS

Energy storage with lead AGM technology for output voltages of 24 or 12 V DC. Buffer times of up to 50 minutes with 1 A load current.

Note: With the MINI-DC-UPS/12DC/4, buffer times are double those of the MINI-DC-UPS/24DC/2.

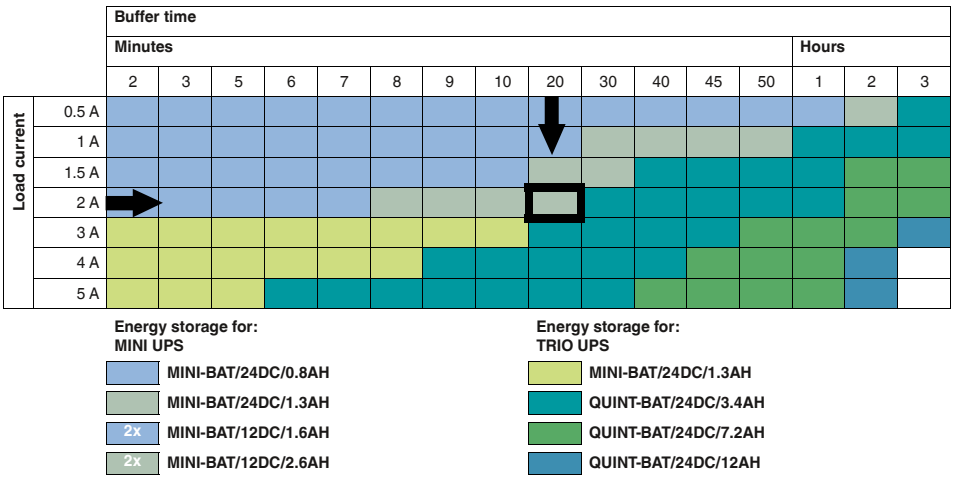
TRIO UPS

Energy storage with lead AGM technology buffer failures lasting up to 2 hours with 5 A load current.

Select the energy storage for your MINI UPS and TRIO UPS here.

Example: 2 A needs to be buffered for 20 minutes.

Solution:
MINI-DC-UPS/24DC/2 and
MINI-BAT/24DC/1.3AH



The data is based on an ambient temperature of +20°C.

UPS module with integrated energy storage

QUINT-UPS is very easy to install in existing systems. You simply need to connect a 24 V DC power supply unit upstream and the reliable UPS solution is complete.

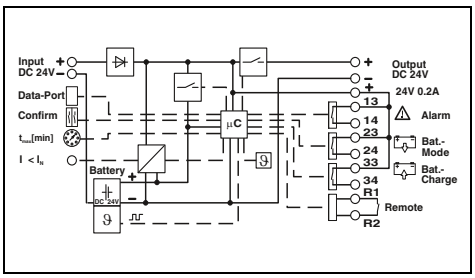
– Advantages of using IQ technology
– Minimal wiring effort
– Maintenance-free energy storage with lead AGM technology

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 293.

Uninterruptible power supply with integrated energy storage, 24 V DC / 24 V DC, 5 A, 1.3 Ah

Ex:



Technical data

Input data	
Input voltage range	18 V DC ... 30 V DC
Max. current consumption	9.3 A (24 V DC)
Output data	
Nominal output voltage	24 V DC
Output voltage range	19.2 V DC ... 27.6 V DC ($U_{OUT} = U_{BAT}$ - 0.5 V DC)
Output current	5 A
Can be connected in parallel/series	Yes / No
Buffer period	50 min. (1 A) / 5 min. (5 A)
Max. power dissipation (normal mode / buffer mode)	2.5 W / 3.3 W
Efficiency	> 97.1 % (Mains operation, with charged energy storage)
Signaling	
Signaling	LED, relay contact, interface/software
Interfaces	IFS (Interface system data port)
General data	
Storage medium	Lead rechargeable battery module 1.3 Ah
Weight / Dimensions W x H x D	2.2 kg / 88 x 138 x 125 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: horizontal 5 mm, vertical 50 mm
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 20 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 20 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / III
MTBF (IEC 61709, SN 29500)	> 806000 h (40°C)
Ambient temperature (operation)	0 °C ... 40 °C
Ambient temperature (storage/transport)	-15 °C ... 40 °C
Service life	6 years ... 9 years (20 °C)
Latest startup	3 months (0 °C ... 20 °C) 1 month (30 °C ... 40 °C)
Standards/regulations	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL Recognized UL 60950 , UL Listed UL 508

Ordering data

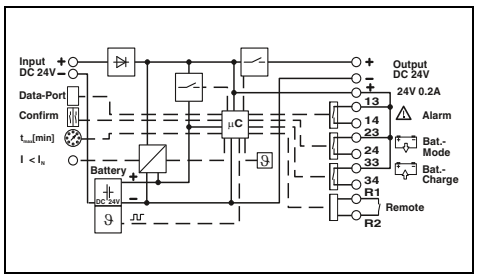
Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**QUINT-UPS/ 24DC/ 24DC/ 5/1.3AH**	2320254	1

Accessories

Fuse	**FUSE 15A/32V FKS ATO**	2908361	2

Uninterruptible power supply with integrated energy storage, 24 V DC / 24 V DC, 10 A, 3.4 Ah

Ex:



Technical data

Input data	
Input voltage range	18 V DC ... 30 V DC
Max. current consumption	18.6 A (24 V DC)
Output data	
Nominal output voltage	24 V DC
Output voltage range	19.2 V DC ... 27.6 V DC ($U_{OUT} = U_{BAT}$ - 0.5 V DC)
Output current	10 A
Can be connected in parallel/series	Yes / No
Buffer period	180 min. (1 A) / 10 min. (10 A)
Max. power dissipation (normal mode / buffer mode)	3.1 W / 6.3 W
Efficiency	> 97.6 % (Mains operation, with charged energy storage)
Signaling	
Signaling	LED, relay contact, interface/software
Interfaces	IFS (Interface system data port)
General data	
Storage medium	Lead rechargeable battery module, 3.4 Ah
Weight / Dimensions W x H x D	3.8 kg / 120 x 169 x 125 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: horizontal 5 mm, vertical 50 mm
Connection method	Plug-in screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 16 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / III
MTBF (IEC 61709, SN 29500)	> 806000 h (40°C)
Ambient temperature (operation)	0 °C ... 40 °C
Ambient temperature (storage/transport)	-15 °C ... 40 °C
Service life	6 years ... 9 years (20 °C)
Latest startup	6 months (0 °C ... 20 °C)
Standards/regulations	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL Recognized UL 60950 , UL Listed UL 508

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-UPS/ 24DC/ 24DC/10/3.4AH	2320267	1

Accessories

FUSE 15A/32V FKS ATO	2908361	2

Maintenance-free buffer module

The QUINT BUFFER is ideal for failures lasting just seconds.

It combines an electronic switch-over unit and a capacitor-based energy storage in the same housing.

– Fast tripping of standard miniature circuit breakers with SFB (Selective Fuse Breaking) Technology dynamic power reserve with up to 6 times the nominal current for 12 ms
– Space savings thanks to compact design

Notes:

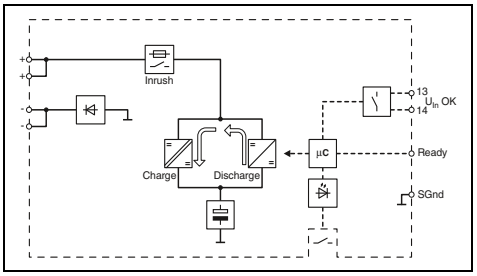
The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 293.

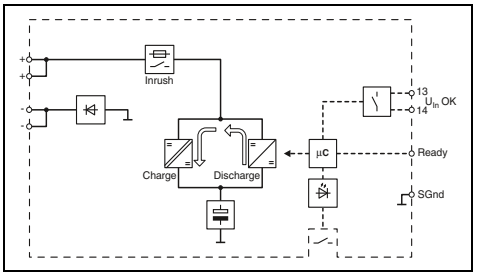
new

Maintenance-free capacity module
24 V DC / 20 A

new

Maintenance-free capacity module
24 V DC / 40 A





Technical data

Input data		
Input voltage range	22.5 V DC ... 30 V DC	22.5 V DC ... 30 V DC
Current consumption (idling/charging process/max.)	0.2 A / 0.6 A / 26 A	0.2 A / 0.8 A / 46 A
Connect threshold (fixed, variable)	< 22 V DC , (U_{IN} - 1 V)/0.1 s	< 22 V DC , (U_{IN} - 1 V)/0.1 s
Output data		
Nominal output voltage	24 V DC	24 V DC
Output current I_N / $I_{Stat. Boost}$ / $I_{Dyn. Boost}$ / I_{SFB}	20 A / 25 A / 30 A (5 s) / 120 A (15 ms)	40 A / 45 A / 60 A (5 s) / 215 A (15 ms)
Can be connected in parallel/series	No / No	No / No
Buffer period	200 ms (20 A)	200 ms (40 A)
Maximum power dissipation for nominal condition	< 6 W	< 9 W
Signaling		
LED signaling	U_{IN} OK, Ready	U_{IN} OK, Ready
Transistor switching output	Ready	Ready
Floating signal contact	U_{IN}OK	U_{IN}OK
General data		
Storage medium	Electrolytic capacitor	Electrolytic capacitor
Weight / Dimensions W x H x D	1 kg / 57 x 130 x 125 mm	1.2 kg / 73 x 130 x 125 mm
Mounting position	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 6 mm² / 0.2 - 4 mm² / 30 - 10	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
Output connection data (solid/stranded/AWG)	0.2 - 6 mm² / 0.2 - 4 mm² / 30 - 10	0.5 - 16 mm² / 0.5 - 16 mm² / 10 - 6
Signal connection data (solid/stranded/AWG)	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 2497000 h (40°C)	> 2814000 h (40°C)
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 70 °C
Standards/regulations		
Insulation voltage: input, output/housing	500 V	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	-	-
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950	UL Listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Buffer module, maintenance-free	**QUINT4-BUFFER/24DC/20**	2907913	1	**QUINT4-BUFFER/24DC/40**	2908283	1

Maintenance-free buffer module

QUINT CAP is ideal for cyclical failures lasting up to 30 seconds. It combines an electronic switch-over unit and a capacitor-based energy storage device in the same housing.

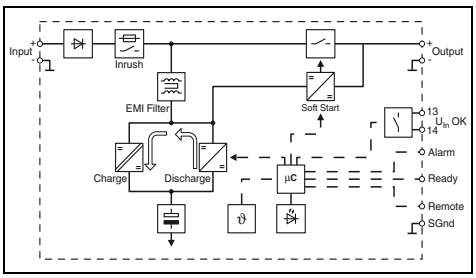
– Convenient PC shutdown
– Maintenance-free with a long service life
– Space savings thanks to compact design
– Long buffer time thanks to high memory capacity

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 292.

new

Maintenance-free Ultra-CAP Capacity module 24 V DC, 5 A



Technical data

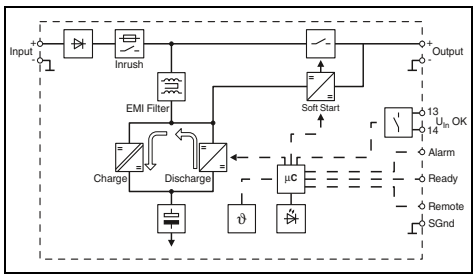
Input data	
Input voltage range	22.5 V DC ... 30 V DC
Current consumption (idling/charging process/max.)	0.1 A / 0.8 A / 7 A
Connect threshold (fixed, variable)	< 22 V DC , -
Output data	
Nominal output voltage	24 V DC
Output current I_N / $I_{Stat. Boost}$ / $I_{Dyn. Boost}$ / I_{SFB}	5 A / 6.25 A / 10 A (5 s) / 30 A (15 ms)
Can be connected in parallel/series	Yes / No
Buffer period	3 min. (1 A) / 1 min. (2.5 A) / 30 s (5 A)
Maximum power dissipation for nominal condition	< 3 W
Signaling	
LED signaling	U_{IN} OK, Alarm, Ready
Transistor switching output	Alarm, Ready
Floating signal contact	U_{IN}OK
General data	
Storage medium	Double-layer capacitor
Weight / Dimensions W x H x D	1.3 kg / 94 x 130 x 125 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 30 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 30 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16
Degree of protection / Protection class	IP20 / II
MTBF (IEC 61709, SN 29500)	> 1302000 h (40°C)
Ambient temperature (operation)	-40 °C ... 60 °C
Standards/regulations	
Insulation voltage: input, output/housing	500 V
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	-
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Buffer module, maintenance-free	**QUINT4-CAP/24DC/5/4KJ**	2320539	1

new

Maintenance-free Ultra-CAP Capacity module 24 V DC, 10 A



Technical data

	22.5 V DC ... 30 V DC
	0.1 A / 1 A / 13.5 A
	< 22 V DC , -
	24 V DC
	10 A / 12.5 A / 20 A (5 s) / 60 A (15 ms)
	Yes / No
	5 min. (1 A) / 1 min. (5 A) / 30 s (10 A)
	< 6 W
	U_{IN} OK, Alarm, Ready
	Alarm, Ready
	U_{IN}OK
	Double-layer capacitor
	1.6 kg / 118 x 130 x 125 mm
	horizontal DIN rail NS 35, EN 60715
	Can be aligned: Horizontally 0 mm, vertically 50 mm
	Screw connection
	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 30 - 12
	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 30 - 12
	0.2 - 1.5 mm² / 0.2 - 1.5 mm² / 24 - 16
	IP20 / II
	> 1387000 h (40°C)
	-40 °C ... 60 °C
	500 V
	Conformance with EMC Directive 2014/30/EU
	IEC 60950-1/VDE 0805 (SELV)
	-
	UL Listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT4-CAP/24DC/10/8KJ	**2320571**	1

UPS module with integrated energy storage

STEP UPS

The STEP BAT energy storage is included when ordering the STEP UPS. The STEP BAT can be reordered separately. (See accessories on this page)

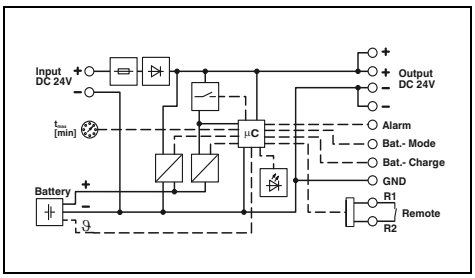
Notes:

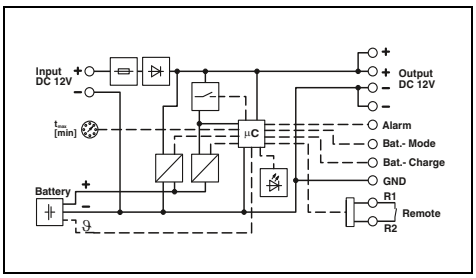
With the STEP-UPS/12DC/12DC/4, buffer times are double those of the STEP-UPS/24DC/24 DC/3. See page 292.

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 292.

Uninterruptible power supply with integrated rechargeable battery, 24 V DC / 24 V DC, 3 A

Uninterruptible power supply with integrated battery module, 12 V DC/12 V DC, 4 A





	Technical data	Technical data
Input data		
Nominal input voltage range	24 V DC	12 V DC
Input voltage range	22.5 V DC ... 29.5 V DC	10 V DC ... 16.5 V DC
Max. current consumption	4.7 A	6 A
Current consumption charging process	0.5 A	0.8 A
Input fuse	7 A (slow-blow, internal)	7 A (slow-blow, internal)
Output data		
Nominal output voltage	24 V DC	12 V DC
Output current standard operation	3 A	4 A
Output current Power Boost	4 A (0 °C ... 35 °C)	5 A (0 °C ... 35 °C)
Can be connected in parallel/series	No / No	No / No
Buffer period	50 min. (1 A) / 25 min. (2 A) / 17 min. (3 A)	100 min. (1 A) / 50 min. (2 A) / 30 min. (3 A)
Max. power dissipation (normal mode / buffer mode)	2 W / 3.8 W	1.2 W / 4.4 W
Efficiency	> 98 % (Mains operation, with charged energy storage) / > 95 % (Battery operation)	> 97.4 % (Mains operation, with charged energy storage) / > 92 % (Battery operation)
Signaling		
Signaling Power OK	LED	LED
Signaling alarm	LED, active transistor switching output	LED, active transistor switching output
Signaling battery charge	LED, active transistor switching output	LED, active transistor switching output
Signaling battery mode	LED, active transistor switching output	LED, active transistor switching output
General data		
Storage medium	Lithium polymer	Lithium polymer
Weight / Dimensions W x H x D	0.45 kg / 108 x 90 x 61 mm	0.46 kg / 108 x 90 x 61 mm
Mounting position	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Screw connection	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / III	IP20 / III
MTBF (IEC 61709, SN 29500)	> 1401000 h (40°C)	> 1997000 h (40°C)
Ambient temperature (operation)	0 °C ... 40 °C	0 °C ... 40 °C
Standards/regulations		
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950	UL Listed UL 508 , UL/C-UL Recognized UL 60950

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible						
	STEP-UPS/24DC/24DC/3	2868703	1	**STEP-UPS/12DC/12DC/4**	2868693	1
	Accessories			**Accessories**		
Energy storage	**STEP-BAT/LIPO/18.5DC/1.4AH**	2320364	1	**STEP-BAT/LIPO/18.5DC/1.4AH**	2320364	1

UPS module with integrated energy storage

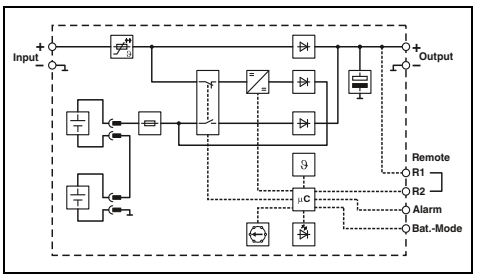
UNO UPS

The energy storage is included when ordering the UNO UPS.

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 292.

Uninterruptible power supply with integrated rechargeable battery, 24 V DC/24 V DC, 60 W



Technical data

Input data	
Nominal input voltage range	24 V DC
Input voltage range	22.5 V DC ... 29.5 V DC
Max. current consumption	2.8 A
Current consumption charging process	-
Input fuse	5 A (electronic)
Output data	
Nominal output voltage	24 V DC (SELV)
Output current standard operation	2.5 A
Output current Power Boost	-
Can be connected in parallel/series	yes, with redundancy module / No
Buffer period	45 min. (0.5 A) / 20 min. (1 A) / 8 min. (2 A)
Max. power dissipation (normal mode / buffer mode)	3 W / -
Efficiency	> 95 % (Mains operation, with charged energy storage) / > 92 % (Battery operation)
Signaling	
Signaling Power OK	LED
Signaling alarm	LED, active transistor switching output
Signaling battery charge	-
Signaling battery mode	LED, active transistor switching output
General data	
Storage medium	Lead rechargeable battery module
Weight / Dimensions W x H x D	1 kg / 110 x 90 x 84 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Alignable: 0 mm horizontally, 30 mm vertically
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 14
Degree of protection / Protection class	IP20 / III
MTBF (IEC 61709, SN 29500)	> 1900000 h (40°C)
Ambient temperature (operation)	-15 °C ... 50 °C
Standards/regulations	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible	**UNO-UPS/24DC/24DC/60W**	2905907	1

Accessories

Fuse	**FUSE 5A/32V FK-1**	2908367	2

UPS module with integrated power supply

TRIO UPS

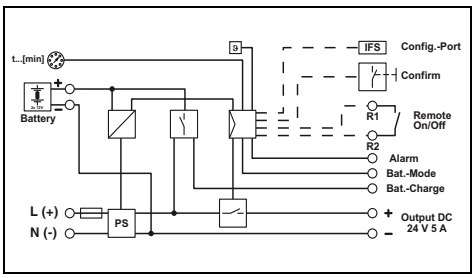
Developed specifically for supplying industrial PCs. Configuration port: freely parameterizable with the UPS CONF configuration software. Configuration stick: parameterize stick once and transfer to any number of TRIO UPS units.

The UPS-CONF (Order No. 2320403) configuration software can be downloaded free of charge from our homepage.

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 293.

UPS with integrated power supply, 100 - 240 V AC / 24 V DC, 5 A



Technical data

Input data	
Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC / 100 V DC ... 350 V DC
Max. current consumption in normal mode	0.95 A (230 V AC) / 1.1 A (230 V AC, maximum) , 1.7 A (120 V AC) / 1.8 A (120 V AC, maximum)
Input fuse	6.3 A (slow-blow, internal)
Reliable backup fuse, circuit breaker	B6 , B10 , B16
Output data	
Nominal output voltage	24 V DC
Output current	5 A
Can be connected in parallel/series	No / No
Buffer period	20 min. (5 A)
Max. power dissipation (normal mode / buffer mode)	16 W / 4 W
Efficiency	> 88 % (230 V AC, mains operation) / > 86 % (120 V AC, mains operation) / > 86 % (Battery operation)
Signaling	
Interfaces	IFS (Interface system data port)
Signaling Power OK	LED
Signaling alarm	LED, active switching output
Signaling battery charge	LED, active switching output
Signaling battery mode	LED, active switching output
General data	
Storage medium	External, battery 1.3 Ah / 3.4 Ah / 7.2 Ah / 12 Ah
Weight / Dimensions W x H x D	1.1 kg / 60 x 130 x 118 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	Screw connection
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / I
MTBF (IEC 61709, SN 29500)	> 596000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating: 2.5%/K)
Standards/regulations	
Insulation voltage input/output	2 kV (routine test) / 4 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)
UL approvals	UL/C-UL listed UL 508 , UL/C-UL Recognized UL 60950

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible			
	TRIO-UPS/1AC/24DC/ 5	2866611	1

UPS module with integrated power supply

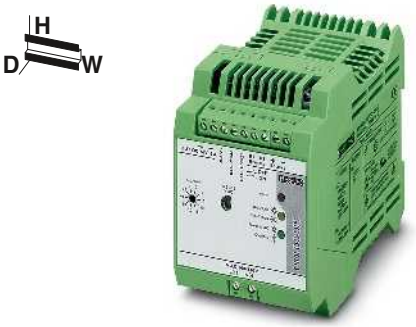
MINI-UPS 24 V DC and 12 V DC

The MINI UPS combines the power supply and the UPS module in the same housing in a particularly space-saving way.

Notes:

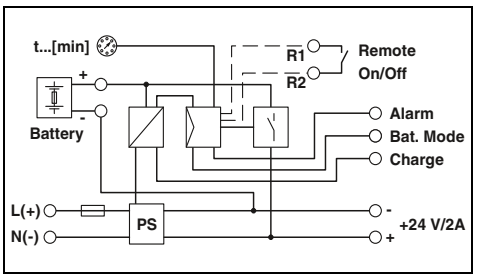
With the MINI-DC-UPS/12DC/4, buffer times are double those of the MINI-DC-UPS/24DC/2.

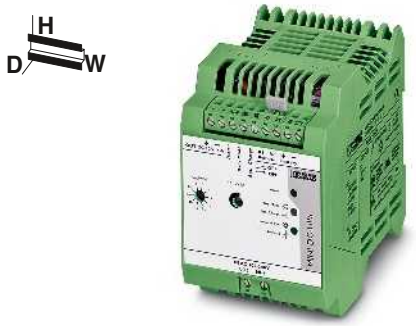
The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 293.



UPS with integrated power supply, 100 - 240 V AC / 24 V DC, 2 A

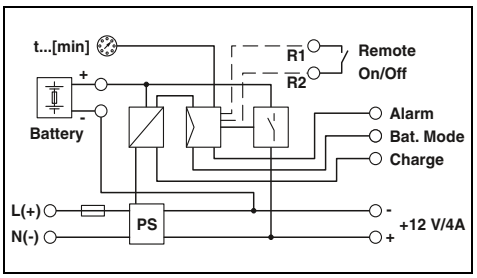
Ex:





UPS with integrated power supply, 100 - 240 V AC / 12 V DC, 4 A

Ex:



	Technical data	Technical data
Input data		
Nominal input voltage range	100 V AC ... 240 V AC	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC / 100 V DC ... 350 V DC	85 V AC ... 264 V AC / 100 V DC ... 350 V DC
Max. current consumption in normal mode	0.6 A / 0.85 A (230 V AC) , 1.1 A / 1.5 A (120 V AC)	0.5 A / 0.65 A (230 V AC) , 1.15 A / 1.35 A (120 V AC)
Input fuse	3.15 A (slow-blow, internal)	3.15 A (slow-blow, internal)
Reliable backup fuse, circuit breaker	B6 , B10 , B16	B6 , B10 , B16
Output data		
Nominal output voltage	24 V DC (AC input voltage available: 22.5 to 29.5 V DC, AC input voltage not available: 27.9 to 19.2 V DC)	12 V DC (AC input voltage available: 10 to 16 V DC, AC input voltage not available: 13.6 to 9.6 V DC)
Output current	2 A	4 A
Can be connected in parallel/series	No / yes	No / yes
Buffer period	20 min. (2 A)	20 min. (4 A)
Max. power dissipation (idling / normal mode / buffer mode)	3.8 W / 10.1 W / 2.1 W	1.6 W / 10.5 W / 2.6 W
Efficiency	> 83 %	> 82 %
Signaling		
Signaling Power OK	LED	LED
Signaling alarm	LED, active switching output	LED, active switching output
Signaling battery charge	LED, active switching output	LED, active switching output
Signaling battery mode	LED, active switching output	LED, active switching output
General data		
Storage medium	External, battery 0.8 Ah / 1.3 Ah	External, rechargeable battery 1.6 Ah / 2.6 Ah
Weight / Dimensions W x H x D	0.45 kg / 67.5 x 99 x 107 mm	0.45 kg / 67.5 x 99 x 107 mm
Mounting position	horizontal DIN rail NS 35, EN 60715	horizontal DIN rail NS 35, EN 60715
Assembly instructions	Can be aligned: Horizontally 0 mm, vertically 50 mm	Can be aligned: Horizontally 0 mm, vertically 50 mm
Connection method	COMBICON plug-in screw connections	COMBICON plug-in screw connections
Input connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Output connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Signal connection data (solid/stranded/AWG)	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12	0.2 - 2.5 mm² / 0.2 - 2.5 mm² / 24 - 12
Degree of protection / Protection class	IP20 / II	IP20 / II
MTBF (IEC 61709, SN 29500)	> 753000 h (40°C)	> 728000 h (40°C)
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)	-25 °C ... 70 °C (> 60 °C derating: 2.5%/K)
Standards/regulations		
Insulation voltage input/output	2 kV (routine test) / 4 kV (type test)	2 kV (routine test) / 4 kV (type test)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU	Conformance with EMC Directive 2014/30/EU
Electrical safety, safety transformer	EN 60950-1/VDE 0805 (SELV)	EN 60950-1/VDE 0805 (SELV)
Electronic equipm. for electrical power installations	EN 50178/VDE 0160 (PELV)	EN 50178/VDE 0160 (PELV)
UL approvals	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)	UL Listed UL 508 , UL/C-UL Recognized UL 60950 , UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Power supply, uninterruptible						
	MINI-DC-UPS/24DC/2	2866640	1	MINI-DC-UPS/12DC/4	2866598	1

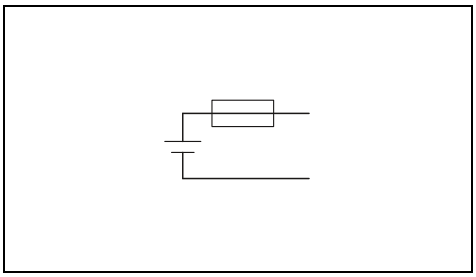
Energy storage for TRIO UPS

MINI-BAT, QUINT-BAT

MINI-BAT and QUINT BAT for maximum buffer times
– Lead AGM (Absorbent Glass Mat) technology
– Ambient temperatures from 0 to +40°C

Energy storage, 24 V DC, 1.3 Ah for TRIO UPS and MINI UPS 2 A

EAC
Ex:



Technical data

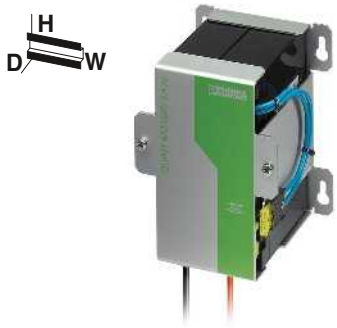
Input data/output data	
Nominal capacity	1.3 Ah
Nominal output voltage	24 V DC
Output current	15 A
Can be connected in parallel/series	Yes / No
General data	
Weight / Dimensions W x H x D	1.7 kg / 52 x 130 x 110 mm
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	0 °C ... 40 °C
Service life	6 years ... 9 years (20 °C) 6 months (20 °C ... 30 °C) 3 months (30 °C ... 40 °C)

Ordering data

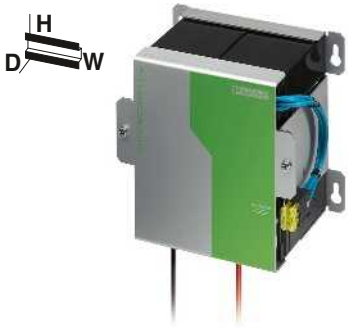
Description	Type	Order No.	Pcs./Pkt.
Energy storage			
	MINI-BAT/24DC/1.3AH	2866417	1

Accessories

Fuse	**FUSE 15A/32V FKS ATO**	2908361	2

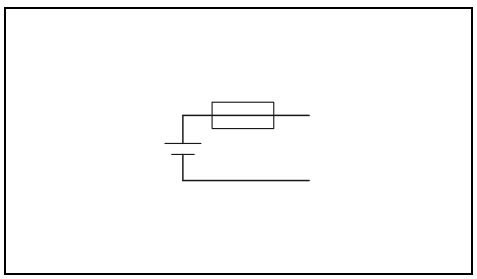


Energy storage, 24 V DC, 3.4 Ah for TRIO UPS



Energy storage, 24 V DC, 7.2 Ah for TRIO UPS

Energy storage, 24 V DC, 12 Ah for TRIO UPS



Technical data

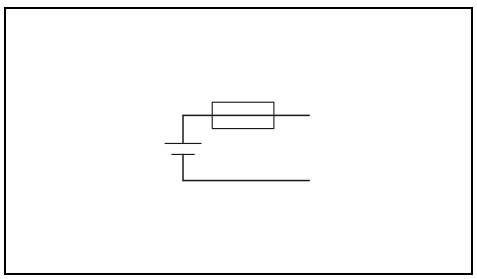
3.4 Ah
24 V DC
25 A
Yes / No
3.5 kg / 112 x 145 x 123 mm
IP20 / -
0 °C ... 40 °C
6 years ... 9 years (20 °C)
9 months (20 °C ... 30 °C)
6 months (30 °C ... 40 °C)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-BAT/24DC/ 3.4AH	2866349	1

Accessories

FUSE 25A/32V ATOF	2908366	2



Technical data

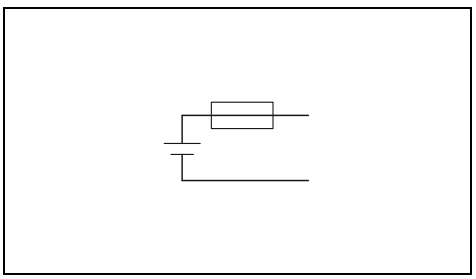
7.2 Ah
24 V DC
50 A
Yes / No
6 kg / 164 x 156 x 110 mm
IP20 / III
0 °C ... 40 °C
6 years ... 9 years (20 °C)
9 months (20 °C ... 30 °C)
6 months (30 °C ... 40 °C)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-BAT/24DC/ 7.2AH	2866352	1

Accessories

FUSE 25A/32V ATOF	2908366	2



Technical data

12 Ah
24 V DC
50 A
Yes / No
9 kg / 231 x 156 x 110 mm
IP20 / III
0 °C ... 40 °C
6 years ... 9 years (20 °C)
9 months (20 °C ... 30 °C)
6 months (30 °C ... 40 °C)

Ordering data

Type	Order No.	Pcs./Pkt.
QUINT-BAT/24DC/12AH	2866365	1

Accessories

FUSE 25A/32V ATOF	2908366	2

Energy storage for MINI UPS

MINI-BAT

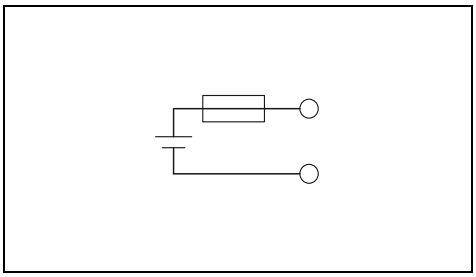
MINI-BAT for maximum buffer times
– Lead AGM (Absorbent Glass Mat) technology
– Ambient temperatures from 0 to +40°C

Notes:

The buffer time associated with your solution is dependent on the load current. Exact details for each uninterruptible power supply can be found on page 293.

Energy storage, 24 V DC, 0.8 Ah for MINI UPS 2 A

Ex:



Technical data

Input data/output data	
Nominal capacity	0.8 Ah
Nominal output voltage	24 V DC
Output current	5 A
Can be connected in parallel/series	Yes / No
General data	
Weight / Dimensions W x H x D	0.9 kg / 67.5 x 99 x 107 mm
Degree of protection / Protection class	IP20 / III
Ambient temperature (operation)	0 °C ... 40 °C
Service life	4 years (20 °C) 6 months (20 °C ... 30 °C) 3 months (30 °C ... 40 °C)
Latest startup	

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Energy storage			
	MINI-BAT/24DC/0.8AH	2866666	1

Accessories

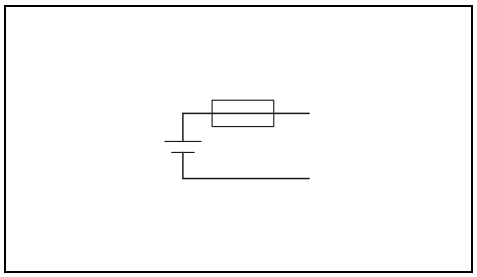
Fuse	**FUSE 5A/32V FK-1**	2908367	2

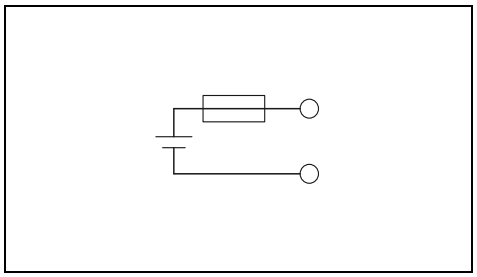
Energy storage, 24 V DC, 1.3 Ah for TRIO UPS and MINI UPS 2 A

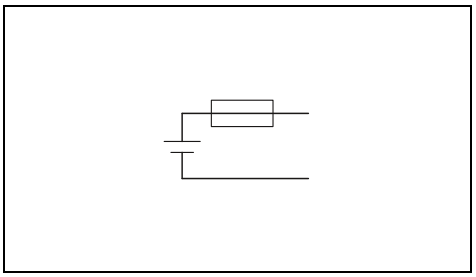
Energy storage 12 V DC, 1.6 Ah for MINI UPS 4 A

Energy storage 12 V DC, 2.6 Ah for MINI UPS 4 A

EAC
Ex:







Technical data

1.3 Ah 24 V DC 15 A Yes / No	1.6 Ah 12 V DC 10 A Yes / No	2.6 Ah 12 V DC 15 A Yes / No
1.7 kg / 52 x 130 x 110 mm IP20 / III 0 °C ... 40 °C 6 years ... 9 years (20 °C) 6 months (20 °C ... 30 °C) 3 months (30 °C ... 40 °C)	0.9 kg / 67.5 x 99 x 107 mm IP20 / III 0 °C ... 40 °C 4 years (20 °C) 6 months (20 °C ... 30 °C) 3 months (30 °C ... 40 °C)	1.7 kg / 52 x 130 x 110 mm IP20 / III 0 °C ... 40 °C 6 years ... 9 years (20 °C) 6 months (20 °C ... 30 °C) 3 months (30 °C ... 40 °C)

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-BAT/24DC/1.3AH	2866417	1

Accessories

FUSE 15A/32V FKS ATO	2908361	2

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-BAT/12DC/1.6AH	2866572	1

Accessories

FUSE 10A/32V FK1	2908364	2

Ordering data

Type	Order No.	Pcs./Pkt.
MINI-BAT/12DC/2.6AH	2866569	1

Accessories

FUSE 25A/32V FKS	2908363	2

12A
SFB
4A
on
off
CBMC 1 – 10 A
OUT+
IN–
IN+
SIGNALS
DC OK
RST
I > 80%
WARRANTY VOID IF REMOVED
PHOENIX CONTACT

Device circuit breakers

High-quality device circuit breakers provide optimum system protection

Thermomagnetic and electronic device circuit breakers are a key factor in maximizing system availability. In the event of overload and short-circuit currents, they selectively shut down the faulty circuit.

Your web code: #0156

Basics	**308**
Multi-channel device circuit breakers	**310**
Selection guide	**312**
Applications	**313**
CBM electronic circuit breakers	**314**
CBMC electronic circuit breakers	**316**
Single-channel device circuit breakers	**318**
Selection guide	**320**
Applications	**321**
Electronic circuit breakers	**322**
Thermomagnetic circuit breakers	**328**
Thermal circuit breakers	**334**

Why device circuit breakers?

Overload currents and short-circuit currents are usually unexpected. They cause malfunctions and interruptions to the ongoing operation of a system. Production downtimes and repair costs can often be the unfortunate consequences.

Minimize damage by protecting individual devices or device groups separately. In this way, terminal devices are optimally protected against damage or destruction. System parts which are not in the affected circuit continue to operate without interruption, insofar as the overall process allows.

Overload currents

Overload currents occur if terminal devices unexpectedly require a higher current than the rated current provided. Such situations may arise, for example, due to a blocked drive. Temporary starting currents from machines are also considered to be overload currents. The occurrence of these can essentially be calculated, but nonetheless can vary depending upon the machine load at the moment it starts.

When selecting suitable fuses or circuit breakers for such circuits, these conditions should be taken into account. Safe shutdown should occur in the seconds to minute range.

Short-circuit currents

Short circuits may occur in the case of damage to the insulation between conductors, which carry operating voltage. Typical protective devices for shutting down short-circuit currents include fuses or miniature circuit breakers with various tripping mechanisms.

Short-circuit currents should be reliably shut down in the milliseconds range.

Selecting the right device circuit breakers

The demands placed on optimum device protection vary depending on the area of application. Device circuit breakers therefore work with a wide range of technologies: electronic, thermal, and thermomagnetic. The differences are in the tripping technology and shutdown behavior used. Characteristic curves clearly illustrate the switch-off characteristics of the various device circuit breakers.

Device circuit breakers are selected based on the nominal voltage, nominal current, and, if required, the starting current of a terminal device. The expected error situation (short circuit or overload) then determines the appropriate shutdown behavior.

Your web code: #1253

The right protection for a circuit

The right choice of protective device ensures safe operation of electrical systems and high system availability.

Circuit breakers protect current distribution cables in buildings or systems. It is only in the event of a short circuit in a terminal device that they switch off to protect the power supply line in the event of overload. The circuit breakers have a high switching capacity of upwards of 6 kA.

As the last protection stage for terminal devices, thermomagnetic and electronic circuit breakers offer the most effective short-circuit and overload protection. If individual loads or small function groups are protected individually, then unaffected system parts can continue to work in the event of an error, insofar as the overall process allows.

If a new circuit is installed, appropriate protection for the terminal device provided must be sought immediately. During installation, cable lengths and conductor cross sections must also be observed. The cables must be designed for the expected operating current, but should also be able to deal with any potential overload and short-circuit currents. Within the scope of graded protection of system areas, the selectivity between the individual fuses or protective devices must be retained. This ensures higher system availability as only the faulty circuit is switched off.

It is advisable to make device circuit breakers easily accessible when installed in control cabinets so that they can be switched on again quickly and without problems after tripping. In addition, a control cabinet should not contain too many components, as this can cause an overload in the power supply. Furthermore, a sufficient air flow and cooling process should be ensured. This enables incorrect tripping to be prevented.

Influence of cable lengths on shutdown behavior

In the event of an error, long cable paths limit the required tripping current. They can delay or even prevent shutdown.

The maximum cable lengths that can be used between a power supply and a terminal device are defined by the following criteria:

– The maximum current of the power supply
– The internal resistance of the circuit breaker
– The cable resistance

The cable resistance is dependent on the cable length and conductor cross section. For this reason, as a general rule, the shortest cable path should be selected during installation.

The length and cross section determine the switch-off conditions for a device circuit breaker.

Cable resistance counteracts a short-circuit current. In the event of low voltage sources, a short-circuit current can be limited by the cable resistance in such a way that safety equipment no longer recognizes this current as a short-circuit current. In the case of circuit breakers with C characteristics, for example, the upper tripping limit is significantly higher than the nominal current. For this reason, a delayed shutdown is highly likely in the event of a short circuit when using this safety equipment.

Optimized protective devices with SFB characteristics or active current limitation detect at an early stage whether the nominal current has been exceeded.

Multi-channel electronic circuit breakers

Safely protect against overload and short-circuit currents in a space-saving way. Thanks to multi-channel device circuit breakers, you can protect multiple circuits with just one single device, even in confined spaces. All channels can be individually adjusted and can therefore be adjusted as required to the connected loads. An integrated electronic interlock secures and protects the parameters you have set from unwanted changes. Push-in connection technology enables quick and tool-free installation of the devices.

All devices provide constant status checks on the individual channels. The multi-stage status indicator reliably informs you of the current status of the circuit. An early warning is also emitted that indicates utilization over 80%. All devices also have a remote indication contact.

Thanks to electronic tripping in the event of a short circuit, the faulty channels are switched off particularly quickly and precisely.

CBMC compact device circuit breaker

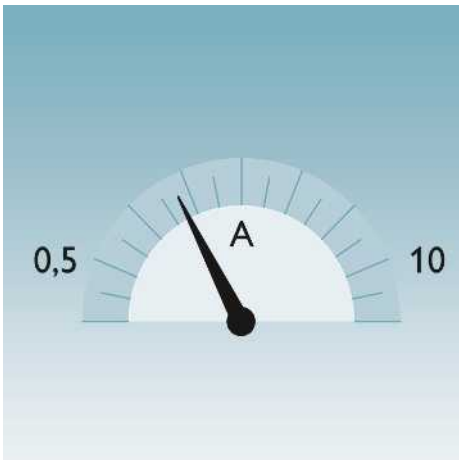
With the compact device circuit breakers, you can protect four channels with just one device. The product range offers two versions with setting options for the nominal current from 1 A to 4 A or 1 A to 10 A. The 1-4 A version provides optimum protection for cables and sensors as well as NEC class 2 circuits by means of an adjusted internal output fuse.

The device circuit breakers can be ordered preconfigured. This means the devices are tailored exactly to your system and can be installed and connected directly.

CBM highly functional device circuit breaker

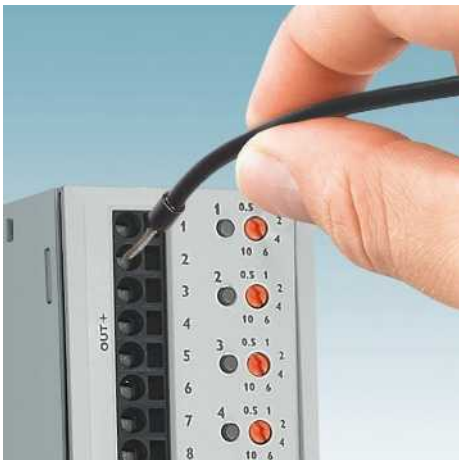
The CBM device circuit breakers protect four or eight channels. Both devices protect nominal currents up to 10 A. A nominal current assistant helps you to correctly adjust the channels and makes installation especially easy. The CBM has a Reset IN connection, so that disconnected channels can be switched back on again remotely. Furthermore, the device provides the option of signaling utilization over 80% via the remote indication contact.

Thanks to the active current limitation, the current does not exceed a set threshold value in the event of a short circuit. This reduces the load on the power supply, thereby preventing a voltage drop.



Incremental adjustment

The multi-channel electronic circuit breakers have fine nominal current grading. The CBM can be adjusted in increments from 0.5 A to 10 A, the CBMC from 1 A to 4 A or 10 A, and set individually to the nominal currents of the connected terminal devices.

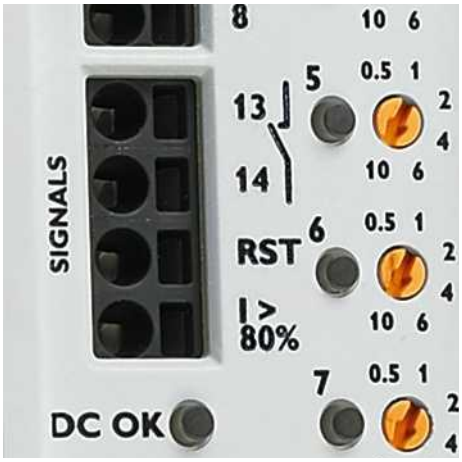


Fast connection

Easy and tool-free direct plug-in. Push-in connection technology enables easy and direct insertion of solid and stranded conductors without the need for great force.

Easy to configure

Configuring the CBM could not be easier with the new nominal current assistant. It enables optimal adjustment of the load currents.



Analysis and signaling

The currents flowing are constantly monitored. As such, the CBM not only provides the floating signal contact, but also an 80% output. Consequently, you receive a message when at least one channel is heavily overloaded. The disconnected channel can then be easily switched back on remotely via the Reset IN signal input.

Very compact

The CBMC protects four circuits against overload and short-circuit currents on just 36 mm. Thanks to adjustable nominal currents of 1 A to 4 A or 10 A in a single device, storage costs are reduced while simultaneously increasing flexibility for system planning.

Can be ordered preconfigured

Order the CBMC device circuit breaker that is already configured for your system. This means the device can be used immediately, without further configuration effort. The preconfigured devices are also available with fixed, preprogrammed nominal current values.

Selection guide

CMB circuit breakers

24 V DC
0.5 A ... 10 A
4 channels

Page 314

24 V DC
0.5 A ... 10 A
8 channels

Page 314

CBMC circuit breakers

24 V DC
1 A ... 4 A
4 channels

Page 316

24 V DC
1 A ... 10 A
4 channels

Page 316

24 V DC
1 A ... 4 A
4 channels
Can be ordered preconfigured

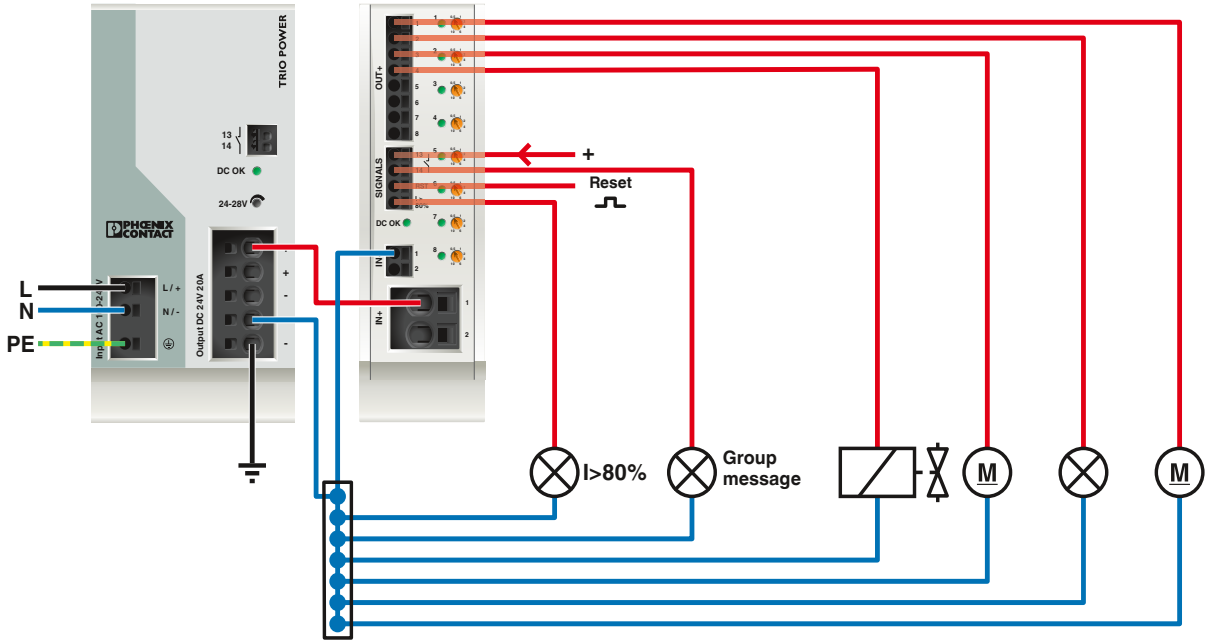
Page 317

24 V DC
1 A ... 10 A
4 channels
Can be ordered preconfigured

Page 317

Applications

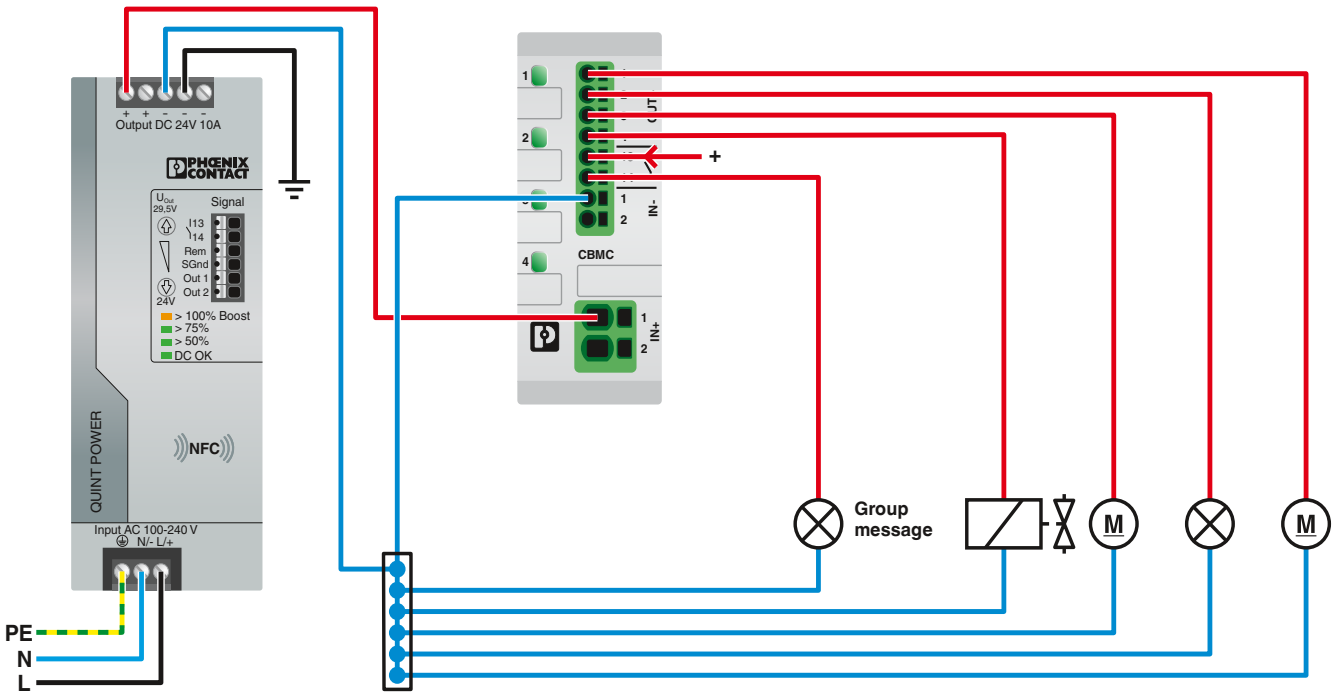
CBM device circuit breakers



CBM

Page 314

CBMC device circuit breakers



CBMC

Page 316

CBM electronic circuit breakers

- For protection against voltage dips caused by overload and short circuit
- Adjustable from 0.5 - 10 A
- Integrated dynamic current limitation
- Supply up to 80 A possible
- Slim design

Notes:

For additional technical data, drawings, and accessories, please visit phoenixcontact.net/products.

DIN-rail-mountable, 4-channel

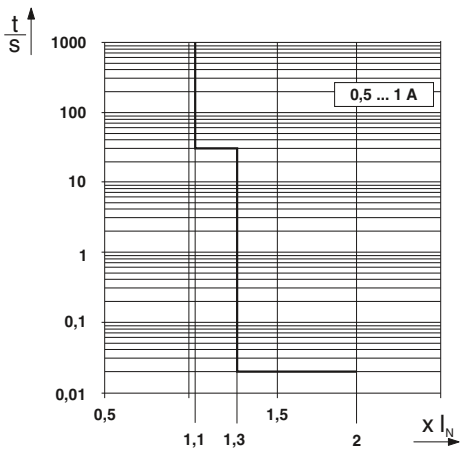
DIN-rail-mountable, 8-channel

Ex:

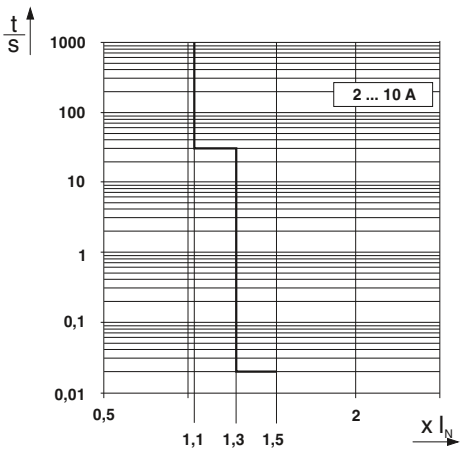
Ex:

	Technical data	Technical data
Electrical data		
Rated voltage	24 V DC	24 V DC
Rated current I_N	max. 40 A DC	max. 80 A DC (for double supply IN+ with at least 2 x 6 mm²)
Rated current I_N	0.5 / 1 / 2 / 4 / 6 / 10 A DC (adjustable per output channel)	0.5 / 1 / 2 / 4 / 6 / 10 A DC (adjustable per output channel)
Switch-on delay	0.1 s (per output channel)	0.1 s (per output channel)
Max. capacitive load	75000 µF (per channel at 24 V DC)	75000 µF (per channel at 24 V DC)
Internal output fuse	15 A DC (per output channel)	15 A DC (per output channel)
Active current limitation	Typ. 2.0 x I_N (0.5 - 1 A) / Typ. 1.5 x I_N (2 - 10 A)	Typ. 2.0 x I_N (0.5 - 1 A) / Typ. 1.5 x I_N (2 - 10 A)
Load circuit		
Shutdown time	0.02 s (> 1.3 x I_N) / 30 s (1.1 ... 1.3 x I_N)	0.02 s (> 1.3 x I_N) / 30 s (1.1 ... 1.3 x I_N)
Reset input		
Input voltage range	7 V DC ... 30 V DC (Falling edge)	7 V DC ... 30 V DC (Falling edge)
General data		
Dimensions W/H/D	41 mm / 130 mm / 121 mm	41 mm / 130 mm / 121 mm
Ambient temperature (operation)	-25 °C ... 70 °C (Startup at -40 C type-tested)	-25 °C ... 70 °C (Startup at -40 C type-tested)
Standards/regulations	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-6 / EN 60068-2-11	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-6 / EN 60068-2-11
Remote indication contact		
DC operating voltage	0 V DC ... 30 V DC	0 V DC ... 30 V DC
DC operating current	1 mA DC ... 100 mA	1 mA DC ... 100 mA DC

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Circuit breaker						
	CBM E4 24DC/0.5-10A NO-R	2905743	1	**CBM E8 24DC/0.5-10A NO-R**	2905744	1



Tripping characteristic in the DC range



Tripping characteristic in the DC range

CBMC electronic circuit breakers

- For protection against voltage dips caused by overload and short circuit
- Adjustable in 1 A increments up to max. 10 A
- Compact design
- Suitable for NEC class 2 applications

Notes:

For additional technical data, drawings, and accessories, please visit phoenixcontact.net/products.

new

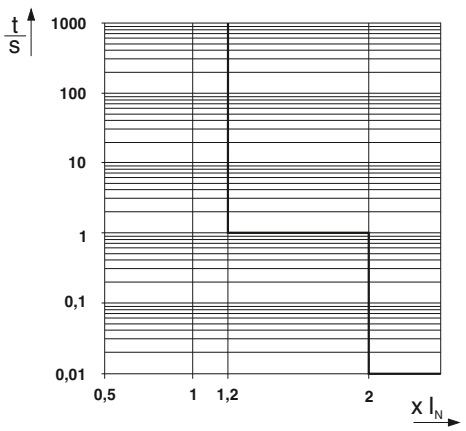
DIN-rail-mountable, 4-channel

new

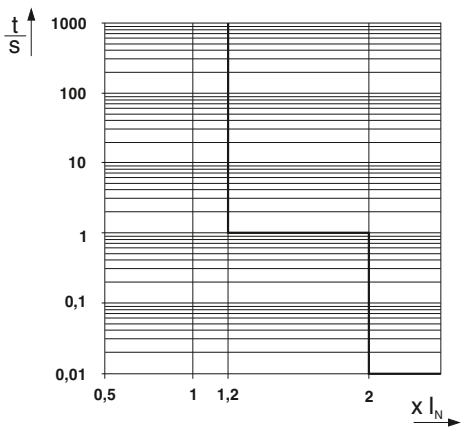
DIN-rail-mountable, 4-channel

	Technical data	Technical data
Electrical data		
Rated voltage	24 V DC	24 V DC
Rated current I_N	max. 16 A DC	max. 40 A DC
Rated current I_N	1 / 2 / 3 / 4 A DC (adjustable per output channel)	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 A DC (adjustable per output channel)
Switch-on delay	0.1 s (Cascaded per output channel)	0.1 s (Cascaded per output channel)
Max. capacitive load	30000 µF (Depending on the current setting and the short-circuit current available)	45000 µF (Depending on the current setting and the short-circuit current available)
Internal output fuse	4 A DC (per output channel)	15 A DC (per output channel)
Active current limitation	-	-
Load circuit		
Shutdown time	≤ 10 ms (for short circuit > 2.0 x I_N) / 1 s (1.2 ... 2.0 x I_N)	≤ 10 ms (for short circuit > 2.0 x I_N) / 1 s (1.2 ... 2.0 x I_N)
General data		
Dimensions W/H/D	36 mm / 90 mm / 98 mm	36 mm / 90 mm / 98 mm
Ambient temperature (operation)	-25 °C ... 60 °C	-25 °C ... 60 °C
Standards/regulations	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-78 / UL 508	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-78 / UL 508
Remote indication contact		
DC operating voltage	0 V DC ... 30 V DC	0 V DC ... 30 V DC
DC operating current	100 mA DC	100 mA DC

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Circuit breaker						
	CBMC E4 24DC/1-4A NO	2906031	1	**CBMC E4 24DC/1-10A NO**	2906032	1



Tripping characteristic in the DC range



Tripping characteristic in the DC range

new

**DIN-rail-mountable,
4-channel, preconfigurable**

new

**DIN-rail-mountable,
4-channel, preconfigurable**

	Technical data	Technical data
Electrical data		
Rated voltage	24 V DC	24 V DC
Rated current I_N	max. 16 A DC	max. 40 A DC
Rated current I_N	1 / 2 / 3 / 4 A DC (Adjustable or fixed per output channel)	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 A DC (Adjustable or fixed per output channel)
Switch-on delay	0.1 s (Cascaded per output channel)	0.1 s (Cascaded per output channel)
Max. capacitive load	30000 µF (Depending on the current setting and the short-circuit current available)	45000 µF (Depending on the current setting and the short-circuit current available)
Internal output fuse	4 A DC (per output channel)	15 A DC (per output channel)
Active current limitation	-	-
Load circuit		
Shutdown time	≤ 10 ms (for short circuit > 2.0 x I_N) / 1 s (1.2 ... 2.0 x I_N)	≤ 10 ms (for short circuit > 2.0 x I_N) / 1 s (1.2 ... 2.0 x I_N)
General data		
Dimensions W/H/D	36 mm / 90 mm / 98 mm	36 mm / 90 mm / 98 mm
Ambient temperature (operation)	-25 °C ... 60 °C	-25 °C ... 60 °C
Standards/regulations	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-78 / UL 508	EN 61000-6-2 / EN 61000-6-3 / EN 60068-2-78 / UL 508
Remote indication contact		
DC operating voltage	0 V DC ... 30 V DC	0 V DC ... 30 V DC
DC operating current	100 mA DC	100 mA DC

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Circuit breaker						
	CBMC E4 24DC/1-4A NO-C	2908713	1	**CBMC E4 24DC/1-10A NO-C**	2908716	1

Order key for the device circuit breaker: CBMC E4 24DC/1-4A NO-C

Order No.	Adjustability	Channel 1	Channel 2	Channel 3	Channel 4
2908713	ADJ	1	3	1	4
	ADJ – adjustable FIX – not adjustable	Select the current value in amperes individually for each channel 1 ... 4			

Order key for the device circuit breaker: CBMC E4 24DC/1-10A NO-C

Order No.	Adjustability	Channel 1	Channel 2	Channel 3	Channel 4
2908716	ADJ	1	5	8	10
	ADJ – adjustable FIX – not adjustable	Select the current value in amperes individually for each channel 1 ... 10			

Branch out

The device circuit breakers provide reliable protection even in systems with long cable paths. Together with the SFB Technology* of the QUINT POWER power supplies, the special SFB tripping characteristic of the CB device circuit breakers ensures fast shutdown in the event of an error. This combination offers maximum protection against overload and short-circuit currents.

*SFB = Selective Fuse Breaking, selective shutdown

Modular extension

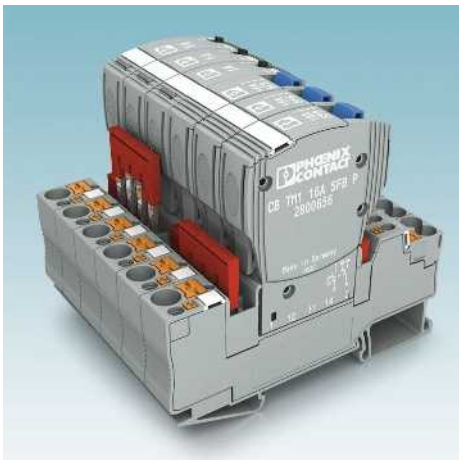
It couldn't be easier. A system can be extended with additional device circuit breakers in no time at all. You can bridge the power distribution, remote signaling or even the auxiliary voltage for electronic circuit breakers without this resulting in significant wiring costs. The uniform, plug-in housing concept as well as the bridgeability of the base elements simplify installation.

Individual adaptation

Systems and control cabinets can be pre-wired with base elements and individually fitted with corresponding protective plugs on site. Should the demands on a load change in the meantime, you can simply replace the protective plug in question. Various tripping methods, tripping characteristics, and nominal currents are available depending on the application.

Latching

The new locking mechanism ensures a secure hold in harsh environments and where there are vibrations in the installation environment. It holds the plug securely in the base element. The plugs can be removed from the base element quickly and easily by simply applying light pressure to the locking mechanism.

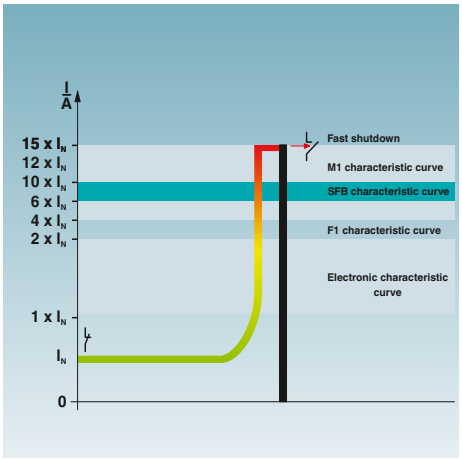


Bridge

With the unique bridge system from our standard range, the device circuit breakers can be combined easily as per your requirements. Potentials of the same type can be connected quickly and safely.

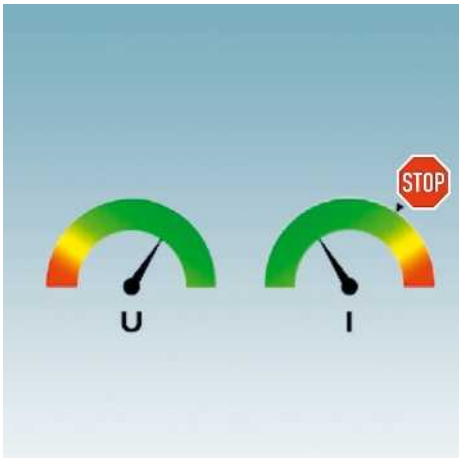
Variable connection technologies

Base elements are available with conventional screw connection technology or quick-to-wire Push-in connection technology.



SFB tripping characteristic

Thermomagnetic device circuit breakers with the SFB tripping characteristic* provide maximum overcurrent protection – even in large systems with long cable paths.



Active current limitation

The active current limitation of electronic device circuit breakers restricts short-circuit and overload currents to a value that is 1.25 to 2 times the nominal current. This protects the power supply against excessively high currents and prevents the output voltage dipping at the switched-mode power supply unit. In addition, longer cable paths between the power supply and load are possible without negatively impacting the shutdown behavior.

Single-channel device circuit breakers

Selection guide

Electronic device circuit breakers

CB E1	ECP-E	ECP	EC-E
24 V DC 1 A ... 10 A	**24 V DC** 1 A ... 12 A	**24 V DC** 1 A ... 10 A	**24 V DC** 0.5 A ... 12 A
Page 322	Page 324	Page 325	Page 326

Thermomagnetic device circuit breakers

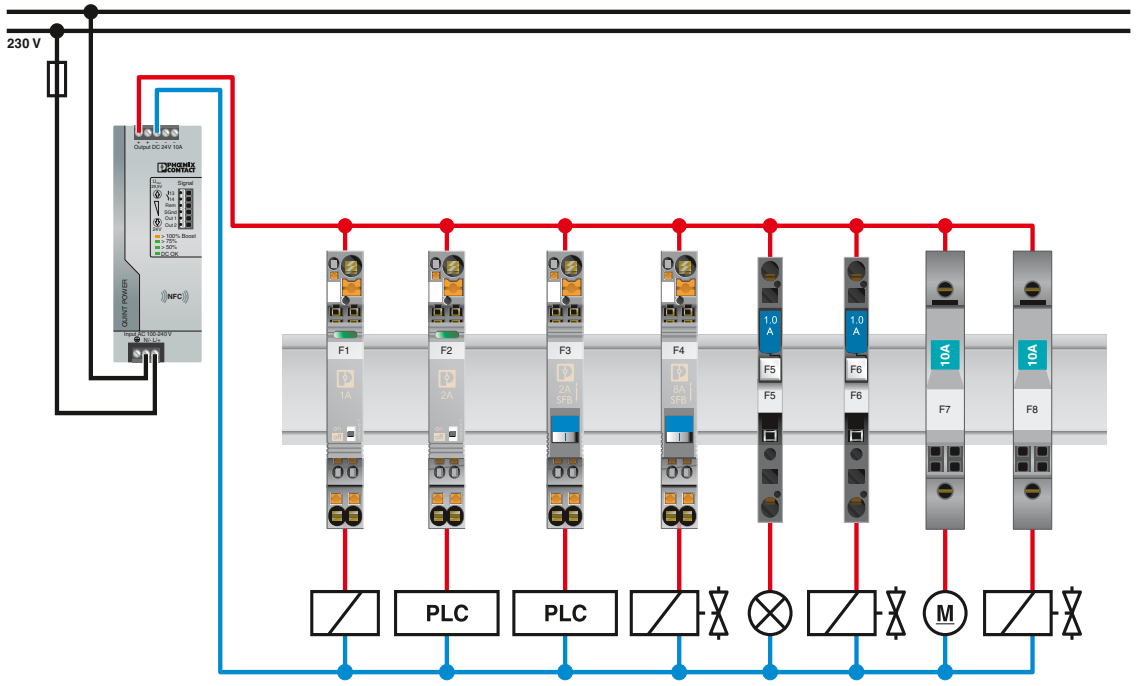
CB TM	UT6-TMC	TMC
50 V DC **277 V AC** 0.5 A ... 16 A	**28 V DC** **240 V AC** 0.5 A ... 16 A	**65 V DC** **250 V AC** 0.2 A ... 16 A
Page 328	Page 332	Page 333

Thermal device circuit breakers

TCP.../DC	TCP
32 V DC 5 A ... 40 A	**65 V DC** **250 V AC** 0.25 A ... 10 A
Page 334	Page 335

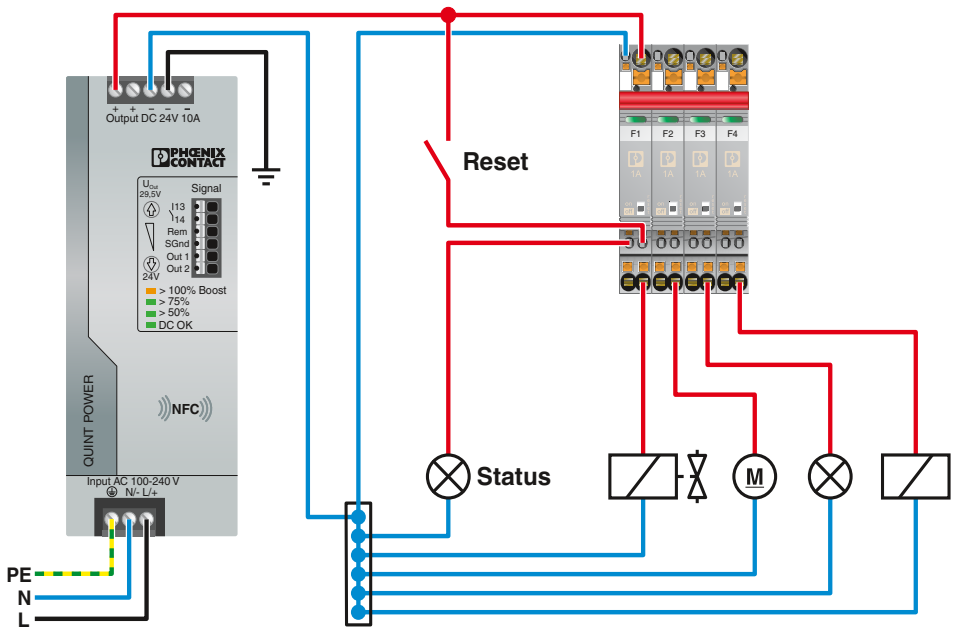
Applications

Protecting 24 V loads



CB E1...	CB-TM1...	TCP...	UT 6-TMC...
Page 322	Page 328	Page 335	Page 332

Enhanced functionality through digital signals



CB E1...
Page 322

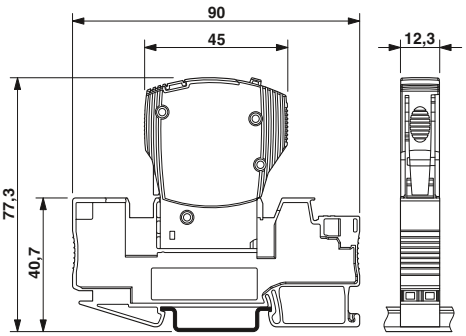
Plug-in electronic circuit breakers

- Device circuit breakers for protecting against voltage dips caused by overloads and short circuits
- Integrated active current limitation
- Remote control possible
- Maximum ease of maintenance thanks to the two-piece design
- Snap-in function for secure hold and easy removal
- Plug coding possible
- Slim design

Notes:

In conjunction with order numbers 2800929 and 2801305, the items also satisfy UL 508.

For additional technical data, drawings, and accessories, please visit phoenixcontact.net/products.



The figure shows the complete module consisting of a base element and plug

1 N/O contact

Total width 12.3 mm

Technical data

Electrical data	
Operating voltage	24 V DC
Nominal current I_N	Depends on the product version selected
Disconnection	
Switch-off time	See tripping characteristic
Active current limitation	typ. 1.25 x I_N
General data	
Ambient temperature (operation)	-25 °C ... 50 °C (non-condensing)
Degree of protection	IP30 (Actuation area)
Standards/regulations	UL 2367 / UL 508 / EN 61000-6-3 / EN 61000-6-2

Ordering data

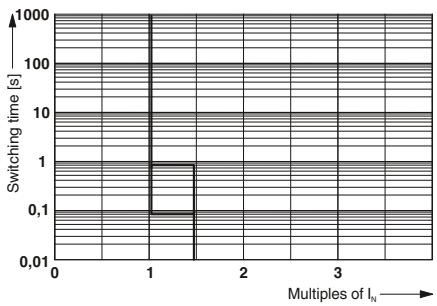
Description	Nominal current	Type	Order No.	Pcs./Pkt.
Electronic circuit breaker, 1-pos.				
	1 A	**CB E1 24DC/1A NO P**	**2800901**	1
	2 A	**CB E1 24DC/2A NO P**	**2800902**	1
	3 A	**CB E1 24DC/3A NO P**	**2800903**	1
	4 A	**CB E1 24DC/4A NO P**	**2800904**	1
	6 A	**CB E1 24DC/6A NO P**	**2800905**	1
	8 A			
	10 A			

Accessories

Bridge plug, 0 volt distribution			
	CB PT BRIDGE	**2801014**	1
Base element			
With Push-in connection technology	**CB 1/6-2/4 PT-BE**	**2800929**	10
With screw connection technology	**CB 1/10-1/10 UT-BE**	**2801305**	10
For the PCB	**CB S-BE**	**2905067**	30

Plug-in bridge, for cross connections in the bridge shaft

For FBS ..., see page 331



Tripping characteristic

1 N/C contact

Total width 12.3 mm

Technical data

24 V DC
Depends on the product version selected
See tripping characteristic
typ. 1.25 x I_N
-25 °C ... 50 °C (non-condensing)
IP30 (Actuation area)
UL 2367 / UL 508 / EN 61000-6-3 / EN 61000-6-2

Ordering data

Type	Order No.	Pcs./Pkt.
CB E1 24DC/1A NC P	**2800915**	1
CB E1 24DC/2A NC P	**2800916**	1
CB E1 24DC/3A NC P	**2800917**	1
CB E1 24DC/4A NC P	**2800918**	1
CB E1 24DC/6A NC P	**2800919**	1

Accessories

CB PT BRIDGE	**2801014**	1
CB 1/6-2/4 PT-BE	**2800929**	10
CB 1/10-1/10 UT-BE	**2801305**	10
CB S-BE	**2905067**	30

For FBS ..., see page 331

1 x Status OUT + 1 x Reset IN

Total width 12.3 mm

Technical data

24 V DC
Depends on the product version selected
See tripping characteristic
typ. 1.25 x I_N
-25 °C ... 50 °C (non-condensing)
IP30 (Actuation area)
UL 2367 / UL 508 / EN 61000-6-3 / EN 61000-6-2

Ordering data

Type	Order No.	Pcs./Pkt.
CB E1 24DC/1A S-R P	**2800908**	1
CB E1 24DC/2A S-R P	**2800909**	1
CB E1 24DC/3A S-R P	**2800910**	1
CB E1 24DC/4A S-R P	**2800911**	1
CB E1 24DC/6A S-R P	**2800912**	1
CB E1 24DC/8A S-R P	**2800913**	1
CB E1 24DC/10A S-R P	**2800914**	1

Accessories

CB PT BRIDGE	**2801014**	1
CB 1/6-2/4 PT-BE	**2800929**	10
CB 1/10-1/10 UT-BE	**2801305**	10
CB S-BE	**2905067**	30

For FBS ..., see page 331

1 x Status OUT + 1 x Control IN

Total width 12.3 mm

Technical data

24 V DC
Depends on the product version selected
See tripping characteristic
typ. 1.25 x I_N
-25 °C ... 50 °C (non-condensing)
IP30 (Actuation area)
UL 2367 / UL 508 / EN 61000-6-3 / EN 61000-6-2

Ordering data

Type	Order No.	Pcs./Pkt.
CB E1 24DC/1A S-C P	**2800922**	1
CB E1 24DC/2A S-C P	**2800923**	1
CB E1 24DC/3A S-C P	**2800924**	1
CB E1 24DC/4A S-C P	**2800925**	1
CB E1 24DC/6A S-C P	**2800926**	1
CB E1 24DC/8A S-C P	**2800927**	1
CB E1 24DC/10A S-C P	**2800928**	1

Accessories

CB PT BRIDGE	**2801014**	1
CB 1/6-2/4 PT-BE	**2800929**	10
CB 1/10-1/10 UT-BE	**2801305**	10
CB S-BE	**2905067**	30

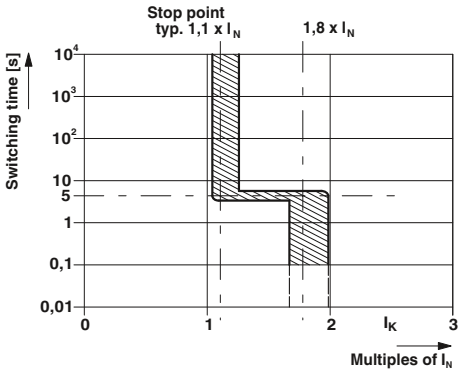
For FBS ..., see page 331

Plug-in electronic circuit breakers

- Device circuit breakers for protecting against voltage dips caused by overloads and short circuits
- Integrated active current limitation
- Remote control possible
- Maximum ease of maintenance thanks to the two-piece design
- Snap-in function for secure hold and easy removal
- Plug coding possible
- Slim design

Notes:

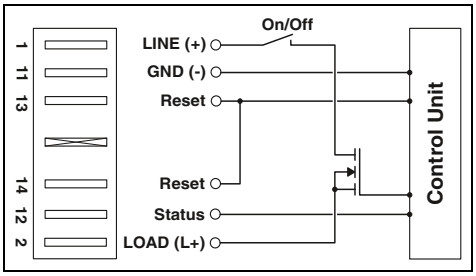
For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.



With reset input and status output

Ex:

Total width 12.5 mm



Technical data

Electrical data	
Operating voltage	24 V DC
Nominal current I_N	Depends on the product version selected
Disconnection	
Switch-off time	See tripping characteristic
Switch off	Typ. 1.8 x I_N
Active current limitation	active
General data	
Temperature range	0 °C ... 50 °C (non-condensing)
Degree of protection	IP30 (Actuation area)
Standards/regulations	UL 2367 / UL 508 / CSA 22.2

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Electronic circuit breaker, can be plugged into TMCP base, signaling via LED				
	1 A	**ECP-E 1A**	0900113	5
	2 A	**ECP-E 2A**	0900210	5
	3 A	**ECP-E 3A**	0900317	5
	4 A	**ECP-E 4A**	0900414	5
	6 A	**ECP-E 6A**	0900618	5
	8 A	**ECP-E 8A**	0900812	5
	10 A	**ECP-E 10A**	0901002	5
	12 A	**ECP-E-12A**	0900126	5
Electronic circuit breaker, as above, but nominal current can be set via a switch, 1 A and 2 A				
	1 A (adjustable)			
Electronic circuit breaker, as above, but nominal current can be set via a switch, 3 A and 6 A				
	3 A (adjustable)			

Accessories

Spring lock, for mechanical locking in the case of overhead mounting, 1-pos.	**SPRING-LOCK**	0713009	10
Modular socket, 2-position, for holding two circuit breakers, each with a single position	**TMCP SOCKET M**	0916589	10
Socket termination elements, can be plugged in both left and right, contain the connections for the reset inputs/group query	**TMCP CONNECT LR**	0916592	3
Signal bridge, pluggable, for bridging group signaling when there is a free slot on the TMCP SOCKET M socket	**TMCP SB**	0916602	6

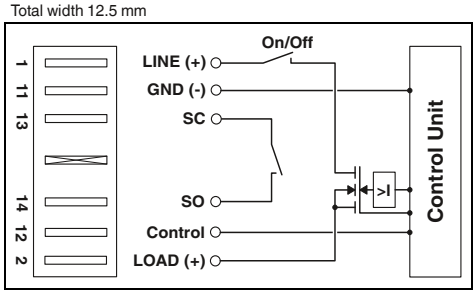
With control input and group request

With reset input and group request

With floating signal contact and electrical isolation

Ex:

Total width 12.5 mm



Technical data

24 V DC	
Depends on the product version selected	
See tripping characteristic	
Typ. 1.8 x I_N	
active	
0 °C ... 50 °C (non-condensing)	
IP30 (Actuation area)	
UL 2367 / UL 508 / CSA 22.2	

Ordering data

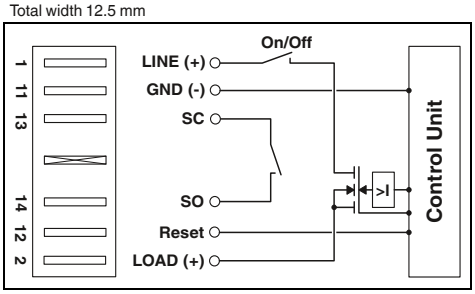
Type	Order No.	Pcs./Pkt.
ECP-E2-1A	0900139	5
ECP-E2-2A	0900236	5
ECP-E2-3A	0900333	5
ECP-E2-4A	0900430	5
ECP-E2-6A	0900634	5
ECP-E2-8A	0900838	5
ECP-E2-10A	0900100	5
ECP-E2-12A	0900207	5

Accessories

SPRING-LOCK	0713009	10
TMCP SOCKET M	0916589	10
TMCP CONNECT LR	0916592	3
TMCP SB	0916602	6

Ex:

Total width 12.5 mm



Technical data

24 V DC	
Depends on the product version selected	
See tripping characteristic	
Typ. 1.8 x I_N	
active	
0 °C ... 50 °C (non-condensing)	
IP30 (Actuation area)	
UL 2367 / UL 508 / CSA 22.2	

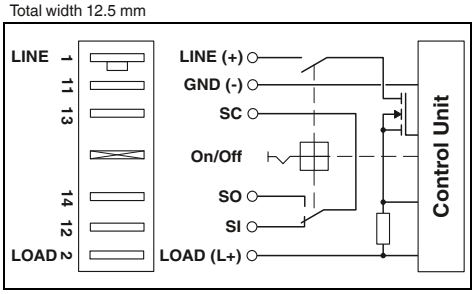
Ordering data

Type	Order No.	Pcs./Pkt.
ECP-E3 1A	0912041	5
ECP-E3 2A	0912042	5
ECP-E3 3A	0912043	5
ECP-E3 4A	0912044	5
ECP-E3 6A	0912046	5
ECP-E3 8A	0912048	5
ECP-E3 10A	0912050	5
ECP-E3 12A	0912052	5

Accessories

SPRING-LOCK	0713009	10
TMCP SOCKET M	0916589	10
TMCP CONNECT LR	0916592	3
TMCP SB	0916602	6

Total width 12.5 mm



Technical data

24 V DC	
Depends on the product version selected	
See tripping characteristic	
Typ. 1.8 x I_N	
active	
0 °C ... 50 °C (non-condensing)	
IP30 (Actuation area)	
-	

Ordering data

Type	Order No.	Pcs./Pkt.
ECP 2	0911034	5
ECP 3	0911047	5
ECP 4	0912034	5
ECP 6	0912033	5
ECP 8	0912019	5
ECP 10	0912020	5
ECP 1-2	0912018	5
ECP 3-6	0916536	5

Accessories

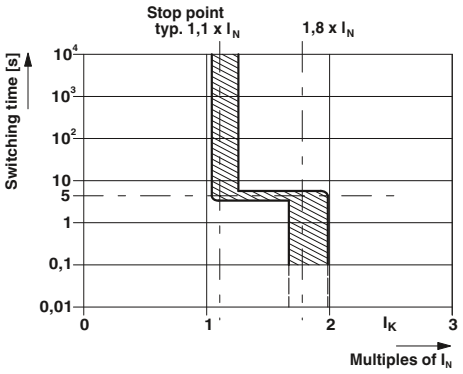
SPRING-LOCK	0713009	10
TMCP SOCKET M	0916589	10
TMCP CONNECT LR	0916592	3
TMCP SB	0916602	6

EC-E1 and EC-E4 electronic circuit breakers

– Selective protection of all load circuits at switched-mode power supply units
– A combination of active electronic current limitation in the event of short circuit and overload shutdown ensures that the circuit breaker can respond to overloads faster than the switched-mode power supply unit
– The residual current is always limited to 1.3 - 1.8 times the nominal current

Notes:

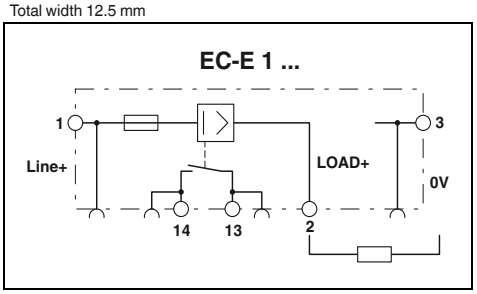
For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.



With signal contact as N/C contact or N/O contact

Ex:

Total width 12.5 mm



Technical data

Electrical data	
Operating voltage	24 V DC
Nominal current I_N	Depends on the product version selected
Disconnection	
Switch-off time	See tripping characteristic
Fuse type	Electronic
General data	
Dimensions W/H/D	12.5 mm / 83 mm / 80 mm
Connection method	Screw connection
Connection data solid/stranded/AWG	0.5 ... 16 mm² / 0.5 ... 16 mm² / 20 - 6
Stranded conductor cross section with ferrule	0.5 ... 10 mm²
Ambient temperature (operation)	0 °C ... 50 °C (non-condensing)
Degree of protection	IP20 (Housing)
Flammability rating according to UL 94	V0

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Electronic circuit breaker, signal contact: 1 N/O contact				
	0.5 A	**EC-E1 0.5A**	0903022	6
	1 A	**EC-E1 1A**	0903023	6
	2 A	**EC-E1 2A**	0903024	6
	3 A	**EC-E1 3A**	0903025	6
	4 A	**EC-E1 4A**	0903026	6
	6 A	**EC-E1 6A**	0903028	6
	8 A	**EC-E1 8A**	0903029	6
	10 A	**EC-E1 10A**	0903030	6
	12 A	**EC-E1 12A**	0903031	6
Electronic circuit breaker, signal contact: 1 N/C contact				
	0.5 A	**EC-E4 0.5A**	0903040	6
	1 A	**EC-E4 1A**	0903032	6
	2 A	**EC-E4 2A**	0903033	6
	3 A	**EC-E4 3A**	0903034	6
	4 A	**EC-E4 4A**	0903035	6
	6 A	**EC-E4 6A**	0903036	6
	8 A	**EC-E4 8A**	0903037	6
	10 A	**EC-E4 10A**	0903038	6
	12 A	**EC-E4 12A**	0903039	6

Accessories

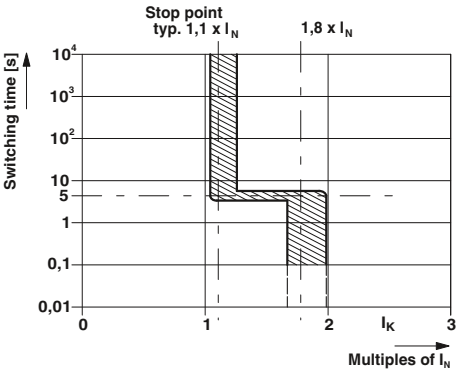
Cont. plug-in bridge, 500 mm long, isolated, can be cut to length, for potential distribution			
Nominal current: 32 A	**FBST 500-PLC BU**	2966692	20
	FBST 500-PLC RD	2966786	20
	FBST 500 TMC-N GY	0901028	10
Screwdriver	**SZS 0.6X3,5**	1205053	10

EC-E electronic circuit breakers

- Selective protection of all 24 V DC load circuits at switched-mode power supply units
- A combination of active electronic current limitation in the event of short circuit and overload shutdown ensures that the circuit breaker can respond to overloads faster than the switched-mode power supply unit
- The residual current is always limited to 1.3 - 1.8 times the nominal current

Notes:

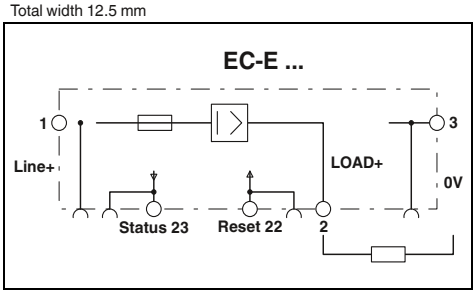
For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.



With reset input and status output

Ex:

Total width 12.5 mm



Technical data

Electrical data	
Operating voltage	24 V DC
Nominal current I_N	Depends on the product version selected
Disconnection	
Switch-off time	See tripping characteristic
Fuse type	Electronic
General data	
Dimensions W/H/D	12.5 mm / 83 mm / 80 mm
Connection method	Screw connection
Connection data solid/stranded/AWG	0.5 ... 16 mm² / 0.5 ... 16 mm² / 26 - 6
Stranded conductor cross section with ferrule	0.5 ... 10 mm²
Ambient temperature (operation)	0 °C ... 50 °C (non-condensing)
Degree of protection	IP20 (Housing)
Flammability rating according to UL 94	V0

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Electronic circuit breaker, with reset input				
	0.5 A	**EC-E 0.5A DC24V**	0903041	6
	1 A	**EC-E 1A DC24V**	0903042	6
	2 A	**EC-E 2A DC24V**	0903043	6
	3 A	**EC-E 3A DC24V**	0903044	6
	4 A	**EC-E 4A DC24V**	0903045	6
	6 A	**EC-E 6A DC24V**	0903046	6
	8 A	**EC-E 8A DC24V**	0903047	6
	10 A	**EC-E 10A DC24V**	0903048	6
	12 A	**EC-E 12A DC24V**	0903049	6

Accessories

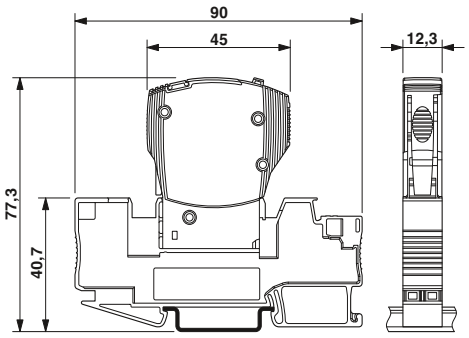
Cont. plug-in bridge, 500 mm long, isolated, can be cut to length, for potential distribution			
Nominal current: 32 A	**FBST 500-PLC BU**	2966692	20
	FBST 500-PLC RD	2966786	20
	FBST 500 TMC-N GY	0901028	10

Plug-in thermomagnetic circuit breakers

- Device circuit breakers for protecting against voltage dips caused by overloads and short circuits
- SFB characteristic curve enables longer cables and tripping times of < 10 ms
- Maximum ease of maintenance thanks to the two-piece design
- Snap-in function for secure hold and easy removal
- Plug coding possible
- Slim design

Notes:

For additional technical data, drawings, and accessories, please visit phoenixcontact.net/products.



The figure shows the complete module consisting of a base element and plug

Can be plugged in, SFB characteristic curve

Total width 12.3 mm

Technical data

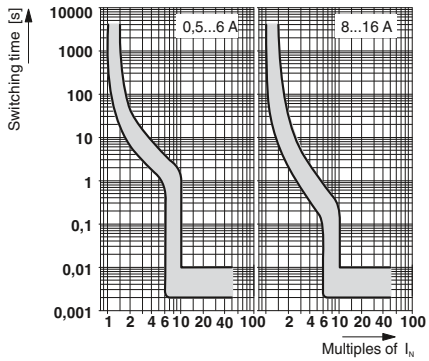
Electrical data			
Rated voltage	IEC	UL / CUL	CSA
	50 V DC	50 V DC	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	SFB		
Rated short-circuit switching capacity I_{cn}	- / 600 A (50 V DC)		
Switching cycles, max.	6000 (at 1 x I_n)		
General data			
Ambient temperature (operation)	-30 °C ... 60 °C		
Degree of protection	IP30 (Actuation area)		
Standards/regulations	EN 60934 / UL 1077 / UL 508 / CSA 22.2		

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, plug-in, 1-pos., signal contact 1 PDT				
	0.5 A	**CB TM1 0.5A SFB P**	2800835	1
	1 A	**CB TM1 1A SFB P**	2800836	1
	2 A	**CB TM1 2A SFB P**	2800837	1
	3 A	**CB TM1 3A SFB P**	2800838	1
	4 A	**CB TM1 4A SFB P**	2800839	1
	5 A	**CB TM1 5A SFB P**	2800840	1
	6 A	**CB TM1 6A SFB P**	2800841	1
	8 A	**CB TM1 8A SFB P**	2800842	1
	10 A	**CB TM1 10A SFB P**	2800843	1
	12 A	**CB TM1 12A SFB P**	2800844	1
	16 A	**CB TM1 16A SFB P**	2800845	1
Thermomagnetic circuit breaker, plug-in, 2-pos., signal contact 1 PDT				
	0.5 A	**CB TM2 0.5A SFB P**	2800868	1
	1 A	**CB TM2 1A SFB P**	2800869	1
	2 A	**CB TM2 2A SFB P**	2800870	1
	3 A	**CB TM2 3A SFB P**	2800871	1
	4 A	**CB TM2 4A SFB P**	2800872	1
	5 A	**CB TM2 5A SFB P**	2800873	1
	6 A	**CB TM2 6A SFB P**	2800874	1
	8 A	**CB TM2 8A SFB P**	2800875	1
	10 A	**CB TM2 10A SFB P**	2800876	1
	12 A	**CB TM2 12A SFB P**	2800877	1
	16 A	**CB TM2 16A SFB P**	2800878	1

Accessories

Bridge plug, 0 volt distribution			
	CB PT BRIDGE	2801014	1
Base element			
With Push-in connection technology	**CB 1/6-2/4 PT-BE**	2800929	10
With screw connection technology	**CB 1/10-1/10 UT-BE**	2801305	10
For the PCB	**CB S-BE**	2905067	30



Tripping characteristic in the DC range

Plug-in thermomagnetic circuit breakers

- Device circuit breakers for protecting against voltage dips caused by overloads and short circuits
- Medium-blow and fast-blow tripping characteristics
- 1 and 2-pos. circuit breakers
- Maximum ease of maintenance thanks to the two-piece design
- Snap-in function for secure hold and easy removal
- Plug coding possible
- Slim design

Can be plugged in, M1 characteristic curve, 1-pos.

Can be plugged in, M1 characteristic curve, 2-pos.

Total width 12.3 mm

Total width 24.6 mm

Technical data

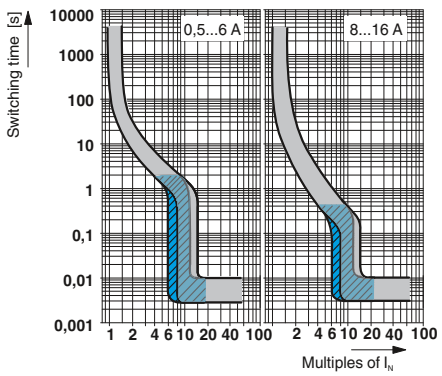
Electrical data	IEC	UL / CUL	CSA	IEC	UL / CUL	CSA
Rated voltage	240 V AC	277 V AC	-	240 V AC	277 V AC	-
Rated voltage	50 V DC	50 V DC	-	80 V DC	80 V DC	-
Nominal current I_N	Depends on the product version selected			Depends on the product version selected		
Disconnection						
Switch-off time	See tripping characteristic			See tripping characteristic		
Fuse type	normal blow			normal blow		
Rated short-circuit switching capacity I_{cn}	300 A (240 V AC) / 600 A (50 V DC)			400 A (240 V AC) / 600 A (80 V DC)		
Switching cycles, max.	6000 (at 1 x I_n)			6000 (240 V AC/1 x I_n)		
General data						
Ambient temperature (operation)	-30 °C ... 60 °C			-30 °C ... 60 °C		
Degree of protection	IP30 (Actuation area)			IP30 (Actuation area)		
Standards/regulations	EN 60934 / UL 1077 / UL 508 / CSA 22.2			EN 60934 / UL 1077 / UL 508 / CSA 22.2		

Ordering data

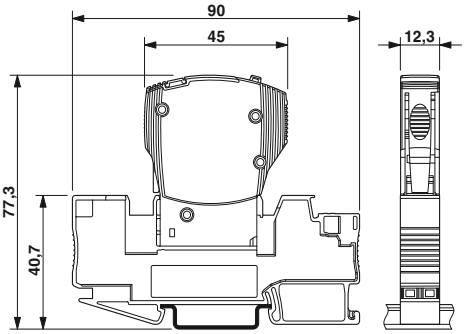
Description	Nominal current	Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, plug-in, signal contact 1 PDT							
	0.5 A	**CB TM1 0.5A M1 P**	2800846	1	**CB TM2 0.5A M1 P**	2800879	1
	1 A	**CB TM1 1A M1 P**	2800847	1	**CB TM2 1A M1 P**	2800880	1
	2 A	**CB TM1 2A M1 P**	2800848	1	**CB TM2 2A M1 P**	2800881	1
	3 A	**CB TM1 3A M1 P**	2800849	1	**CB TM2 3A M1 P**	2800882	1
	4 A	**CB TM1 4A M1 P**	2800850	1	**CB TM2 4A M1 P**	2800883	1
	5 A	**CB TM1 5A M1 P**	2800851	1	**CB TM2 5A M1 P**	2800884	1
	6 A	**CB TM1 6A M1 P**	2800852	1	**CB TM2 6A M1 P**	2800885	1
	8 A	**CB TM1 8A M1 P**	2800853	1	**CB TM2 8A M1 P**	2800886	1
	10 A	**CB TM1 10A M1 P**	2800854	1	**CB TM2 10A M1 P**	2800887	1
	12 A	**CB TM1 12A M1 P**	2800855	1	**CB TM2 12A M1 P**	2800888	1
	16 A	**CB TM1 16A M1 P**	2800856	1	**CB TM2 16A M1 P**	2800889	1

Accessories

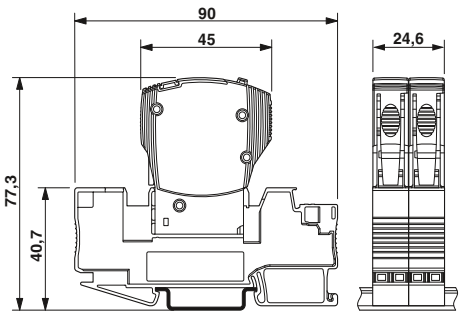
Bridge plug, 0 volt distribution						
		CB PT BRIDGE	2801014	1	**CB PT BRIDGE**	2801014	1
Base element						
With Push-in connection technology		**CB 1/6-2/4 PT-BE**	2800929	10	**CB 1/6-2/4 PT-BE**	2800929	10
With screw connection technology		**CB 1/10-1/10 UT-BE**	2801305	10	**CB 1/10-1/10 UT-BE**	2801305	10
For the PCB		**CB S-BE**	2905067	30	**CB S-BE**	2905067	30



Tripping characteristic
Gray: DC range, blue: AC range



The figure shows the complete module consisting of a base element and plug



The figure shows the complete module consisting of a base element and plug

Plug-in thermomagnetic circuit breakers

- Device circuit breakers for protecting against voltage dips caused by overloads and short circuits
- Medium-blow and fast-blow tripping characteristics
- 1 and 2-pos. circuit breakers
- Maximum ease of maintenance thanks to the two-piece design
- Snap-in function for secure hold and easy removal
- Plug coding possible
- Slim design

Can be plugged in, F1 characteristic curve, 1-pos.

Can be plugged in, F1 characteristic curve, 2-pos.

Technical data

Electrical data	IEC	UL / CUL	CSA
Rated voltage	50 V DC	50 V DC	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	fast blow		
Rated short-circuit switching capacity I_{cn}	- / 600 A (50 V DC)		
Switching cycles, max.	6000 (at 1 x I_n)		
General data			
Ambient temperature (operation)	-30 °C ... 60 °C		
Degree of protection	IP30 (Actuation area)		
Standards/regulations	EN 60934 / UL 1077 / UL 508 / CSA 22.2		

Technical data

Electrical data	IEC	UL / CUL	CSA
Rated voltage	80 V DC	80 V DC	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	fast blow		
Rated short-circuit switching capacity I_{cn}	- / 600 A (80 V DC)		
Switching cycles, max.	6000 (240 V AC/1 x I_n)		
General data			
Ambient temperature (operation)	-30 °C ... 60 °C		
Degree of protection	IP30 (Actuation area)		
Standards/regulations	EN 60934 / UL 1077 / UL 508 / CSA 22.2		

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, plug-in, signal contact 1 PDT				
	0.5 A	**CB TM1 0.5A F1 P**	2800857	1
	1 A	**CB TM1 1A F1 P**	2800858	1
	2 A	**CB TM1 2A F1 P**	2800859	1
	3 A	**CB TM1 3A F1 P**	2800860	1
	4 A	**CB TM1 4A F1 P**	2800861	1
	5 A	**CB TM1 5A F1 P**	2800862	1
	6 A	**CB TM1 6A F1 P**	2800863	1
	8 A	**CB TM1 8A F1 P**	2800864	1
	10 A	**CB TM1 10A F1 P**	2800865	1
	12 A	**CB TM1 12A F1 P**	2800866	1
	16 A	**CB TM1 16A F1 P**	2800867	1

Ordering data

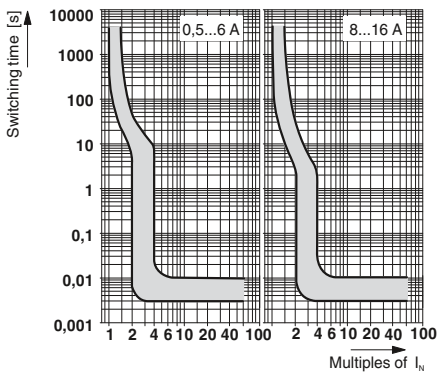
Type	Order No.	Pcs./Pkt.
CB TM2 0.5A F1 P	2800890	1
CB TM2 1A F1 P	2800891	1
CB TM2 2A F1 P	2800892	1
CB TM2 3A F1 P	2800893	1
CB TM2 4A F1 P	2800894	1
CB TM2 5A F1 P	2800895	1
CB TM2 6A F1 P	2800896	1
CB TM2 8A F1 P	2800897	1
CB TM2 10A F1 P	2800898	1
CB TM2 12A F1 P	2800899	1
CB TM2 16A F1 P	2800900	1

Accessories

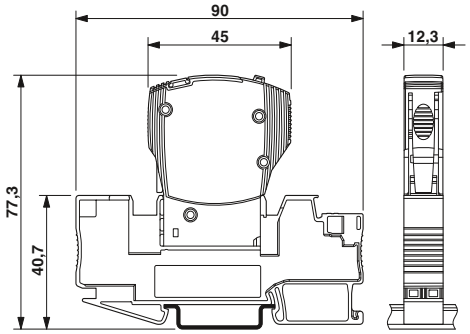
Description	Type	Order No.	Pcs./Pkt.
Bridge plug, 0 volt distribution			
	CB PT BRIDGE	2801014	1
Base element			
With Push-in connection technology	**CB 1/6-2/4 PT-BE**	2800929	10
With screw connection technology	**CB 1/10-1/10 UT-BE**	2801305	10
For the PCB	**CB S-BE**	2905067	30

Accessories

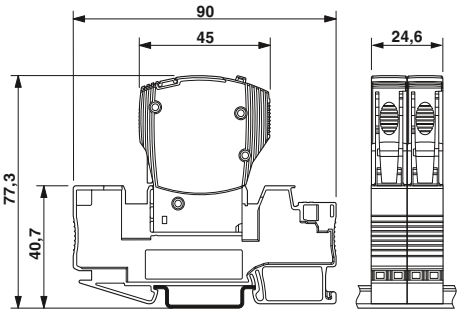
Type	Order No.	Pcs./Pkt.
CB PT BRIDGE	2801014	1
CB 1/6-2/4 PT-BE	2800929	10
CB 1/10-1/10 UT-BE	2801305	10
CB S-BE	2905067	30



Tripping characteristic in the DC range



The figure shows the complete module consisting of a base element and plug



The figure shows the complete module consisting of a base element and plug

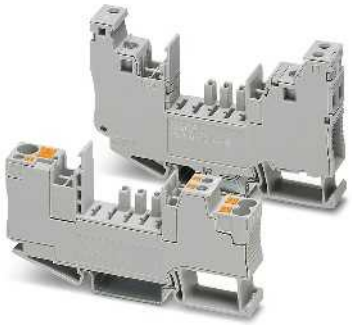
Base element and plug-in bridges

Base elements

– For accommodating CB TM.../CB E.... device circuit breakers
– DIN rail module
– With bridge shafts
– Systematic structure with 1-channel base elements possible

Notes:

Can be loaded with up to 41 A if two bridges are connected for the supply.



1-pos, with screw or Push-in connection technology

For the PCB

	Technical data		Technical data
Electrical data	... PT-BE	... UT-BE	
Rated surge voltage	4 kV	2.5 kV	-
General data			
Dimensions W/H/D	12.3 mm / 90 mm / 46.7 mm	12.3 mm / 90.8 mm / 70 mm	12.3 mm / 34.8 mm / 36.4 mm
Connection method	Push-in connection	Screw connection	Solder connection
Ambient temperature (operation)	-30 °C ... 60 °C	-30 °C ... 60 °C	-30 °C ... 60 °C
Degree of protection	IP30 (Actuation area)	IP30 (Actuation area)	IP30 (Plug-in area with plugged-in device) / IP00 (Connection area)
Flammability rating according to UL 94	V0	V0	V-0
Standards/regulations	IEC 60947-7-1	UL 1059	DIN EN 50155 / IEC 60068-2

		Ordering data			Ordering data		
Description		Type	Order No.	Pcs./Pkt.	Type	Order No.	Pcs./Pkt.
Base element							
For the PCB		**CB 1/6-2/4 PT-BE**	2800929	10	**CB S-BE**	2905067	30
		CB 1/10-1/10 UT-BE	2801305	10			
		Accessories			**Accessories**		
Plug-in bridge, red	Number of positions						
	2	**FBS 2-6**	3030336	50			
	3	**FBS 3-6**	3030242	50			
	4	**FBS 4-6**	3030255	50			
	5	**FBS 5-6**	3030349	50			
	10	**FBS 10-6**	3030271	10			
	20	**FBS 20-6**	3030365	10			
	50	**FBS 50-6**	3032224	10			
Plug-in bridge, blue	Number of positions						
	2	**FBS 2-6 BU**	3036932	50			
	3	**FBS 3-6 BU**	3036945	50			
	4	**FBS 4-6 BU**	3036958	50			
	5	**FBS 5-6 BU**	3036961	50			
	10	**FBS 10-6 BU**	3032198	10			
	20	**FBS 20-6 BU**	3032208	10			
	50	**FBS 50-6 BU**	3032211	10			
Plug-in bridge, gray	Number of positions						
	2	**FBS 2-6 GY**	3032237	50			
	3	**FBS 3-6 GY**	3032240	50			
	4	**FBS 4-6 GY**	3032279	50			
	5	**FBS 5-6 GY**	3032266	50			
	10	**FBS 10-6 GY**	3032253	10			

Thermomagnetic circuit breaker UT 6-TMC ...

- Thermomagnetic circuit breakers feature a compact design, large-surface marking options, and a double plug-in bridge shaft
- With bridge shafts enabling them to be bridged together easily
- 12.3 mm compact design
- High level of system availability thanks to their reclosure function and clear status display
- Eleven nominal current levels can be selected from 0.5 A to 16 A
- Clear assignment of the relevant circuit breaker thanks to the large center marking area

Notes:

For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.

DIN-rail-mountable

Total width 12.3 mm

Technical data

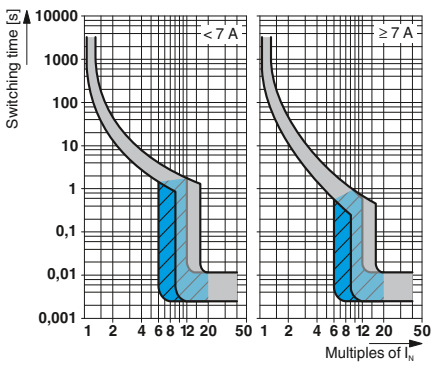
Electrical data	IEC	UL / CUL	CSA
Rated voltage	240 V AC	240 V AC	-
Rated voltage	28 V DC	28 V DC	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	Normal blow (M1)		
Rated short-circuit switching capacity I_{cn}	200 A (240 V AC) / 400 A (28 V DC)		
Switching cycles, max.	6000 (at 1 x I_n)		
General data			
Dimensions W/H/D	12.3 mm / 85.5 mm / 89.5 mm		
Connection method	Screw connection		
Connection data solid/stranded/AWG	0.2 ... 10 mm² / 0.2 ... 10 mm² / 24 - 8		
Stranded conductor cross section with ferrule	0.25 ... 6 mm²		
Ambient temperature (operation)	-30 °C ... 60 °C		
Degree of protection	IP40 (Actuation area) / IP20 (Connection area)		
Standards/regulations	EN 60934 / UL 1077 / CSA 22.2 / EAC		

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, for mounting on NS 35...				
	0.5 A	**UT 6-TMC M 0.5A**	0916603	6
	1 A	**UT 6-TMC M 1A**	0916604	6
	2 A	**UT 6-TMC M 2A**	0916605	6
	4 A	**UT 6-TMC M 4A**	0916606	6
	5 A	**UT 6-TMC M 5A**	0916607	6
	6 A	**UT 6-TMC M 6A**	0916608	6
	8 A	**UT 6-TMC M 8A**	0916609	6
	10 A	**UT 6-TMC M 10A**	0916610	6
	12 A	**UT 6-TMC M 12A**	0916611	6
	15 A	**UT 6-TMC M 15A**	0916612	6
	16 A	**UT 6-TMC M 16A**	0916613	6

Accessories

Plug-in bridge, red	Number of positions			
	2	**FBS 2-6**	3030336	50
	3	**FBS 3-6**	3030242	50
	4	**FBS 4-6**	3030255	50
	5	**FBS 5-6**	3030349	50
	10	**FBS 10-6**	3030271	10
	20	**FBS 20-6**	3030365	10



Tripping characteristic

TMC thermomagnetic circuit breaker

– Available with fast-blow and medium-blow characteristic curve for various nominal current strengths
– Single or two-pos. main current path

Notes:
1) Main contact
For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.

DIN-rail-mountable

Total width 12.5 mm

Technical data

Electrical data	IEC	UL / CUL	CSA
Rated voltage	250 V AC	-	-
Rated voltage	65 V DC	-	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	Fast blow (F1)		
Rated short-circuit switching capacity I_{cn}	400 A / 2500 A (32 V DC)		
General data			
Dimensions W/H/D	12.5 mm / 82.5 mm / 96 mm		
Connection method	Screw connection		
Connection data solid/stranded/AWG	0.2 ... 6 mm²1) / 0.2 ... 4 mm² / 24 - 10		
Stranded conductor cross section with ferrule	0.25 ... 4 mm²		
Ambient temperature (operation)	-30 °C ... 60 °C		
Degree of protection	IP30 (Actuation area) / IP20 (Connection area)		

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermomagnetic circuit breaker, with universal foot for mounting on NS 32... or NS 35...		**TMC 1 F1 100 0.2A**	0914015	6

TMC type key

The type key indicates the unique structure of the product.

Type	Main current paths	Characteristic curve	Auxiliary contact versions	Nominal current
TMC	**1** ≙ Single-pos. **2** ≙ Two-pos. **3** ≙ Three-pos.	**F1** ≙ Therm. 1.05 - 1.4 I_N, magn. 2 - 4 I_N DC (fast-blow), **Only for DC applications** **M1** ≙ Therm. 1.05 - 1.4 I_N, magn. 6 - 12 I_N AC, 7.8 - 15.6 I_N DC (medium-blow)	**100** ≙ Single-pos.: 1 N/O contact **200** ≙ Single-pos.: 1 N/C contact **120** ≙ Two-pos.: 1 N/O contact, 1 N/C contact **122** ≙ Three-pos.: 1 N/O contact, 2 N/C contacts	0.2 A 2.5 A 0.3 A 3 A 0.4 A 4 A 0.5 A 5 A 0.6 A 6 A 0.8 A 8 A 1 A 10 A 1.5 A 12 A 2 A 16 A

Ordering example:

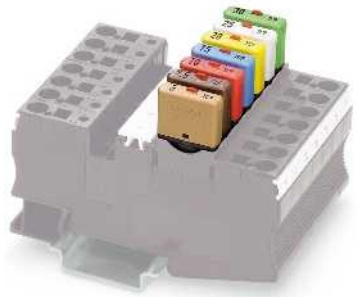
TMC with single-pos. main current path, one N/O contact, medium-blow characteristic curve, and a nominal current of 2 A.

TMC	1	M1	100	2 A

TCP thermal circuit breaker

- The pluggable thermal miniature circuit-breaker combines the protective mechanism of an automotive flat-type fuse with the advantages of a circuit-breaker
- In the event of an error, the time-sensitive search for a suitable replacement fuse is eliminated thanks to the reclosure function
- The area of application extends to the protection of integrated circuits in all battery and onboard systems with up to 32 V DC
- Fits in all fuse holders designed for flat-type fuse-links according to ISO 8820−3 (DIN 72581−3)
- A version with screw or spring-cage connection is used as a basic terminal block

Notes:
1) If the fuse is faulty, the downstream circuit is not off load.
Attention: The reset button must not be obstructed. During installation, please leave enough room for using button.
For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.
You can find a wide selection of fuse terminal blocks in Catalog 1



For fuse holder

EAC

Total width 6 mm

Technical data

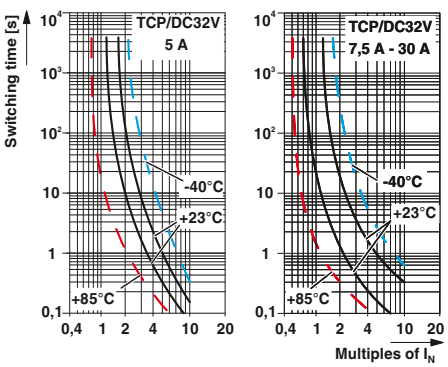
Electrical data	IEC	UL / CUL	CSA
Rated voltage	32 V DC	-	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	Slow-blow		
Rated short-circuit switching capacity I_{cn}	≤ 50 A (300 switch-offs)		
General data			
Dimensions W/H/D	6 mm / 20.3 mm / 24 mm		
Height	17 mm		
Ambient temperature (operation)	-40 °C ... 85 °C		
Degree of protection	IP30 (Actuation area)		

Ordering data

Description	Nominal current	Type	Order No.	Pcs./Pkt.
One-pos., thermal circuit breaker, for fuse holders in acc. with ISO 8820-3				
	5 A	**TCP 5/DC32V**	0700005	50
	7.5 A	**TCP 7,5/DC32V**	0700007	50
	10 A	**TCP 10/DC32V**	0700010	50
	15 A	**TCP 15/DC32V**	0700015	50
	20 A	**TCP 20/DC32V**	0700020	50
	25 A	**TCP 25/DC32V**	0700025	50
	30 A	**TCP 30/DC32V**	0700030	50
	40 A	**TCP 40/DC32V**	0700040	50

Accessories

Fuse terminal block, with spring-cage connection, for mounting on NS 35...			
		ST 4-FSI/C	3036372	50
with LED display for 12 V DC, 1.7 mA1)		**ST 4-FSI/C-LED 12**	3036495	50
with LED display for 24 V DC, 1.9 mA1)		**ST 4-FSI/C-LED 24**	3036505	50
Fuse terminal block, with screw connection, for mounting on NS 32... or NS 35...				
		UK 6-FSI/C	3118203	50
with LED display for 12 V DC, 1.7 mA1)		**UK 6-FSI/C-LED12**	3001925	50
with LED display for 24 V DC, 1.9 mA1)		**UK 6-FSI/C-LED24**	3001938	50
Fuse terminal block, with Push-in connection, for mounting on NS 35...				
		PT 6-FSI/C	3212166	50
with LED display for 6 - 12 V DC, 0.31 - 0.95 mA		**PT 6-FSI/C-LED 12**	3212169	50
with LED display for 12 - 30 V DC, 0.31 - 0.95 mA		**PT 6-FSI/C-LED 24**	3212172	50
with LED display for 24 - 48 V DC, 0.31 - 0.95 mA		**PT 6-FSI/C-LED 48**	3212175	50



Tripping characteristic

TCP thermal circuit breaker

- The reclosable thermal circuit breaker is available in nine nominal current levels ranging from 0.25 to 10 A
- The integrated switching function enables immediate reclosure and thus ensures the availability of the system
- Compact design
- A version with screw or spring-cage connection is used as a basic terminal block
- Potential distribution possible by means of bridges

Notes:

When mounted in rows, the nominal device current can be limited to just 80% or must be overdimensioned accordingly.

For further technical data, drawings, and accessories, and a complete data sheet, please visit phoenixcontact.net/products.

Can be plugged into a fuse terminal block

Total width 8.2 mm

Technical data

	IEC	UL / CUL	CSA
Electrical data			
Rated voltage	250 V AC	-	-
Rated voltage	65 V DC	-	-
Nominal current I_N	Depends on the product version selected		
Disconnection			
Switch-off time	See tripping characteristic		
Fuse type	Slow-blow		
Rated short-circuit switching capacity I_{cn}	-		
General data			
Dimensions W/H/D	8.2 mm / 64 mm / 88.5 mm		
Ambient temperature (operation)	-20 °C ... 60 °C		
Degree of protection	IP40 (Actuation area)		

Ordering data

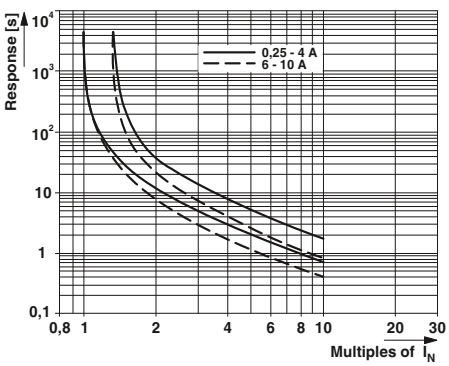
Description	Nominal current	Type	Order No.	Pcs./Pkt.
Thermal miniature circuit breaker, can be plugged into UK 6 FSI/C or ST 4-FSI/C fuse terminal block				
	0.1 A	**TCP 0.1A**	0712107	20
	0.25 A	**TCP 0.25A**	0712123	20
	0.5 A	**TCP 0.5A**	0712152	20
	1 A	**TCP 1A**	0712194	20
	2 A	**TCP 2A**	0712217	20
	3 A	**TCP 3A**	0712233	20
	4 A	**TCP 4A**	0712259	20
	6 A	**TCP 6A**	0712275	20
	8 A	**TCP 8A**	0712291	20
	10 A	**TCP 10A**	0712314	20

Accessories

Fuse terminal block, for mounting on NS 32... or NS 35...	**UK 6-FSI/C**	3118203	50
Fuse terminal block, for flat-type fuses	**ST 4-FSI/C**	3036372	50

Lateral groove marking

For ZB 5, see page 197



Tripping characteristic

Installation notes for surge protective devices

Installation direction:

Surge protective devices with a multi-stage configuration which are looped into the circuit are marked "**IN**" or "unprotected" and "**OUT**" or "protected". They must be connected before the device to be protected so that "**IN**" / "unprotected" points towards the direction from which the surge voltage is expected.

The device to be protected should be connected to the terminal points marked "**OUT**" / "protected". This is the only way to ensure correct operation of the surge protective device in the event of a surge voltage coupling.

Connection:

The protective conductor connection of the system to be protected should be connected directly and via the shortest route to the ground connection of the surge protective device or the corresponding connection terminal block on the "**OUT**" / "protected" side of the surge protective device.

This is the only way to ensure that impermissibly high voltages due to potential increases caused by discharge currents are prevented between the ground connections of the surge protective device and the device to be protected. The same is true for the connection between ground and the live conductors of the device to be protected (see figure: ground connection).

Equipotential bonding:

Correct operation of the surge protective devices requires complete equipotential bonding in accordance with the applicable regulations.

Cable routing:

Protected and unprotected cables must not be laid directly parallel to one another. They must be physically separated or shielded from one another so that surge voltages cannot be coupled from unprotected cables to protected ones. If crossed, cables that can influence one another must be crossed at right angles.

Quenching follow currents:

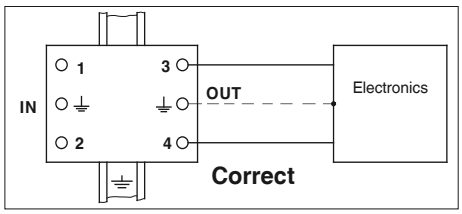
Gas-filled surge arresters only have limited self-quenching capability and are therefore almost always suitable for protecting message transmission systems.

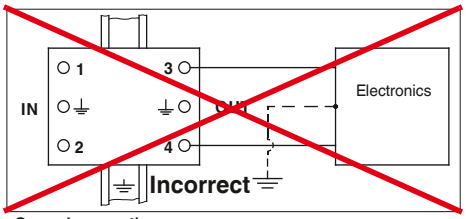
The arresters easily meet the requirements of the usually high-impedance remote indication circuits. Distinct quenching behavior is observed under the following conditions in the case of systems with higher operating voltage or lower impedance:

AC application: if the possible short-circuit current of the source exceeds the alternating current carrying capacity, a fuse is required to prevent overheating caused by the follow current.

DC application: for voltages > 12 V DC, the possible short-circuit current of the source must not exceed 100 mA. Otherwise a fuse that enables shutdown within 5 seconds should be selected. Self-quenching capability is ensured for voltages ≤ 12 V. Please note, however, that the specific technical data for the product must always be observed.

Backup fuse: the system must be protected against impermissibly high short-circuit currents due to arrester overload. The maximum permissible or required backup fuse for the affected arrester is documented in the technical data of the relevant product.





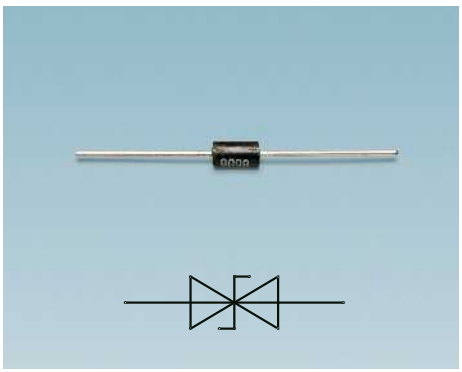
Ground connection

Surge voltage limiting components

The main function-specific components for lightning current arresters and surge protective devices are spark gaps, gas-filled surge arresters, varistors, and diodes, as well as decoupling impedances.

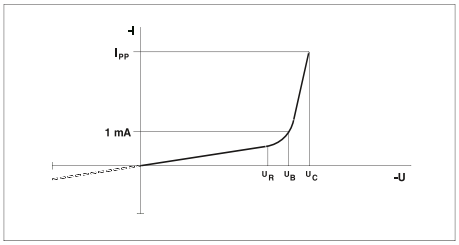
All components have specific advantages and disadvantages. In order to achieve optimum protection, protective circuits and multi-stage protection concepts that combine various components can be implemented.

Suppressor diode



The reverse voltage U_R is the highest voltage that the diode can safely block. A current of 1 mA flows through the suppressor diode at the breakdown voltage U_B. At this point the suppressor diode starts limiting the surge voltage.

The maximum clamping voltage U_C is the highest voltage which can be present at the suppressor diode in the event of a peak pulse current I_{pp} (10/1000) µs.

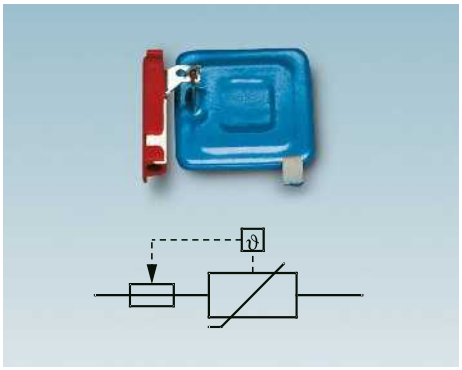


U/I characteristic curve of a suppressor diode

Explanation:

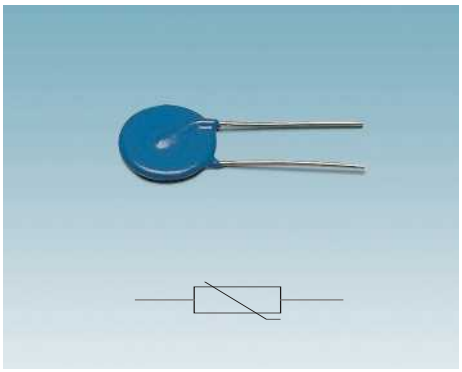
U_R = Reverse voltage
U_B = Breakdown voltage
U_C = Clamping voltage
I_{pp} = Peak pulse current
I_R = Reverse current

Varistors

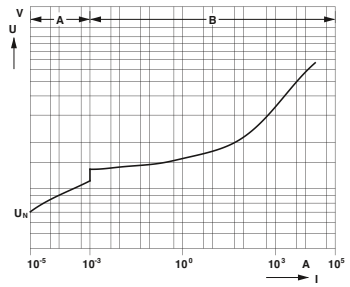


Block varistor with thermal disconnect device

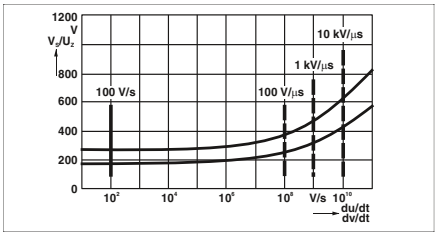
Varistors are "voltage-dependent resistors" which, due to their voltage/current characteristic curves enable a high discharge capacity with a low residual voltage.



Disc varistor

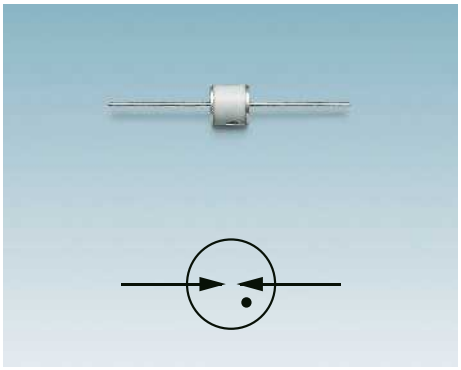


U/I characteristic curve of metal oxide varistors
Explanation:
A = High-resistance operating area
B = Low-resistance operating area/ limiting area



Characteristic ignition curve of a gas-filled surge arrester
Static response behavior
Dynamic response behavior

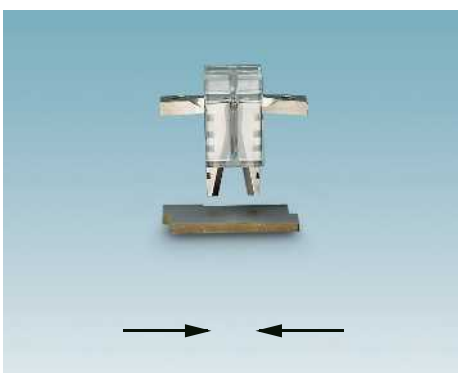
Gas-filled surge arresters



Gas-filled surge arresters consist of an electrode arrangement in a ceramic or glass tube. Between the electrodes is an inert gas, such as argon or neon. When the igniting voltage is reached, the component changes to a low-resistance state as a result of the gas discharge used. The igniting voltage is not a constant, instead it is dependent on the rate of rise of the surge voltage.

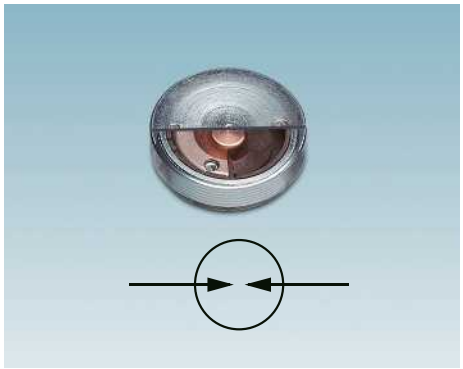
After igniting the discharge path, an arc voltage between 10 and 30 V typically occurs, which can be measured as a voltage drop at the arrester. In this low-resistance state, a line follow current, whose value depends on the impedance of the mains connected upstream, can flow through the arrester. In order to interrupt line follow currents that exceed the self-quenching capability, a fuse must be connected upstream of the surge arrester. Series connection of varistors or resistors is also possible.

Spark gaps

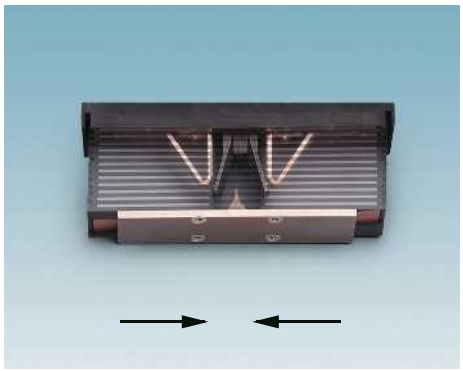


ArC spark gap

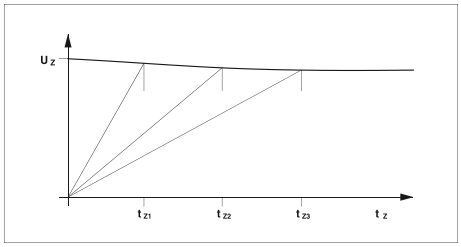
The ArC spark gap in the FLASHTRAB lightning current arrester is based on arc chopping technology. Two spark horns positioned opposite one another are kept at a distance by an isolator bridge bar. In addition, a baffle plate is fitted below the electrodes in the direction of the opening. In the event of a surge voltage, surface discharge occurs along the isolator bridge bar, which creates an arc. This is driven along the spark horns towards the baffle plate where it is chopped up. The resulting physical effects quench the arc and the associated line follow currents.
A significant increase in the follow current quenching capacity can be achieved with spark gap types in which quenching plates are arranged around the spark horns.



Encapsulated ArC spark gap



ArC spark gap with quenching plates



Characteristic ignition curve of a spark gap

Surge protective devices

The wide range of different applications also requires numerous different surge protective devices with application-specific properties. Important criteria include the type of circuit, the surge-voltage limiting properties, and the design. The TRABTECH range from Phoenix Contact offers numerous versions, such as adapters, junction boxes or DIN-rail-mountable arresters in a modular and compact design, providing practical system solutions for all applications.

In line with their intended application, surge protective devices are designed for high electrical loads. However, excessive or very frequent surge voltages may lead to overload. This can result in a reduction or even failure of the protective function, and the affected protective device having to be replaced. Where possible, surge protective devices should therefore have a pluggable design and support testing.

The TRABTECH product range from Phoenix Contact takes these requirements into consideration as far as modern technology permits. The product range includes surge protective devices in the form of adapters, as well as devices with a two-piece pluggable modular design.

The protective devices in the FLASHTRAB, VALVETRAB, PLUGTRAB, and COMTRAB product ranges are particularly interesting with regard to their plug-in capability and testability. They have been developed with various protective circuits and different nominal voltages for applications in power supply, measurement and control, and data interface protection.

With components that are perfectly designed to work together, i.e., gas-filled surge arresters, varistors, and suppressor diodes depending on the protective circuit, their specific advantages are fully utilized.

Explanation of terms

AC withstand voltage

The r.m.s. value of the highest sinusoidal voltage at mains frequency which will not lead to a disruptive discharge under the specified test conditions.

Aging

Modification of the original performance data due to disturbing pulses, operation or unfavorable ambient conditions.

Ambient conditions

The immediate ambient conditions for the device or the relevant air and creepage distances.

Arc voltage U_{bo}

The arc voltage is the instantaneous value of the voltage on a discharge path (arc discharge) during an arresting process.

Arrester

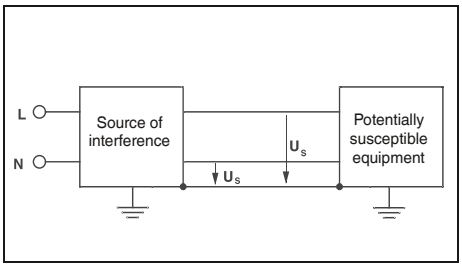
Item of equipment that mainly consists of voltage-dependent resistors and/or spark gaps. Both elements can be connected in series or in parallel, or even used individually. Arresters are used to protect other electrical equipment and electrical systems against impermissibly high surge voltages.

Associated electrical equipment

An item of electrical equipment in which not all circuits are intrinsically safe, but which contains circuits that can influence the safety of the intrinsically safe circuits to which they are connected.

Asymmetrical interference

Asymmetrical means that the source of interference and the potentially susceptible equipment are grounded, i.e., they have a capacitive or galvanic connection to the protective conductor. As shown in the figure, the interference moves from the source along both conductors to the potentially susceptible equipment and back via ground. The terms “common-mode interference” or “common mode” are also used.



Asymmetrical voltage, common mode voltage

Average voltage between each conductor and a specified reference point, usually reference ground or ground.

Burst

Pulses which occur repeatedly within a specific time interval.

Common mode voltage

The common mode voltage is the voltage which occurs in the event of interference between live conductors and ground.

Coupling

Interaction between circuits, in which energy is transferred capacitively, inductively or galvanically from one circuit to the other.

Direct or close-up strikes

These cause surge voltages with an energy level that constitutes a considerable part of the total energy of the lightning discharge.

Discharge of static electricity; electrostatic discharge; ESD

The transmission of an electrical charge between bodies with different electrostatic potentials when they are in close proximity or touching.

Disconnect device

This is a device which disconnects a SPD from the mains when it fails. It is designed to prevent a permanent fault in the system caused by the faulty surge protective device and provide an optical indication of the faulty SPD.

Disturbance variable

The disturbance variable is an electromagnetic (or electrical or magnetic) variable, which can have an undesirable influence on electrical equipment.

Electromagnetic compatibility (EMC)

The ability of a device or system to operate without faults in an electromagnetic environment without itself causing electromagnetic interference, which would be unacceptable for other devices in this environment.

Electromagnetic environment

The sum of all electromagnetic phenomena at a given location.

Electromagnetic interference
A loss in the quality of the operating behavior, such as malfunction or failure of electrical or electronic equipment, that is caused by an electromagnetic disturbance variable.

Equipment to be protected
All equipment of a structural system or a range which requires surge protection or lightning protection.

Equipotential bonding
The removal of potential differences between conductive parts, in which all points assume virtually the same potential.

A distinction is made between functional equipotential bonding and protective equipotential bonding.

Equipotential bonding conductors
These are electrically conductive connections used to create equipotential bonding.

Equipotential bonding strip
This is the strip which is designed to connect protective conductors, equipotential bonding conductors, and conductors for functional earth grounding to the ground conductor and the ground electrodes.

Equipotential bonding system
This refers to all the interconnected equipotential bonding conductors, including the conductive parts such as housing or external conductive parts which work in the same way.

The equipotential bonding system can also be the grounding system or part of a grounding system.

Exposure
Exposure is an insufficient distance between the lightning protection system and metal installations or electrical systems which leads to a risk of flashover or disruptive discharge in the event of a lightning strike.

Exposure voltage
The exposure voltage is a voltage that occurs at the exposure point when lightning strikes the lightning protection system.

Follow current I_f
Current which flows through the SPD following discharge and is supplied by the mains. The follow current differs considerably from the continuous operating current.

Gas-filled surge arrester
The gas-filled surge arrester is a discharge path which is filled with a gas other than air, generally an inert gas.

Ground
This expression refers to the earth and the ground.

Ground conductor
A conductor which connects the equipment to be grounded to a ground electrode, as long as the ground conductor is not laid in the ground or, if laid in the ground, is insulated.

Ground electrode
A conductor embedded in the ground with an electrically conductive connection to ground. Parts of supply lines to a ground electrode, which are not insulated in the ground, are considered to be parts of the ground electrode.

Grounding
Grounding is the sum of all means and measures used for grounding.

Grounding resistance
The resistance between the grounding system and the reference ground. The amount of grounding resistance depends on the interaction of the individual ground electrodes.

Impulse sparkover voltage of 1.2/50 µs
Highest voltage value before the disruptive discharge between the electrodes of the spark gap of a SPD.

Impulse withstand voltage U_{st}
The peak value of the highest surge voltage with a predefined form and polarity, which will not lead to a disruptive discharge under the specified test conditions.

Note: the impulse withstand voltage is equal to or greater than the rated surge voltage.

Inactive parts
Inactive parts are conductive parts that are electrically isolated from all live parts through basic insulation.

Insertion attenuation
To determine the insertion attenuation of a SPD, the mains and frequency are specified. The attenuation value is defined as the ratio of voltages that occur immediately before and after the insertion point of the SPD to be tested. The result is expressed in decibels.

Insulation coordination
The assignment of characteristic insulation data for an item of equipment for:
- Expected surge voltages
- Characteristic data of the surge protective device
- Expected ambient conditions
- Protective measures against contamination

Interference suppression
Measure to reduce or avoid the electromagnetic disturbance variables that occur.

Intrinsically safe circuit
A circuit protected against sparks and thermal effects that may occur under the conditions specified in DIN EN 60079-11 (which include error-free operation and specific fault conditions), which can cause the ignition of a particular explosive gas atmosphere.

Intrinsically safe electrical equipment
Electrical equipment in which all circuits are intrinsically safe.

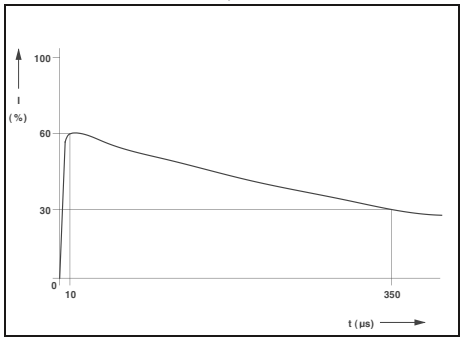
Lightning protection system
All devices as a whole that provide external and internal lightning protection for the system to be protected.

Lightning surge current I_{imp}
Lightning surge currents are characterized by the parameters peak value, charge, specific energy, and current rate of rise. The lightning surge current I_{imp} is a measurement for the discharge capacity of lightning current arresters (class I). It is determined according to a defined test procedure using 10/350 µs waveform test pulses.

Lightning surge voltage
Surge voltage as a result of lightning discharge.

Lightning test current

The (10/350) µs lightning test current has a rise time of 10 µs and a decay time to half-value of 350 µs.



10/350 lightning current pulse according to IEC 62305-1

Live parts

Live parts are conductors and conductive parts of equipment that are energized under normal operating conditions.

Maximum continuous voltage U_c

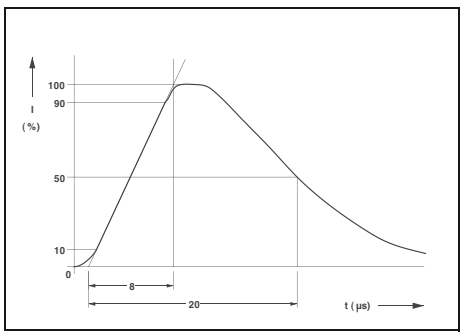
The rated voltage is the maximum permissible r.m.s. value of the power-frequency AC voltage, which may be permanently applied to the protective paths of the arrester.

Nominal current I_N or load current I_L

Highest continuous current for products according to IEC 61643 which can flow through the surge protective device at the specified temperature without altering the electrical operating properties. For higher operating temperatures, the nominal current is lower (derating).

Nominal discharge surge current I_n

Peak value of the current flowing through the SPD with surge form (8/20) µs. It is used to classify the SPD according to class II. Source: EN 61643-11



8/20 surge current pulse according to IEC 60060-1

Nominal voltage U_N

A suitable rounded voltage value, which is specified by the manufacturer for equipment for the purpose of designation or identification.

Normal mode voltage

The normal mode voltage is the voltage which occurs in the event of interference between two conductors of a circuit.

Potentially susceptible equipment

All electrical equipment whose function can be influenced by disturbance variables is referred to as potentially susceptible equipment. Influence on function may be in the form of a functional disturbance, reduction in function, malfunction or failure.

Protection level U_p

A parameter that characterizes the performance capabilities of the SPD with regard to voltage limitation via its connection terminal blocks. This value, which should be specified by the manufacturer, must be greater than the highest measured value of the clamping voltages.

Protective paths

The voltage-limiting or switching components of the SPD can be connected between conductor/conductor, conductor/ground, conductor/neutral conductor, and neutral conductor/ground or a combination of these options. These circuit types are referred to as protective paths.

Pulse

Rapid, brief alteration of a physical variable, followed by a fast return to the original value.

Pulse burst; burst

Result of a limited number of pulses or waves of a limited duration.

Rate of rise

Average rate of change of a variable between two specified values, e.g., 10% and 90% of the peak value.

Reference ground

An area of the earth, particularly of the earth's surface, which is so far away from the ground conductors that no noticeable voltages occur between any points of this area as a result of the current entering the earth.

Remote strikes

These usually cause surge voltages with a significantly lower energy level than close-up strikes. Remote strikes are responsible for causing surge voltages in electrical and electronic systems.

Residual current device (RCD)

Residual current devices are devices which isolate electrical systems from the power supply system as soon as the residual current to ground exceeds a specific value.

Residual voltage U_{res}

The peak voltage value that occurs while discharge surge current is flowing via the terminal blocks of the SPD. Source: EN 61643-11:2002

Response

A response is when either:

– The peak value of the ohmic components of the current flowing through the arrester reaches 5 mA
– A voltage dip with an increase in the peak value of the current flowing through the arrester to 5 mA occurs

Selective residual current device

Selective residual current devices are time-delayed circuit breakers.

Short-circuit stability

Highest interference-free short-circuit current the SPD can withstand.

Source of interference

A source of interference is the origin of disturbance variables. In principle, any electrical equipment, such as motors or fluorescent lamps, can be a source of interference.

Specialist

A specialist is a person who, because of their education, experience, and instruction, and their knowledge of relevant regulations, can assess any required operations and recognize any possible dangers.

Note: when considering a person's professional training, several years' experience in the relevant field can also be taken into account.

Spike

A relatively short single-polarity pulse.

Surface discharge surge arrester

The surface discharge surge arrester, according to DIN VDE 0845 Part 1, is a discharge path in which gas discharge is initiated by means of surface discharge.

Surge current of (8/20) µs

Surge current with a rise time of 8 µs and a decay time to half-value of 20 µs. Source: IEC 60060-1

Surge current of (10/350) µs
Surge current with a rise time of 10 µs and a decay time to half-value of 350 µs. Source: IEC 62305-1

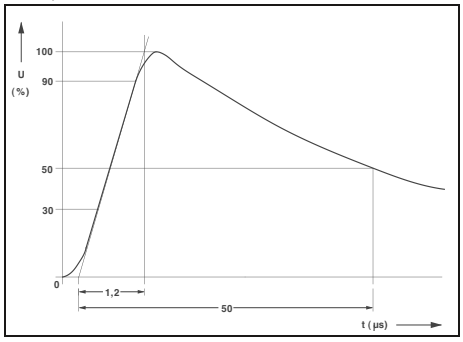
Surge protection equipment (SPE)
Surge protection equipment consists of surge protective devices and all equipment in telecommunications systems, including their cables, used for surge protection.

Surge protective device (SPD)
A device to limit surge voltages and discharge surge currents. It contains at least one non-linear voltage-limiting component.

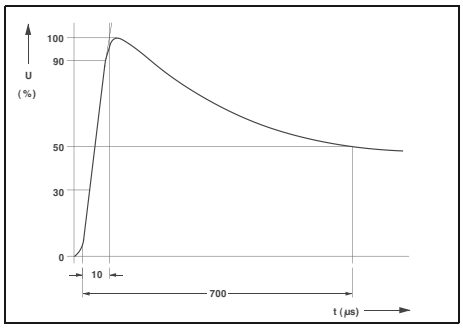
Surge voltage
Any voltage with a peak value that exceeds the corresponding peak value of the maximum continuous voltage under normal operating conditions.
Source: EN 60664-1

Surge voltage category
Assignment of electrical equipment to the anticipated surge voltage.

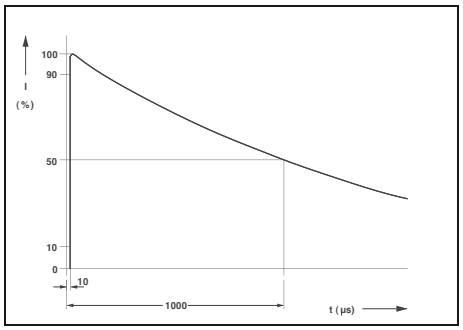
Surge voltage of (1.2/50) µs
Surge voltage with a rise time of 1.2 µs and a decay time to half-value of 50 µs. Source: IEC 60060-1



1.2/50 surge voltage pulse according to IEC 60060-1



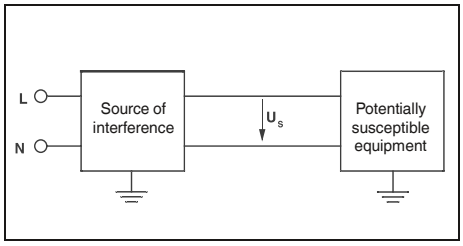
10/700 surge voltage pulse according to ITU-T K.44



10/1000 surge current pulse according to IEEE C62.41.1

Switching surge voltage
Surge voltage as a result of a switching operation.

Symmetrical interference
As shown in the figure, the disturbance variable moves from the source along one conductor to the potentially susceptible equipment and back along the other conductor. The terms "normal-mode interference" or "differential mode" are also used.



Symmetrical interference voltage
Interference voltage between two wires of a cable (e.g., double cable) or between two connection points of electrical equipment for this cable type.

Symmetrical voltage, differential mode voltage
Voltage between two live conductors from one defined group.

Temperature range
Range between the minimum and maximum temperature that may be present at/in housing. For devices without self-heating, this value is the permissible ambient temperature. For devices with self-heating, these values are the maximum temperatures that may occur at/in the device during operation.

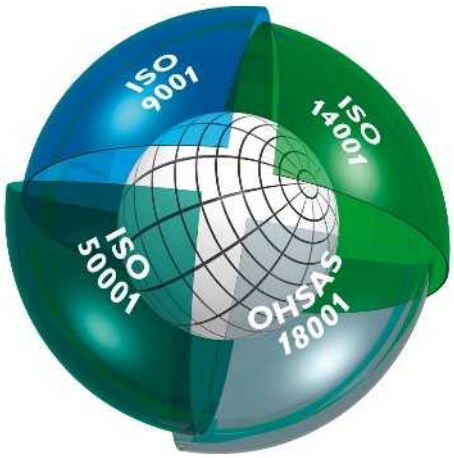
To ground
An electrically conductive part, e.g., the lightning protection system is connected to ground via a grounding system.

Transient
Describes a phenomenon or variable which changes during what is, in comparison to the time scale being observed, a short period of time between two consecutive stationary states.

Transients
Irregular and relatively short positive and/or negative voltage or current changes between two stationary states.

Varistors
A varistor is a bipolar non-linear resistor with a symmetrical voltage/current characteristic curve and a resistance value which decreases as the voltage increases.

Quality in quantity



Integrated management system

The objective of the Phoenix Contact integrated management system is to integrate all requirements pertaining to products, processes, and the organization.

Statutory and regulatory requirements, as well as those of international standards and our customers, are met and, in some cases, even exceeded in all phases of the product lifecycle.

The Phoenix Contact management system is monitored by internationally recognized independent bodies each year to ensure that quality, environmental protection, energy efficiency, and occupational safety have been integrated in conformance with the relevant requirements. Certification in accordance with international standards ISO 9001, ISO 14001, ISO 50001, and BS OHSAS 18001 is the result of our corporate philosophy of meeting the needs of our customers, staff, and environment as best as possible. They serve as the basis for innovative products with the familiar high Phoenix quality standard, actively practiced environmental protection through efficient production and products that conserve resources, and responsibility in the field of occupational health and safety. It goes without saying that we integrate all further requirements of standards, international approvals or special customer requirements into our company processes.

The result of this system is a building block for the success of the Phoenix Contact Group as well as its products and services.

CE marking

CE marking was introduced as an important instrument for the free movement of goods within the European single market. By applying the mark to a product, the manufacturer confirms its compliance with all EU directives applicable to this product. The EU directives describe the product characteristics with regard to device safety and the avoidance of risks. These are legally binding regulations of the European Union (EU), which means that the fulfillment of these requirements is a **legal prerequisite for the marketing of these products within the EU**.

Where applicable, our products currently fall within the scope of the following directives:

– 2014/35/EU
  Electrical equipment designed for use within certain voltage limits (Low Voltage Directive)
– 2014/30/EU
  Electromagnetic compatibility (EMC Directive)
– 2014/32/EU
  Measuring instruments
– 2006/42/EC
  Safety of machinery (Machinery Directive)
– 2014/34/EU
  Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive)
– 1999/5/EC
  Radio Equipment and Telecommunications Terminal Equipment Directive (R&TTE)
– 2014/53/EU
  Radio equipment (RED)
– 2011/65/EU
  RoHS Directive

The standards used as the basis for the aforementioned directives have been at the heart of our development standard for some time as a way of ensuring compliance with European directives. The numbers of the directives indicate their version at the time of publication. In the event of changes to directives and/or standards, our products will undergo conformity assessment again in good time and a new declaration of conformity will be issued promptly. The current declarations for each product can also be found in our download area.

Among the aforementioned European directives, the EMC Directive plays a particularly important role. It uses a legally binding directive as the basis for defining electromagnetic compatibility as a fundamental device property. European legislation therefore places great emphasis on the electromagnetic compatibility of devices and systems as a basic prerequisite for the error-free operation of machines and systems. As an international leader in the field of surge protection, Phoenix Contact has extensive expertise in EMC. This expertise and the experience gained over many years in the development and application of industrial interface and communication technology have resulted in an extremely high standard of quality for our products when it comes to electromagnetic compatibility. Our sister company, Phoenix Testlab, was founded in order to share this expertise with other companies. Phoenix Testlab GmbH is an independent, accredited service company, which carries out EMC testing in compliance with the European standards. At Phoenix Testlab, devices are also tested with regard to their electrical safety, mechanical influences, and their behavior in relation to environmental influences. Phoenix Testlab is also a notified body according to EMC Directive 2014/30/EU, R&TTE Directive 1999/5/EC for radio equipment and telecommunications terminal equipment, and Radio Equipment Directive (RED) 2014/53/EU. As a certification body (TCB, FCB, and RCB), Phoenix Testlab is also able to approve these products for the markets in the USA, Canada, and Japan.

Standards and regulations

All relevant standards and regulations are used as the basis for the development and maintenance of our products.

International standards are subject to continuous changes as a result of harmonization and new developments. In line with this process, the current version of all standards that are relevant to our products is documented in the product area on our website at **phoenixcontact.net/products**.

Online product information service on the world wide web

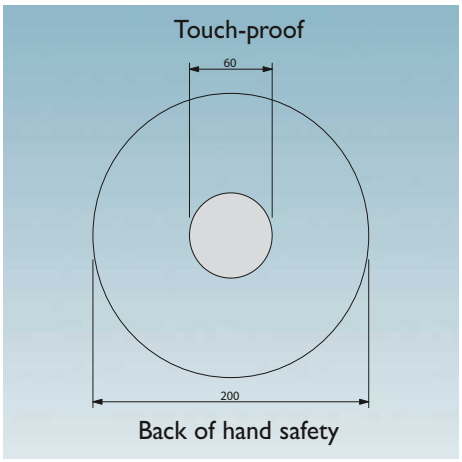
Phoenix Contact is continuously extending its product range.

Within the scope of our product monitoring obligation, all products are subject to an improvement process.

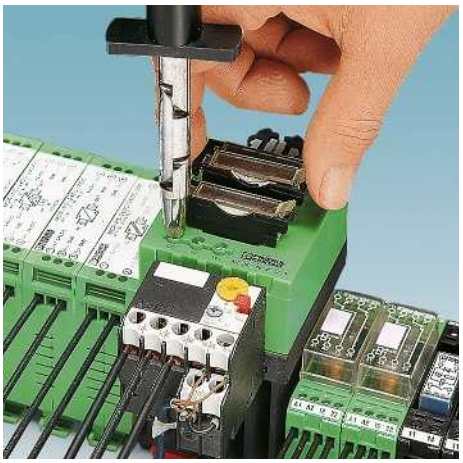
The Internet is an ideal platform to quickly communicate new product developments and improvements to the market.

You can quickly access the relevant Phoenix Contact website for your region via phoenixcontact.com. There you will always find an up-to-date overview of products, solutions, and services from Phoenix Contact. This includes technical documents such as data sheets and user manuals, current driver and demo software, and a direct link to the relevant contact person.

Touch proofness



Example: pressure actuation



Finger safety

Back of hand safety

The accident prevention regulations BGV A 2 issued by the German employer's liability insurance association for precision mechanics and electrical engineering apply to the operators of electrical systems and are aimed at the prevention of electrical accidents by means of special safety requirements.

These regulations contain specifications regarding the safety distances for work, operation, and occasional handling in the proximity of "live parts" in low-voltage systems up to 1000 V ~ or 1500 V –.

– Work with live parts is only permitted once they have been de-energized. Operational activities are only permitted in the vicinity of live parts if these parts are de-energized or are protected against direct contact (§ 6). The following safety measures apply when working in the vicinity of live parts:
– Provision of the de-energized state for the duration of the work
– Ensure shock protection is in place in the form of covers or barriers during the work
– Assurance that proximity limits will not be violated (§ 7)

The term "occasional handling" has been introduced for the operation of elements such as pushbuttons, rocker arms or rotary buttons in the proximity of live parts.

In VDE 0105-1, this is covered by "operation with partial protection against direct contact".

Detailed specifications for "occasional handling" can be found in DIN VDE 0106-100. This specifies to what degree live parts in the proximity of operating elements are to be protected against contact. The basis for this is the definition of a "protection area for occasional handling"; this is the area into which the user must reach in order to handle the machine.

The most important thing is that an area formed by an even envelope curve 30 mm in radius must surround the live parts. This area must be **touch-proof**, i.e., the live parts of the electrical device must not be within reach of the VDE test finger according to IEC 60529/DIN VDE 0470-1 (test finger).

Back of hand safety is specified for the "rest of the area" up to 100 mm around the operating element. **Back of hand safety** means that when a force of 50 N is applied to a ball with a diameter of 50 mm, this does not come into contact with the live parts of the equipment. No special measures for ensuring contact safety are stipulated outside this area.

Note: Systems and equipment that are operated with SELV up to 25 V ~ or 60 V – are considered to be protected against "direct contact".

According to § 5, Subsection 4 of the BGV A 2 regulations, there is no need to test the condition of the system prior to initial startup if the company has confirmation from the manufacturer or installer that the electrical systems and equipment conform to BGV A 2. The confirmation required relates to systems and equipment that have been installed and are ready for operation and can only be issued by the installer or installation company. The manufacturer of the electrical equipment can only issue a confirmation that products have been produced in accordance with the relevant electrotechnical DIN VDE regulations stipulated in BGV A 2. The installer must bear this in mind when selecting the equipment to be used.

In the field of connection technology, Phoenix Contact offers a wide range of products which are touch-proof or can be protected against contact by means of covers. Depending on the conditions, all of this must be taken into account when selecting the individual types of terminal blocks and accessories.

Quality features of insulating housings

Thermoplastics

The majority of our insulating housing is made from thermoplastic materials. Roughly speaking, these can be divided into amorphous and semi-crystalline substances. Thermoplastics are processed using the efficient and environmentally-friendly injection molding process. They have good recycling properties and can be re-used. We use many materials that are modified in different ways to meet the demanding requirements that electrical and electronic modules, devices, and systems have to meet with regard to their mechanical, thermal, and electrical properties.

Behavior of plastics under the influence of temperature (operating temperatures, mechanical influences)

All plastics undergo a process referred to as thermal aging when they are subjected to heat over long periods. This process causes changes in the mechanical and electrical properties of the material. External influences, e.g., radiation, additional mechanical, chemical or electrical stresses, amplify this effect. Special tests on samples can yield characteristic data which provides a good means of drawing comparisons between different plastics. However, applying these characteristics to an evaluation of molded plastic parts is only possible to a limited extent, and can only give the designer a rough guide when it comes to selecting a plastic material. This catalog uses the following assessment criteria: the **RTI value** according to UL746B/ANSI 746 B (elec. based on electric strength) and the **Ti value** according to IEC 60216-1 (based on a 50% reduction in tensile strength after 20,000 hours).

IEC 60947-7-1/EN 60947-7-1 specifies a permissible temperature increase of 45 K for terminal blocks under nominal load. Phoenix Contact terminal blocks fulfill this requirement.

The properties of plastics are not only affected by the influence of heat as described above; they also undergo changes as a result of cold influences. When subjected to cold as well as low levels of humidity, plastics become increasingly brittle with the result that they are no longer capable of withstanding the same mechanical loads. As the table on the right shows, the plastics concerned can be used down to a temperature of -40°C, but only without a mechanical load. As far as the products presented in the catalog are concerned, it is the ambient temperature specified in each case that is to be regarded as definitive for operation. Regardless of the plastics used, this may be subject to further restrictions (e.g., limited to -20°C) as a result of the components used or other restrictive parameters.

At very low temperatures, this means that any form of mechanical load on the plastic components must be avoided (e.g., mounting of products on/removal of products from the DIN rail, actuation of terminal points, locking/ejection of relays from bases, prizing out of jumpers, bending of cables and lines, etc.), as there is always an associated risk of damage. Unless otherwise indicated, it is recommended that you carry out the specified mounting/operational tasks in a temperature range from -10°C to +40°C.

Inflammability characteristics of plastics (UL 94)

The inflammability tests for plastics have been defined by the Underwriters Laboratory (USA) in regulation UL 94. This applies to all areas of application, particularly in electrical engineering. A horizontal or vertical test is carried out at the test laboratory to determine the inflammability of the plastic material with a naked flame. In order of increasing flame-retardant behavior, the evaluation classes are HB, V2, V1, V0, and 5V. Test results are recorded on "yellow cards" and are published annually in the **Recognized Component Directory.**

Thermoplastics: non-reinforced polyamide, PA

We use the modern, semi-crystalline polyamide insulation material, which has now become an essential component in electrical engineering and electronics. It has long occupied a leading position and is authorized for use by the relevant approval authorities such as the CSA, NEMKO, KEMA, PTB, SEV, UL, VDE, etc.

Polyamide has excellent electrical, mechanical, chemical, and other properties even at high operating temperatures. Brief peak temperatures of up to approximately 200°C are permitted as a result of heat aging stabilization. Depending on the type (PA 4.6, 6.6, 6.10, etc.), its melting point is in the region of 215°C to 295°C.

Polyamide absorbs moisture from its surroundings, on average 2.8%. This is not the embedded water of crystallization, however, but rather chemically bound H_2O groups in the molecular structure. This makes the plastic flexible and resistant to breakage, even at temperatures as low as -40°C. PA belongs to flammability rating V2 to V0 according to UL 94.

Thermoplastics: polyester, PBT

We use the semi-crystalline thermoplastic polyester in non-reinforced and fiberglass-reinforced variants for special applications which require increased dimensional and form stability.

Apart from the high operating temperature, the material is characterized by excellent mechanical strength and hardness. Polyester does not absorb moisture from its surroundings. Therefore, PBT is particularly suitable for strips, for example, that are soldered onto PCBs and are subsequently required to pass a burn-in test where they are subjected to the influence of heat. PBT belongs to flammability rating V2 to V0 according to UL 94.

Thermoplastics: polycarbonate, PC

Polycarbonate combines many advantages such as rigidity, impact strength, transparency, dimensional stability, good insulation properties, and resistance to heat.

The amorphous material only absorbs moisture to a very limited degree, and is used for items such as large, rigid electronic component housings.

In its transparent form, polycarbonate is particularly suitable for use as a material for cover profiles or marking materials.

PC has good resistance properties against mineral acids, saturated aliphatic hydrocarbons, gasoline, greases, and oils.

This material is not very resistant to solvents, benzene, alkalis, acetone, and ammonia. Strain cracks may result from contact with certain chemicals.

PC belongs to flammability rating V2 to V0 according to UL 94.

Thermoplastics: polycarbonate fiber-reinforced, PC-F

Compared to non-reinforced materials, fiber-reinforced polycarbonates feature greater rigidity, impact strength, and operating temperature. In other respects, their properties are largely identical to those of non-reinforced polycarbonate.

Thermoplastics: ABS

We use the thermoplastic molding compound ABS for products which must have good impact and notched impact properties in addition to high mechanical stability and rigidity. The products are resistant to chemicals and stress cracking due to their special surface quality and hardness.

The characteristic thermal properties provide good dimensional stability at both low and high temperatures. Products made from ABS can be coated with metallic surfaces, e.g., nickel.

The flammability rating of the molding compound used is HB to V0 according to UL 94.

Properties	Unit/level	Polyamide PA	Polyester PBT	Polycarbonate PC	Polycarbonate PC-F	ABS
Operating temperature RTI */**	°C	≤ 105	≤ 105	≤ 125	≤ 120	≤ 80
Minimum temperature (without mechanical load)	°C	-40	-40	-40	-40	-40
Electric strength IEC 60243-1/DIN VDE 0303-21	kV/cm	600	400	> 300		850
Resistance to creepage IEC 60112/DIN VDE 0303-1	CTI...M	550	225	175		200
	CTI...	600	225	175	175	600
Tropical and termite resistance		Good	Good	Good		
Specific contact resistance IEC 60093/VDE 0303 Part 30; IEC 60167/VDE 0303 Part 31	Ω cm	10^{12}	10^{16}	> 10^{16}	> 10^{14}	10^{14}
Surface resistance IEC 60093/VDE 0303 Part 30; IEC 60167/VDE 0303 Part 31	Ω	10^{10}	10^{13}	> 10^{14}		10^{13}
Flammability rating according to UL 94		V2-V0	V0	V2-V0	V0	HB-V0

* According to UL 746 B/ANSI 746 B (elec.)

** Minimum value

Dimensions

Dimensions: Width/**H**eight/**D**epth

The dimensions "**W**idth/**H**eight/**D**epth" are defined as follows for all DIN-rail-mountable products:

– **W**idth: measurement taken along the DIN rail
– **H**eight: measurement taken across the DIN rail
– **D**epth: measurement taken starting from the mounting plate and including the DIN rail

NS 35/7.5 (EN 60715)

The width, height, and depth never change, even if the products shown in this catalog happen to be photographed from two different perspectives (horizontal or vertical).

To make things easier for you, one of the two symbols shown above has been included next to each product photo:

EMC: Class A product:

In accordance with statutory regulations, our products are indicated with this footnote if they are intended for use in industrial environments. This means that the permitted limit values for residential applications may be exceeded in the event of conducted and emitted disturbance variables. In such cases, the operator may have to take additional safety measures in order to ensure electromagnetic compatibility in residential applications.

Note:

Subject to changes that serve the purpose of technical progress.

Connection cross section

The rated cross section of terminal blocks must be specified by the manufacturer according to IEC 60947-7-1. The rated cross section is the maximum conductor cross section that can be connected in single, multi or fine-strand versions subject to specific thermal, mechanical, and electrical requirements.

The manufacturer must also specify the **rated connection capacity**, i.e., the area of connectable conductors as well as the number of conductors which can be connected simultaneously and the necessary preparation of the conductor ends. The conductors can be **solid (single or multi-strand)** or flexible **(fine-strand)**.

These values can be found in the product-specific technical data.

The rated connection capacity of Phoenix Contact terminal blocks usually exceeds standard requirements, which specify that it must only be possible to connect one conductor with one of the two next smallest cross sections, excluding the rated cross section (standardized for the cross section range from 0.2 to 35 mm²).

In addition, conductors with a rated cross section can usually be wired with ferrules with plastic sleeve.

Phoenix Contact terminal blocks are designed to allow copper conductors to be connected to them untreated. "Special treatment" or the use of ferrules – both permitted according to IEC 60947-7-1 – are not required. If ferrules are nevertheless used to protect stranded conductors against splicing, the connection capacity of the stranded conductor is generally reduced by one level.

Structure and dimensions of connecting cables

Cross section	Single-stranded		Multi-stranded		Fine-stranded		American Wire Gauge [AWG]							
	Diameter max. dimension	Number of wires	Diameter max. dimension	Number of wires (minimum number)	Diameter max. dimension	Number of wires (guide value)	Gauge no.	Solid wires			Stranded wires			
[mm²]							AWG	[Ø mm]	[circ. mils]	[mm²]	[Ø mm]	[circ. mils]	[mm²]	
0.2	0.5	1	–	–	–	–	24	0.51	404	0.21	–	–	–	
0.5	0.9	1	1.1	7	1.1	16	20	0.81	1022	0.52	0.97	1111	0.56	
0.75	1.0	1	1.2	7	1.3	24	18	1.02	1620	0.82	1.16	1600	0.82	
1	1.2	1	1.4	7	1.5	32	(17)	1.15	2050	1.04	–	–	–	
–	–	–	–	–	–	–	16	1.29	2580	1.31	1.50	2580	1.32	
1.5	1.5	1	1.7	7	1.8	30	(15)	1.45	3260	1.65	–	–	–	
–	–	–	–	–	–	–	14	1.63	4110	2.08	1.85	4100	2.09	
2.5	1.9	1	2.2	7	2.3	50	(13)	1.83	5180	2.63	–	–	–	
–	–	–	–	–	–	–	12	2.05	6530	3.31	2.41	6500	3.32	
4	2.4	1	2.7	7	2.9	56	(11)	2.30	8230	4.17	–	–	–	
–	–	–	–	–	–	–	10	2.59	10380	5.26	2.95	10530	5.37	
6	2.9	1	3.3	7	3.9	84	(9)	2.91	13100	6.63	–	–	–	
–	–	–	–	–	–	–	8	3.26	16510	8.37	3.73	16625	8.48	

Tightening torque of terminal block screws

IEC 60947-1/EN 60947-1, modified, Table 4 specifies tightening torques for screw connections based on the screw size for electrical and mechanical type tests.

Extract from IEC 60947-1/EN 60947-1, Table 4

The torque according to IEC and the recommended torque for Phoenix Contact terminal blocks are specified

Thread	Head screw with slot	
	Torque [Nm]	Recommended tightening torque [Nm]
M2.5 (M2.6)	0.4	0.4 - 0.5
M3	0.5	0.5 - 0.6
M3.5	0.8	0.8 - 1.0
M4	1.2	1.2 - 1.5

Current carrying capacity

Standard IEC 60947-7-1/EN 60947-7-1/ DIN VDE 0611-1 specifies the test currents for the individual conductor cross sections listed in the adjacent table. The corresponding currents are listed with the connection data for the individual terminal blocks. The type tests of terminal blocks are based on this data.

Test currents according to IEC 60947-7-1/EN 60947-7-1, Table 5

Rated cross section	[mm²]	0.2	0.5	0.75	1.0	1.5	2.5	4	6	10	16
Test current	[A]	4	6	9	13.5	17.5	24	32	41	57	76

Certification bodies and safety marks

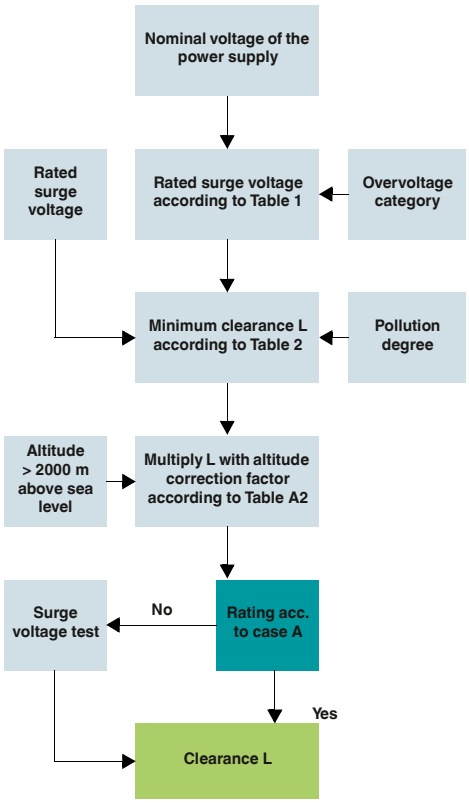
Certification bodies and approvals		Country code
CB scheme	IECEE CB Scheme (in combination with certifying body)	Interna-tional
CCA	CENELEC Certification Agreement (CCA inspection report) (in combination with certifying body)	EU
	Canadian Standards Association (CSA)	CA
	Canadian Standards Association (CSA) - CSA approval for the USA -	US
	Canadian Standards Association (CSA) Combined logo - CSA approval for Canada and the USA -	CA US
	Underwriters Laboratories Inc. (UL)	US
	Underwriters Laboratories Inc. (UL) - UL approval for Canada -	CA
	Underwriters Laboratories Inc. (UL) Combined logo - UL approval for the USA and Canada -	US CA
	INSIEME PER LA QUALITA'E LA SICUREZZA	IT
EAC	Eurasian Conformity	BY KZ RU
KEMA KEUR	DEKRA Certification B.V.	NL
ÖVE	Österreichischer Verband für Elektrotechnik	AT
SEV	electrosuisse SEV Verband für Elektro-, Energie- und Informationstechnik	CH
VDE	Verband Deutscher Elektrotechniker e.V. (VDE) – Approval of drawings – Reports with production monitoring	DE
DGUV TEST	Berufsgenossenschaft (BG) GS Tested safety	DE
Intertek	Intertek ETL Listed - Approval for the USA -	US
Intertek	Intertek ETL Listed - Approval for Canada -	CA
Intertek	Intertek ETL Listed - Approval for the USA and Canada -	US CA
TÜV	TÜV Rheinland Industrie Service GmbH	DE
CCC	China Compulsory Certification	CN
KC	Korea Communications Commission	KR

Explosion protection		Country code
IEC IECEx	International Electrotechnical Commission	Interna-tional
Ex	ATEX Directive	EU
DEKRA	DEKRA Certification B.V.	NL
PTB	Physikalisch-Technische Bundesanstalt	DE
kiwa	KIWA Nederland B.V.	NL
VTT	VTT Expert Services Oy	FI
IBExU	IBExU Institut für Sicherheitstechnik GmbH	DE
UC	TÜV Rheinland do Brasil	BR
TÜV NORD	Technischer Überwachungsverein Nord	DE
DEKRA	DEKRA EXAM GmbH	DE
	Canadian Standards Association (CSA)	CA
US	Canadian Standards Association (CSA) - CSA approval for the USA -	US
C US	Canadian Standards Association (CSA) Combined logo - CSA approval for Canada and the USA -	CA US
	Underwriters Laboratories Inc. (UL)	US
	Underwriters Laboratories Inc. (UL) - UL approval for Canada -	CA
	Underwriters Laboratories Inc. (UL) Combined logo - UL approval for the USA and Canada -	US CA
FM APPROVED	FM Approvals	US
EAC Ex	Eurasian Conformity for Ex-products	BY KZ RU

Marine classification societies		Country code
DNV GL	DNV GL - MARITIME	DE
BUREAU VERITAS	Bureau Veritas	FR
GL	Germanischer Lloyd AG	DE
Lloyd's Register	Lloyd's Register of Shipping	GB
ClassNK	Nippon Kaiji Kyokai	JP
DNV	Det Norske Veritas	NO
	Polski Rejestr Statków	PL
	Russian Maritime Register of Shipping	RU
KR KOREAN REGISTER	Korean Register of Shipping	KR
ABS	American Bureau of Shipping	US

Dimensioning of clearances

Schematic for determining clearances



Rated surge voltages for equipment that is directly supplied by the low-voltage network (extract from Table 1)

Nominal voltage of the power supply system [1] (mains) as per IEC 60038 [3]		Conductor-neutral conductor voltage derived from the total nominal AC voltage or nominal DC voltage	Rated surge voltage [2] [V]			
Three-phase	Single-phase		Overvoltage category [4]			
[V]	[V]	[V]	I	II	III	IV
	120 to 240	50	330	500	800	1500
		100	500	800	1500	2500
		150	800	1500	2500	4000
230/400 277/480		300	1500	2500	4000	6000
400/690		600	2500	4000	6000	8000
1000		1000	4000	6000	8000	12000

[1] Refer to Annex B for application in existing deviating low-voltage networks and their nominal voltages.

[2] Equipment with this rated surge voltage may be used in systems according to IEC 60364-4-443.

[3] The slash, i.e., /, indicates a three-phase four-wire system. The lower value is the conductor-to-neutral-conductor voltage, whereas the higher value is the conductor-to-conductor voltage. When only one value is specified, it refers to a three-phase three-conductor system, and indicates the conductor-to-conductor voltage.

[4] Refer to 2.2.2.1.1 for an explanation of overvoltage categories.

Minimum clearances for overvoltages (extract from Table 2)

Required rated impulse voltage [1] [5]	Condition A Non-homogeneous field (refer to 3.15)			Condition B Homogeneous field (refer to 3.14)		
	Pollution degree [6]			Pollution degree [6]		
	1	2	3	1	2	3
[kV]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
0.33 [2]	0.01	0.2 [3] [4]	0.8 [4]	0.01	0.2 [3] [4]	0.8 [4]
0.40	0.02			0.02		
0.5 [2]	0.04			0.04		
0.60	0.06			0.06		
0.80 [2]	0.10			0.10		
1.0	0.15			0.15		
1.2	0.25	0.25		0.2		
1.5 [2]	0.5	0.5		0.3	0.3	
2.0	1.0	1.0	1.0	0.45	0.45	
2.5 [2]	1.5	1.5	1.5	0.6	0.6	
3.0	2.0	2.0	2.0	0.8	0.8	
4.0 [2]	3	3	3	1.2	1.2	1.2
5.0	4	4	4	1.5	1.5	1.5
6.0 [2]	5.5	5.5	5.5	2	2	2
8.0 [2]	8	8	8	3	3	3
10	11	11	11	3.5	3.5	3.5
12 [2]	14	14	14	4.5	4.5	4.5
15	18	18	18	5.5	5.5	5.5
20	25	25	25	8	8	8
25	33	33	33	10	10	10
30	40	40	40	12.5	12.5	12.5
40	60	60	60	17	17	17
50	75	75	75	22	22	22
60	90	90	90	27	27	27
80	130	130	130	35	35	35
100	170	170	170	45	45	45

[1] This voltage is:
– For function insulation: the highest surge voltage expected for the clearance
– For basic insulation, if influenced directly or considerably by transient overvoltages from the low-voltage network: the rated surge voltage of the equipment
– For a different basic insulation: the highest surge voltage possible in the circuit.

[2] Preferred values

[3] For PCBs, the values of pollution degree 1 are applicable, except that no deviation below the value of 0.04 mm is permitted, as specified in Table 4.

[4] Minimum clearances for pollution degrees 2 and 3 are based on the corresponding creepage distances. This resistance is reduced due to the effects of humidity.

[5] Values can be interpolated for parts or circuits within equipment that are subjected to surge voltages.

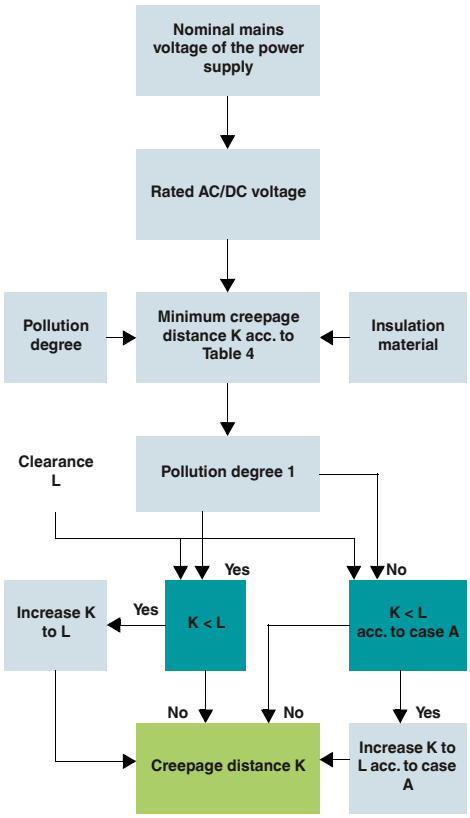
[6] The distances for pollution degree 4 are equal to those for pollution degree 3, except that the minimum clearance is 1.6 mm.

Altitude correction factors (extract from Table A.2)

Altitude [m]	Normal air pressure [kPa]	Multiplication factor for distances
2000	80.0	1.00
3000	70.0	1.14
4000	62.0	1.29
5000	54.0	1.48
6000	47.0	1.70
7000	41.0	1.95
8000	35.5	2.25
9000	30.5	2.62
10000	26.5	3.02
15000	12.0	6.67
20000	5.5	14.50

Dimensioning of creepage distances

Schematic for determining creepage distances



Single-phase three or two-conductor AC or DC voltage systems (extract from Table 3 a)

Nominal voltage of the power supply system (mains) *)	Voltages for Table 4	
	For conductor-to-conductor insulation [1] All systems	For conductor-to-ground insulation [1] Three-conductor systems center point grounded
[V]	[V]	[V]
12.5	12.5	–
24 25	25	–
30	32	–
42 48 50 **)	50	–
60	63	–
30 - 60	63	32
100 **)	100	–
110 120	125	–
150 **)	160	–
220	250	–
110 - 220 220 - 240	250	125
300 **)	320	–
220 - 440	500	250
600 **)	630	–
480 - 960	1000	500
1000 **)	1000	–

[1]) Conductor-to-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-to-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-to-conductor voltage. This is based on the fact that the actual voltage to ground is determined by the insulation resistance and capacitive reactance of each conductor to ground. Therefore, a low (but permissible) insulation resistance of a conductor can practically ground this and raise the two others to conductor-to-conductor voltage to ground.

*) Refer to 2.2.1 for correlation with the rated voltage.

**) These values correspond to the values in Table 1.

Three-phase four or three-conductor AC voltage systems (extract from Table 3 b)

Nominal voltage of the power supply system (mains) *)	Voltages for Table 4		
	For conductor-to-conductor insulation All systems	Insulation for conductor to ground	
		Three-phase four-conductor systems with grounded neutral conductor [2]	Three-phase three-conductor systems non-grounded [1] or conductor grounded
[V]	[V]	[V]	[V]
60	63	32	63
110/120/127	125	80	125
150 **)	160	–	160
208	200	125	200
220/230/240	250	160	250
300 **)	320	–	320
380/400/415	400	250	400
440	500	250	400
480/500	500	320	500
575	630	400	630
600 **)	630	–	630
660/690	630	400	630
720/830	800	500	800
960	1000	630	1000
1000 **)	1000	–	1000

[1]) Conductor-to-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-to-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-to-conductor voltage. This is based on the fact that the actual voltage to ground is determined by the insulation resistance and capacitive reactance of each conductor to ground. Therefore, a low (but permissible) insulation resistance of a conductor can practically ground this and raise the two others to conductor-to-conductor voltage to ground.

[2]) For equipment designed for use in three-phase four-conductor and three-phase three-conductor systems, grounded as well as non-grounded, only the values for three-conductor systems may be used.

*) Refer to 2.2.1 for correlation with the rated voltage.

**) These values correspond to the values in Table 1.

Creepage distances to prevent failures occurring due to creepage (extract from Table 4)

Voltage [1] r.m.s. value	Minimum creepage distances								
	Printed circuits								
	Pollution degree			Pollution degree					
	1	2	1	2			3		
	All insulation material groups	All insulation material groups except III b	All insulation material groups	Insulation material group			Insulation material group		
				I	II	III	I	II	III [2])
[V]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
10	0.025	0.04	0.08	0.4	0.4	0.4	**1.00**	**1.00**	**1.00**
12.5	0.025	0.04	0.09	0.42	0.42	0.42	**1.05**	**1.05**	**1.05**
16	0.025	0.04	0.10	0.45	0.45	0.45	**1.10**	**1.10**	**1.10**
20	0.025	0.04	0.110	0.48	0.48	0.48	**1.20**	**1.20**	**1.20**
25	0.025	0.04	0.125	0.5	0.5	0.5	**1.25**	**1.25**	**1.25**
32	0.025	0.04	0.140	0.53	0.53	0.53	**1.30**	**1.30**	**1.30**
40	0.025	0.04	0.16	0.56	0.8	1.1	**1.4**	**1.6**	**1.8**
50	0.025	0.04	0.18	0.6	0.85	1.2	**1.5**	**1.7**	**1.9**
63	0.040	0.63	0.20	0.63	0.9	1.25	**1.6**	**1.8**	**2.0**
80	0.063	0.10	0.22	0.67	0.95	1.3	**1.7**	**1.9**	**2.1**
100	0.10	0.16	0.25	0.71	1.0	1.4	**1.8**	**2.0**	**2.2**
125	0.16	0.25	0.28	0.75	1.05	1.5	**1.9**	**2.1**	**2.4**
160	0.25	0.4	0.32	0.8	1.1	1.6	**2.0**	**2.2**	**2.5**
200	0.40	0.63	0.42	1.0	1.4	2.0	**2.5**	**2.8**	**3.2**
250	0.56	1.0	0.56	1.25	1.8	2.5	**3.2**	**3.6**	**4.0**
320	0.75	1.6	0.75	1.6	2.2	3.2	**4.0**	**4.5**	**5.0**
400	1.0	2.0	1.00	2.0	2.8	4.0	**5.0**	**5.6**	**6.3**
500	1.3	2.5	1.30	2.5	3.6	5.0	**6.3**	**7.1**	**8.0**
630	1.8	3.2	1.80	3.2	4.5	6.3	**8.0**	**9**	**10.0**
800	2.4	4.0	2.40	4.0	5.6	8.0	**10.0**	**11**	**12.5**
1000	3.2	5.0	3.20	5.0	7.1	10	**12.5**	**14**	**16.0**
1250			4.20	6.3	9	12.5	**16**	**18**	**20**
1600			5.60	8	11	16	**20**	**22**	**25**
2000			7.50	10	14	20	**25**	**28**	**32**
2500			10	12.5	18	25	**32**	**36**	**40**
3200			12.5	16	22	32	**40**	**45**	**50**
4000			16	20	28	40	**50**	**56**	**63**
5000			20	25	36	50	**63**	**71**	**80**
6300			25	32	45	63	**80**	**90**	**100**
8000			32	40	56	80	**100**	**110**	**125**
10000			40	50	71	100	**125**	**140**	**160**

[1]) This voltage is:

a) For function insulation: the working voltage.

b) For basic and additional insulation of a circuit supplied directly by the low-voltage network: either the voltage selected from Table 3 a or 3 b on the basis of the rated voltage of the equipment or the rated insulation voltage.

c) For basic and additional insulation of systems, equipment, and internal circuits which are not supplied directly from the mains: the highest r.m.s. value of the voltage that, within the bounds of the rated data, can occur in the system, the equipment or the internal circuit, when supplied with rated voltage and in the case of the most unfavorable combination of operating conditions.

[2]) With pollution degree 3, insulation material group III b is not recommended for use if voltages are greater than 630 V.

Type	Order No.	Page
A		
ADAPTER KOAX TYP F	2880972	180
B		
BATTERY MOUNTING CASE	2320458	289
BATTERY MOUNTING KIT	2320788	289
BLT-T2-1S-320-UT	2906101	69
BLT-T2-320-UT	2906100	69
BNC-V 50	2805041	177
BNC-V 75	2805070	177
BT-1S-230AC/A	2803409	73
BT-1S-230AC/O	2800625	73
C		
C-SAT-BOX	2880561	180
C-TV-SAT	2856993	181
C-TV/HIFI	2857002	181
C-UB/E	2763701	177
C-UFB- 5DC/E	2782300	177
C-UFB- 5DC/E 75	2763604	177
C-UFB-24DC/E	2782313	177
CB 1/10-1/10 UT-BE	2801305	331
CB 1/6-2/4 PT-BE	2800929	331
CB E1 24DC/10A S-C P	2800928	323
CB E1 24DC/10A S-R P	2800914	323
CB E1 24DC/1A NC P	2800915	323
CB E1 24DC/1A NO P	2800901	322
CB E1 24DC/1A S-C P	2800922	323
CB E1 24DC/1A S-R P	2800908	323
CB E1 24DC/2A NC P	2800916	323
CB E1 24DC/2A NO P	2800902	322
CB E1 24DC/2A S-C P	2800923	323
CB E1 24DC/2A S-R P	2800909	323
CB E1 24DC/3A NC P	2800917	323
CB E1 24DC/3A NO P	2800903	322
CB E1 24DC/3A S-C P	2800924	323
CB E1 24DC/3A S-R P	2800910	323
CB E1 24DC/4A NC P	2800918	323
CB E1 24DC/4A NO P	2800904	322
CB E1 24DC/4A S-C P	2800925	323
CB E1 24DC/4A S-R P	2800911	323
CB E1 24DC/6A NC P	2800919	323
CB E1 24DC/6A NO P	2800905	322
CB E1 24DC/6A S-C P	2800926	323
CB E1 24DC/6A S-R P	2800912	323
CB E1 24DC/8A S-C P	2800927	323
CB E1 24DC/8A S-R P	2800913	323
CB PT BRIDGE	2801014	322
CB S-BE	2905067	331
CB TM1 0.5A F1 P	2800857	330
CB TM1 0.5A M1 P	2800846	329
CB TM1 0.5A SFB P	2800835	269
CB TM1 10A F1 P	2800865	330
CB TM1 10A M1 P	2800854	329
CB TM1 10A SFB P	2800843	328
CB TM1 12A F1 P	2800866	330
CB TM1 12A M1 P	2800855	329
CB TM1 12A SFB P	2800844	328
CB TM1 16A F1 P	2800867	330
CB TM1 16A M1 P	2800856	329
CB TM1 16A SFB P	2800845	328
CB TM1 1A F1 P	2800858	330
CB TM1 1A M1 P	2800847	329
CB TM1 1A SFB P	2800836	269
CB TM1 2A F1 P	2800859	330
CB TM1 2A M1 P	2800848	329
CB TM1 2A SFB P	2800837	269
CB TM1 3A F1 P	2800860	330
CB TM1 3A M1 P	2800849	329
CB TM1 3A SFB P	2800838	269
CB TM1 4A F1 P	2800861	330
CB TM1 4A M1 P	2800850	329
CB TM1 4A SFB P	2800839	269
CB TM1 5A F1 P	2800862	330
CB TM1 5A M1 P	2800851	329
CB TM1 5A SFB P	2800840	269
CB TM1 6A F1 P	2800863	330
CB TM1 6A M1 P	2800852	329
CB TM1 6A SFB P	2800841	269
CB TM1 8A F1 P	2800864	330
CB TM1 8A M1 P	2800853	329
CB TM1 8A SFB P	2800842	328
CB TM2 0.5A F1 P	2800890	330
CB TM2 0.5A M1 P	2800879	329
CB TM2 0.5A SFB P	2800868	328
CB TM2 10A F1 P	2800898	330
CB TM2 10A M1 P	2800887	329
CB TM2 10A SFB P	2800876	328
CB TM2 12A F1 P	2800899	330
CB TM2 12A M1 P	2800888	329
CB TM2 12A SFB P	2800877	328
CB TM2 16A F1 P	2800900	330
CB TM2 16A M1 P	2800889	329
CB TM2 16A SFB P	2800878	328
CB TM2 1A F1 P	2800891	330
CB TM2 1A M1 P	2800880	329
CB TM2 1A SFB P	2800869	328
CB TM2 2A F1 P	2800892	330
CB TM2 2A M1 P	2800881	329
CB TM2 2A SFB P	2800870	328
CB TM2 3A F1 P	2800893	330
CB TM2 3A M1 P	2800882	329
CB TM2 3A SFB P	2800871	328
CB TM2 4A F1 P	2800894	330
CB TM2 4A M1 P	2800883	329
CB TM2 4A SFB P	2800872	328
CB TM2 5A F1 P	2800895	330
CB TM2 5A M1 P	2800884	329
CB TM2 5A SFB P	2800873	328
CB TM2 6A F1 P	2800896	330
CB TM2 6A M1 P	2800885	329
CB TM2 6A SFB P	2800874	328
CB TM2 8A F1 P	2800897	330
CB TM2 8A M1 P	2800886	329
CB TM2 8A SFB P	2800875	328
CBM E4 24DC/0.5-10A NO-R	2905743	314
CBM E8 24DC/0.5-10A NO-R	2905744	314
CBMC E4 24DC/1-10A NO	2906032	316
CBMC E4 24DC/1-10A NO-C	2908716	317
CBMC E4 24DC/1-4A NO	2906031	316
CBMC E4 24DC/1-4A NO-C	2908713	317
CHECKMASTER 2	2905256	195
CM 2-PA-CTM	2905282	195
CM 2-PA-FLT/VAL-CP/SEC	2905283	195
CM 2-PA-PT/A	2907891	195
CM 2-PA-PT/PLT	2905284	195
CM 2-PA-PT4/PLT3S	2907019	195
CM 2-PA-SEC-HYBRID	2907889	195
CM 2-PA-TTC	2908707	195
CM 2-PA-VAL-MS	2905265	195
CN-LAMBDA/4-0.47-BB	2800021	178
CN-LAMBDA/4-0.47-SB	2800022	178
CN-LAMBDA/4-2.25-BB	2801057	178
CN-LAMBDA/4-2.25-SB	2801056	178
CN-LAMBDA/4-5.9-BB	2838490	179
CN-LAMBDA/4-5.9-SB	2800023	179
CN-UB-280DC-3-BB	2801050	176
CN-UB-280DC-3-SB	2801051	176
CN-UB-70DC-6-BB	2803166	176
CN-UB-70DC-6-SB	2803153	176
CN-UB/E	2763691	177
CN-UB/E-BB	2817686	177
CN-UB/MP	2818135	176
CN-UB/MP-90DEG-50	2803137	176
CSMA-LAMBDA/4-2.0-BS-SET	2800491	179
CT 1-10-ES	2765547	169
CT 10-2/2-GS	2765398	168
CT 10-2/2-GS/3E	2765408	168
CT 10-2/2-GS/3E-110AC	2920829	168
CT 10-MB/ 3	2765372	169
CT 10-MB/10	2765385	169
CT 10-TL	2765356	169
CT-KDT	2765518	169
CT-TERMIBLOCK 10 DA	0441711	169
CTM 10-MAG	2838610	169
CTM 1X2- 12DC	2838597	102
CTM 1X2- 24DC	2838513	102
CTM 1X2- 60DC	2838568	102
CTM 1X2-110AC	2838539	166
CTM 2X1- 12DC	2838584	119
CTM 2X1- 24DC	2838500	119
CTM 2X1- 60DC	2838542	119
CTM 2X1-110AC	2838526	166
CTM 2X1-180DC-GS	2838636	167
CTM 2X1-180DC-GS-P	2838623	167
CTM EST	2838649	102
CTM ISDN	2838555	167
D		
D-LAN-19"-12	2880150	143
D-LAN-19"-16	2880147	143
D-LAN-19"-20	2880134	143
D-LAN-19"-24	2838791	143
D-LAN-19"-4	2880176	143
D-LAN-19"-8	2880163	143
D-LAN-19"-D-P	2880192	143
D-LAN-CAT.5-FP	2800723	143
D-UFB-PB	2880642	155
DK-BIC-35	2749880	77
DT-LAN-CAT.6+	2881007	142
DT-TELE-RJ45	2882925	162
DT-TELE-SHDSL	2801593	162
DT-UFB-485/BS	2920612	147
DT-UFB-IB-RB0	2800056	159
DT-UFB-IB-RBI	2800055	159
DT-UFB-V24/S-9-SB	2803069	144
E		
EC-E 0,5A DC24V	0903041	327
EC-E 1A DC24V	0903042	327
EC-E 2A DC24V	0903043	327
EC-E 3A DC24V	0903044	327
EC-E 4A DC24V	0903045	327
EC-E 6A DC24V	0903046	327
EC-E 8A DC24V	0903047	327
EC-E 10A DC24V	0903048	327
EC-E 12A DC24V	0903049	327
EC-E1 0,5A	0903022	326
EC-E1 10A	0903030	326
EC-E1 12A	0903031	326
EC-E1 1A	0903023	326
EC-E1 2A	0903024	326
EC-E1 3A	0903025	326
EC-E1 4A	0903026	326
EC-E1 6A	0903028	326
EC-E1 8A	0903029	326
EC-E4 0,5A	0903040	326
EC-E4 10A	0903038	326
EC-E4 12A	0903039	326
EC-E4 1A	0903032	326
EC-E4 2A	0903033	326
EC-E4 3A	0903034	326
EC-E4 4A	0903035	326
EC-E4 6A	0903036	326
EC-E4 8A	0903037	326
ECP 4	0912034	325
ECP 6	0912033	325
ECP 1-2	0912018	325
ECP 10	0912020	325
ECP 2	0911034	325
ECP 3	0911047	325
ECP 3-6	0916536	325
ECP 8	0912019	325
ECP-E 1A	0900113	324
ECP-E 2A	0900210	324
ECP-E 3A	0900317	324
ECP-E 4A	0900414	324
ECP-E 6A	0900618	324
ECP-E 8A	0900812	324
ECP-E 10A	0901002	324
ECP-E-12A	0900126	324
ECP-E2-10A	0900100	325
ECP-E2-12A	0900207	325
ECP-E2-1A	0900139	325
ECP-E2-2A	0900236	325
ECP-E2-3A	0900333	325
ECP-E2-4A	0900430	325
ECP-E2-6A	0900634	325
ECP-E2-8A	0900838	325
ECP-E3 10A	0912050	325
ECP-E3 12A	0912052	325
ECP-E3 1A	0912041	325
ECP-E3 2A	0912042	325
ECP-E3 3A	0912043	325
ECP-E3 4A	0912044	325
ECP-E3 6A	0912046	325
ECP-E3 8A	0912048	325
EML (20XE)R	0803452	77
EML (20XE)R YE	0803453	77
F		
F-MS 12	2817987	55
F-MS 12 ST	2817990	63
F-MS 12-UD ST	2858328	63
F-MS 12/FM	2817974	55
F-MS 2200/30 ST	2805392	56
F-MS-T1/T2 50 ST	2800191	36
FBS 2-6	3030336	331
FBS 2-6 BU	3036932	331
FBS 2-6 GY	3032237	331
FBS 3-6	3030242	331
FBS 3-6 BU	3036945	331
FBS 3-6 GY	3032240	331
FBS 4-6	3030255	331
FBS 4-6 BU	3036958	331
FBS 4-6 GY	3032279	331
FBS 5-6	3030349	331
FBS 5-6 BU	3036961	331
FBS 5-6 GY	3032266	331
FBS 10-6	3030271	331
FBS 10-6 BU	3032198	331
FBS 10-6 GY	3032253	331
FBS 20-6	3030365	331
FBS 20-6 BU	3032208	331
FBS 50-6	3032224	331
FBS 50-6 BU	3032211	331
FBST 500 TMC-N GY	0901028	326
FBST 500-PLC BU	2966692	326
FBST 500-PLC RD	2966786	326
FLT-ISG-100-EX	2905579	78
FLT-ISG-BR-11	2905580	79
FLT-ISG-BR-14	2905581	79
FLT-ISG-BR-18	2905582	79
FLT-ISG-BR-22	2905583	79
FLT-ISG-BR-26	2905757	79
FLT-ISG-BR-30	2905758	79
FLT-ISG-BR-33	2905759	79
FLT-ISG-BR-36	2905760	79
FLT-ISG-BR-39	2905761	79
FLT-ISG-BR-42	2905762	79
FLT-ISG-BR-48	2905763	79
FLT-ISG-BR-56	2905764	79
FLT-ISG-BR-62	2905765	79
FLT-ISG-CA-100	2905589	79
FLT-ISG-CA-200	2905590	79
FLT-ISG-CA-300	2905591	79
FLT-ISG-PL-11	2905584	79
FLT-ISG-PL-14	2905586	79
FLT-ISG-PL-18	2905587	79
FLT-ISG-PL-22	2905588	79
FLT-ISG-PL-26	2905745	79
FLT-ISG-PL-30	2905746	79
FLT-ISG-PL-33	2905747	79
FLT-ISG-PL-36	2905754	79
FLT-ISG-PL-39	2905755	79
FLT-ISG-PL-42	2905756	79
FLT-SEC-H-T1-1C-264/25-FM	2801615	28
FLT-SEC-H-T1-1C-440/25-FM	2907259	28
FLT-SEC-H-T1-264/25-P	2905968	28
FLT-SEC-H-T1-3C-264/25-FM	2905871	28
FLT-SEC-H-T1-3C-440/25-FM	2907260	28

Type	Order No.	Page
FLT-SEC-H-T1-440/25-P	2907261	28
FLT-SEC-P-T1-1C-264/50-FM	2907387	35
FLT-SEC-P-T1-1C-350/25-FM	2905414	33
FLT-SEC-P-T1-1C-440/35-FM	2905987	30
FLT-SEC-P-T1-1S-264/50-FM	2907388	35
FLT-SEC-P-T1-1S-350/25-FM	2905415	33
FLT-SEC-P-T1-264/50-P	2907391	34
FLT-SEC-P-T1-2C-350/25-FM	2905416	32
FLT-SEC-P-T1-2S-350/25-FM	2905418	32
FLT-SEC-P-T1-350/25-P	2905422	31
FLT-SEC-P-T1-3C-264/50-FM	2907390	34
FLT-SEC-P-T1-3C-350/25-FM	2905419	31
FLT-SEC-P-T1-3C-440/35-FM	2905988	29
FLT-SEC-P-T1-3S-264/50-FM	2909589	34
FLT-SEC-P-T1-3S-350/25-FM	2905421	31
FLT-SEC-P-T1-3S-440/35-FM	2908264	29
FLT-SEC-P-T1-440/35-P	2905989	29
FLT-SEC-P-T1-N/PE-350/100-FM	2905472	33
FLT-SEC-P-T1-N/PE-350/100-P	2905473	31
FLT-SEC-P-T1-N/PE-440/100-FM	2907262	30
FLT-SEC-P-T1-N/PE-440/100-P	2907263	29
FLT-SEC-T1+T2-1C-350/25-FM	2905465	44
FLT-SEC-T1+T2-1S-350/25-FM	2905466	43
FLT-SEC-T1+T2-2C-350/25-FM	2905467	43
FLT-SEC-T1+T2-2S-350/25-FM	2905468	43
FLT-SEC-T1+T2-3C-350/25-FM	2905469	42
FLT-SEC-T1+T2-3S-350/25-FM	2905470	42
FLT-SEC-T1-350/25-P	2905471	42
FOC-SJ:14-ST/.../.../...	1417723	190
FUSE 5A/32V FK-1	2908367	299
FUSE 10A/32V FK1	2908364	305
FUSE 15A/32V FK1	2908360	286
FUSE 15A/32V FKS ATO	2908361	294
FUSE 25A/32V ATOF	2908366	286
FUSE 25A/32V FKS	2908363	305

G

GEB-SET-T1/T2 TAE/TV-SAT	2801022	76

I

IFS-BT-PROG-ADAPTER	2905872	291
IFS-CONFSTICK	2986122	290
IFS-CONFSTICK-L	2901103	290
IFS-MINI-DIN-DATACABLE	2320487	291
IFS-OPEN-END-DATACABLE	2320450	291
IFS-RS232-DATACABLE	2320490	291
IFS-USB-DATACABLE	2320500	290

K

KBL-SAT/20	2880985	180

L

LIT 1X2-24	2804610	100
LIT 2X1-24	2804636	117
LIT 2X2-24	2804623	100
LIT 4-12	2804704	123
LIT 4-24	2804678	123
LIT 4X1-24	2804649	117
LM-S-A/C-3S-ETH	2800618	191
LM-S-C-3LS	2800617	191
LM-S-LS-H	2800616	190

M

ME 17,5 TBUS 1,5/ 5-ST-3,81 GN	2709561	234
ME 6,2 TBUS-2 1,5/5-ST-3,81 KMGY	2969401	123
MINI MCR-SL-V8-FLK 16-A	2811268	100
MINI-BAT/12DC/1.6AH	2866572	305
MINI-BAT/12DC/2.6AH	2866569	305
MINI-BAT/24DC/0.8AH	2866666	304
MINI-BAT/24DC/1.3AH	2866417	302
MINI-DC-UPS/12DC/4	2866598	301

Type	Order No.	Page
MINI-DC-UPS/24DC/2	2866640	301
MINI-PS- 10- 42AC/15-60DC/3	2320199	257
MINI-PS- 12- 24DC/ 5-15DC/2	2320018	256
MINI-PS- 12- 24DC/24DC/1	2866284	256
MINI-PS- 12- 24DC/48DC/0.7	2320021	257
MINI-PS- 48- 60DC/24DC/1	2866271	257
MINI-PS-100-240AC/ 5DC/3	2938714	236
MINI-PS-100-240AC/10-15DC/2	2938756	236
MINI-PS-100-240AC/10-15DC/8	2866297	237
MINI-PS-100-240AC/24DC/1.3	2866446	234
MINI-PS-100-240AC/24DC/1.5/EX	2866653	237
MINI-PS-100-240AC/24DC/2	2938730	235
MINI-PS-100-240AC/24DC/4	2938837	235
MINI-PS-100-240AC/24DC/C2LPS	2866336	235
MINI-PS-100-240AC/2X15DC/1	2938743	237
MINI-SCREW-USB-DATACABLE	2908217	283
MINI-SYS-PS-100-240AC/24DC/1.5	2866983	234
MNT-1 CH II	2882255	74
MNT-1 D	2882200	74
MNT-1 D/WH	2882213	74
MNT-NET B/F	2882226	74
MNT-TAE D	2882381	74
MNT-TAE D/WH	2882394	74
MNT-TEL B/F	2882404	75
MNT-TELE E	2882417	75
MNT-TELE S/WH	2880901	75
MNT-TV-SAT B/F	2882307	75
MNT-TV-SAT D	2882284	75
MNT-TV-SAT D/WH	2882297	75
MPB 18/1- 2	2809209	77
MPB 18/1- 3	2809212	77
MPB 18/1- 4	2809225	77
MPB 18/1- 5	2817864	77
MPB 18/1- 6	2748564	77
MPB 18/1- 8	2748577	77
MPB 18/1- 9	2748580	77
MPB 18/1-12	2748593	77
MPB 18/1-57	2809238	77
MPB 18/1-6/35	2908705	77
MPB 18/1-8/35	2908704	77

N

NEF 1- 1	2794123	187
NEF 1- 3	2794110	187
NEF 1- 6	2783082	187
NEF 1-10	2788977	187

P

PA-CASE 2	2906272	195
PAS-1	2765615	77
PLT-SEC-T3-120-FM	2905228	71
PLT-SEC-T3-120-P	2905234	71
PLT-SEC-T3-230-FM	2905229	71
PLT-SEC-T3-230-P	2905235	71
PLT-SEC-T3-24-FM	2905223	71
PLT-SEC-T3-24-P	2905232	71
PLT-SEC-T3-3S-230-FM	2905230	71
PLT-SEC-T3-3S-230-P	2905236	71
PLT-SEC-T3-60-FM	2905225	71
PLT-SEC-T3-60-P	2905233	71
PLT-SEC-T3-BE	2905557	71
PLT-T3-IT-230-FM	2906450	72
PLT-T3-IT-230-P	2906451	72
PRT-1S-350/20/R	2905977	70
PRT-1S-350/5S	2908551	70
PT 1X2+F-BE	2856126	98
PT 1X2- 5DC-ST	2856016	98
PT 1X2-12AC-ST	2856045	98
PT 1X2-12DC-ST	2856029	98
PT 1X2-24AC-ST	2856058	98
PT 1X2-24DC-ST	2856032	98
PT 1X2-48DC-ST	2803658	98
PT 1X2-BE	2856113	98
PT 2+1-S-48DC-ST	2839648	72
PT 2+1-S-48DC/FM	2817958	72
PT 2-F-ST	2859000	115

Type	Order No.	Page
PT 2-TELE	2882828	164
PT 2-TELE-ST	2838733	164
PT 2X1+F-BE	2856142	112
PT 2X1- 5DC-ST	2856061	112
PT 2X1-12AC-ST	2856090	113
PT 2X1-12DC-ST	2856074	112
PT 2X1-24AC-ST	2856100	113
PT 2X1-24DC-ST	2856087	112
PT 2X1-BE	2856139	112
PT 2X1-VF-120AC	2859327	114
PT 2X1-VF-120AC-ST	2856799	114
PT 2X1-VF-230AC	2805460	114
PT 2X1-VF-230AC-ST	2921365	114
PT 2X1VA- 60AC-ST	2839172	114
PT 2X1VA-120AC-ST	2839185	114
PT 2X1VA-230AC-ST	2839198	114
PT 2X2+F-BE	2839224	99
PT 2X2- 5DC-ST	2838241	99
PT 2X2-12DC-ST	2838254	99
PT 2X2-24AC-ST	2838283	99
PT 2X2-24DC-ST	2838228	99
PT 2X2-BE	2839208	99
PT 2X2-FF-ST	2800755	161
PT 2X2-HF- 5 DC-ST	2839567	161
PT 2X2-HF-12 DC-ST	2839570	161
PT 2X2-HF-24 DC-ST	2839729	161
PT 2XEX(I)-24DC-ST	2838225	132
PT 2XEX(I)-BE	2839279	132
PT 3-HF-12DC-ST	2858043	145
PT 3-PB-ST	2858030	154
PT 4+F-BE	2839415	116
PT 4- 5DC-ST	2839211	116
PT 4-12DC-ST	2839237	116
PT 4-24AC-ST	2800078	116
PT 4-24DC-ST	2839240	116
PT 4-BE	2839402	115
PT 4-EX(I)-24DC-ST	2839253	134
PT 4-EX(I)-BE	2839486	134
PT 4-F-ST	2858441	115
PT 4X1+F-BE	2839376	113
PT 4X1- 5DC-ST	2838306	113
PT 4X1-12DC-ST	2838319	113
PT 4X1-24AC-ST	2838351	113
PT 4X1-24DC-ST	2838322	113
PT 4X1-48AC-ST	2804856	113
PT 4X1-48DC-ST	2858014	113
PT 4X1-BE	2839363	113
PT 5-HF- 5 DC-ST	2838762	147
PT 5-HF-12 DC-ST	2838775	147
PT 5-HF-24DC-ST	2906002	160
PT 6-FSI/C	3212166	334
PT 6-FSI/C-LED 12	3212169	334
PT 6-FSI/C-LED 24	3212172	334
PT 6-FSI/C-LED 48	3212175	334
PT PE/S+1X2-24-ST	2819008	99
PT PE/S+1X2-BE	2856265	99
PT-BE/FM	2839282	114
PT-IQ-1X2+F-12DC-PT	2801254	97
PT-IQ-1X2+F-12DC-UT	2800975	97
PT-IQ-1X2+F-24DC-PT	2801256	97
PT-IQ-1X2+F-24DC-UT	2800977	97
PT-IQ-1X2+F-48DC-PT	2801258	97
PT-IQ-1X2+F-48DC-UT	2800979	97
PT-IQ-1X2+F-5DC-PT	2801252	97
PT-IQ-1X2+F-5DC-UT	2800792	97
PT-IQ-1X2-12DC-PT	2801253	96
PT-IQ-1X2-12DC-UT	2800793	96
PT-IQ-1X2-24DC-PT	2801255	96
PT-IQ-1X2-24DC-UT	2800976	96
PT-IQ-1X2-48DC-PT	2801257	96
PT-IQ-1X2-48DC-UT	2800978	96
PT-IQ-1X2-5DC-PT	2801251	96
PT-IQ-1X2-5DC-UT	2800791	96
PT-IQ-1X2-EX-24DC-P	2801514	129
PT-IQ-1X2-EX-24DC-UT	2801512	129
PT-IQ-1X2-TELE-P	2800782	163
PT-IQ-1X2-TELE-PT	2801290	163
PT-IQ-1X2-TELE-UT	2800769	163
PT-IQ-2X1+F-24DC-PT	2801248	111
PT-IQ-2X1+F-24DC-UT	2800788	111

Type	Order No.	Page
PT-IQ-2X1+F-48DC-PT	2801250	111
PT-IQ-2X1+F-48DC-UT	2800790	111
PT-IQ-2X1-24DC-PT	2801247	110
PT-IQ-2X1-24DC-UT	2800787	110
PT-IQ-2X1-48DC-PT	2801249	110
PT-IQ-2X1-48DC-UT	2800789	110
PT-IQ-2X2+F-12DC-PT	2801262	97
PT-IQ-2X2+F-12DC-UT	2800985	97
PT-IQ-2X2+F-24DC-PT	2801264	97
PT-IQ-2X2+F-24DC-UT	2800981	97
PT-IQ-2X2+F-48DC-PT	2801266	97
PT-IQ-2X2+F-48DC-UT	2800987	97
PT-IQ-2X2+F-5DC-PT	2801260	97
PT-IQ-2X2+F-5DC-UT	2800809	97
PT-IQ-2X2-12DC-PT	2801261	97
PT-IQ-2X2-12DC-UT	2800984	97
PT-IQ-2X2-24DC-PT	2801263	97
PT-IQ-2X2-24DC-UT	2800980	97
PT-IQ-2X2-48DC-PT	2801265	97
PT-IQ-2X2-48DC-UT	2800986	97
PT-IQ-2X2-5DC-PT	2801259	97
PT-IQ-2X2-5DC-UT	2800807	97
PT-IQ-2X2-EX-24DC-P	2801515	129
PT-IQ-2X2-EX-24DC-UT	2801513	129
PT-IQ-3-HF+F-12DC-PT	2801289	145
PT-IQ-3-HF+F-12DC-UT	2800995	145
PT-IQ-3-HF-12DC-PT	2801288	153
PT-IQ-3-HF-12DC-UT	2800786	153
PT-IQ-3-PB-PT	2801286	153
PT-IQ-3-PB-UT	2800785	153
PT-IQ-4X1+F-24DC-PT	2801272	111
PT-IQ-4X1+F-24DC-UT	2800983	111
PT-IQ-4X1+F-48DC-PT	2801274	111
PT-IQ-4X1+F-48DC-UT	2801220	111
PT-IQ-4X1-24DC-PT	2801271	111
PT-IQ-4X1-24DC-UT	2800982	111
PT-IQ-4X1-48DC-PT	2801273	111
PT-IQ-4X1-48DC-UT	2801219	111
PT-IQ-5-HF+F-12DC-PT	2801295	147
PT-IQ-5-HF+F-12DC-UT	2800801	147
PT-IQ-5-HF+F-5DC-PT	2801292	147
PT-IQ-5-HF+F-5DC-UT	2800798	147
PT-IQ-5-HF-12DC-PT	2801293	146
PT-IQ-5-HF-12DC-UT	2800799	146
PT-IQ-5-HF-5DC-PT	2801291	146
PT-IQ-5-HF-5DC-UT	2800797	146
PT-IQ-PTB-PT	2801296	96
PT-IQ-PTB-UT	2800768	96
PWT 100-800AC-FM	2800531	40
PWT 35-800AC-FM	2800419	40
PWT CCT-SET	2800532	40
PWT CCT-SET 4	2905613	40

Q

QUINT-BAT/24DC/ 3.4AH	2866349	303
QUINT-BAT/24DC/ 7.2AH	2866352	303
QUINT-BAT/24DC/12AH	2866365	303
QUINT-ORING/24DC/2X10/1X20	2320173	260
QUINT-ORING/24DC/2X20/1X40	2320186	261
QUINT-ORING/24DC/2X40/1X80	2902879	261
QUINT-PS-ADAPTERS7/1	2938196	268
QUINT-PS-ADAPTERS7/2	2938206	268
QUINT-PS/12DC/12DC/8	2905007	251
QUINT-PS/12DC/24DC/ 5	2320131	250
QUINT-PS/1AC/12DC/15	2866718	212
QUINT-PS/1AC/12DC/20	2866721	212
QUINT-PS/1AC/24DC/ 3.5	2866747	210
QUINT-PS/1AC/24DC/ 5/CO	2320908	216
QUINT-PS/1AC/24DC/10/CO	2320911	217
QUINT-PS/1AC/24DC/20/CO	2320898	217
QUINT-PS/1AC/24DC/40	2866789	210
QUINT-PS/1AC/48DC/ 5	2866679	213
QUINT-PS/1AC/48DC/10	2866682	213
QUINT-PS/1AC/48DC/20	2866695	213
QUINT-PS/24DC/12DC/ 8	2320115	249
QUINT-PS/24DC/24DC/ 5	2320034	248
QUINT-PS/24DC/24DC/ 5/CO	2320542	254
QUINT-PS/24DC/24DC/10	2320092	248

Type	Order No.	Page
QUINT-PS/24DC/24DC/10/CO	2320555	254
QUINT-PS/24DC/24DC/20	2320102	249
QUINT-PS/24DC/24DC/20/CO	2320568	255
QUINT-PS/24DC/48DC/ 5	2320128	249
QUINT-PS/2AC/1DC/24DC/20	2320830	215
QUINT-PS/3AC/24DC/20/CO	2320924	217
QUINT-PS/3AC/24DC/40	2866802	211
QUINT-PS/3AC/48DC/20	2320827	214
QUINT-PS/48DC/24DC/ 5	2320144	252
QUINT-PS/48DC/48DC/5	2905008	253
QUINT-PS/60-72DC/24DC/10	2905009	253
QUINT-PS/60-72DC/24DC/10/CO	2905011	255
QUINT-PS/96-110DC/24DC/10	2905010	253
QUINT-PS/96-110DC/24DC/10/CO	2905012	255
QUINT-PS/FAN/4	2320076	268
QUINT-UPS/ 1AC/ 1AC/500VA	2320270	280
QUINT-UPS/ 24DC/ 24DC/ 5/1.3AH	2320254	294
QUINT-UPS/ 24DC/ 24DC/10	2320225	275
QUINT-UPS/ 24DC/ 24DC/10/3.4AH	2320267	294
QUINT-UPS/ 24DC/ 24DC/20	2320238	275
QUINT-UPS/ 24DC/ 24DC/40	2320241	275
QUINT-UPS/ 24DC/12DC/5/24DC/10	2320461	276
QUINT-UPS/24DC/24DC/5	2320212	274
QUINT4-BUFFER/24DC/20	2907913	295
QUINT4-BUFFER/24DC/40	2908283	295
QUINT4-CAP/24DC/10/8KJ	2320571	297
QUINT4-CAP/24DC/5/4KJ	2320539	296
QUINT4-DIODE/12-24DC/2X20/1X40	2907719	264
QUINT4-DIODE/48DC/2X20/1X40	2907720	265
QUINT4-PS/1AC/24DC/10	2904601	206
QUINT4-PS/1AC/24DC/20	2904602	207
QUINT4-PS/1AC/24DC/5	2904600	206
QUINT4-PS/3AC/24DC/10	2904621	208
QUINT4-PS/3AC/24DC/20	2904622	209
QUINT4-PS/3AC/24DC/5	2904620	208
QUINT4-S-ORING/12-24DC/1X40	2907752	262
QUINT4-S-ORING/12-24DC/1X40/+	2907753	263
QUINT4-UPS/1AC/1AC/1KVA	2320283	281

R

RAD-ADP-N/M-SMA/F	2917036	176
RAD-PIG-EF316-MCX-N	2867681	176
RAD-PIG-EF316-N-SMA	2867694	178

S

S-PT-1X2-24DC	2880668	101
S-PT-1X2-24DC-1/2"	2882569	101
S-PT-1X2-24DC-3/4"	2882598	101
S-PT-2XEX-24DC	2800040	131
S-PT-2XEX-24DC-1/2"	2800041	131
S-PT-2XEX-48DC	2800038	131
S-PT-2XEX-48DC-1/2"	2800039	131
S-PT-4-EX-24DC	2800036	118
S-PT-4-EX-24DC-1/2"	2800037	118
S-PT-EX(I)-24DC	2880671	130
S-PT-EX(I)-24DC-1/2"	2882572	130
S-PT-EX(I)-24DC-3/4"	2882585	130
S-PT-EX-24DC	2800034	130
S-PT-EX-24DC-1/2"	2800035	130
S-PT-EX-48DC	2800053	130
S-PT-EX-48DC-1/2"	2800054	130
SFP 1-10/120AC	2920670	185
SFP 1-15/120AC	2920683	185
SFP 1-20/120AC	2856702	184
SFP 1-20/230AC	2859987	184
SFP 1-5/120AC	2920667	185
SPRING-LOCK	0713009	324
SSA 3-6	2839295	197
SSA 5-10	2839512	197
ST 4-FSI/C	3036372	334
ST 4-FSI/C-LED 12	3036495	334
ST 4-FSI/C-LED 24	3036505	334
STEP-BAT/LIPO/18.5DC/1.4AH	2320364	298
STEP-DIODE/5-24DC/2X5/1X10	2868606	267
STEP-PS/ 1AC/ 5DC/2	2320513	242
STEP-PS/ 1AC/ 5DC/6.5	2868541	243
STEP-PS/ 1AC/12DC/1	2868538	244
STEP-PS/ 1AC/12DC/1.5	2868567	245
STEP-PS/ 1AC/12DC/1.5/FL	2868554	244
STEP-PS/ 1AC/12DC/3	2868570	245
STEP-PS/ 1AC/12DC/5	2868583	245
STEP-PS/ 1AC/15DC/4	2868619	243
STEP-PS/ 1AC/24DC/0.5	2868596	238
STEP-PS/ 1AC/24DC/0.75	2868635	239
STEP-PS/ 1AC/24DC/0.75/FL	2868622	239
STEP-PS/ 1AC/24DC/1.75	2868648	240
STEP-PS/ 1AC/24DC/2.5	2868651	240
STEP-PS/ 1AC/24DC/3.8/C2LPS	2868677	241
STEP-PS/ 1AC/24DC/4.2	2868664	241
STEP-PS/ 1AC/48DC/2	2868680	243
STEP-PS/277AC/24DC/3.5	2904945	241
STEP-PS/48AC/24DC/0.5	2868716	239
STEP-UPS/12DC/12DC/4	2868693	298
STEP-UPS/24DC/24DC/3	2868703	298
SVP 2E- 48AC	2788919	168
SVP 2E-110AC	2765534	168
SVP 3E-110AC	2765521	168
SZS 0,6X3,5	1205053	326

T

TAE-TRAB FM-NFN-AP	2749628	165
TCP 0,1A	0712107	335
TCP 0,25A	0712123	335
TCP 0,5A	0712152	335
TCP 1A	0712194	335
TCP 2A	0712217	335
TCP 3A	0712233	335
TCP 4A	0712259	335
TCP 5/DC32V	0700005	334
TCP 6A	0712275	335
TCP 7,5/DC32V	0700007	334
TCP 8A	0712291	335
TCP 10/DC32V	0700010	334
TCP 10A	0712314	335
TCP 15/DC32V	0700015	334
TCP 20/DC32V	0700020	334
TCP 25/DC32V	0700025	334
TCP 30/DC32V	0700030	334
TCP 40/DC32V	0700040	334
TMC 1 F1 100 0,2A	0914015	333
TMCP CONNECT LR	0916592	324
TMCP SB	0916602	324
TMCP SOCKET M	0916589	324
TRIO-PS-2G/1AC/12DC/10	2903158	225
TRIO-PS-2G/1AC/12DC/5/C2LPS	2903157	224
TRIO-PS-2G/1AC/24DC/10	2903149	220
TRIO-PS-2G/1AC/24DC/10/B+D	2903145	221
TRIO-PS-2G/1AC/24DC/20	2903151	221
TRIO-PS-2G/1AC/24DC/3/C2LPS	2903147	218
TRIO-PS-2G/1AC/24DC/5	2903148	219
TRIO-PS-2G/1AC/24DC/5/B+D	2903144	219
TRIO-PS-2G/1AC/48DC/10	2903160	225
TRIO-PS-2G/1AC/48DC/5	2903159	225
TRIO-PS-2G/3AC/24DC/10	2903154	223
TRIO-PS-2G/3AC/24DC/20	2903155	223
TRIO-PS-2G/3AC/24DC/40	2903156	223
TRIO-PS-2G/3AC/24DC/5	2903153	222
TRIO-PS/600DC/24DC/20	2866530	215
TRIO-UPS-2G/1AC/1AC/120V/750VA	2905908	282
TRIO-UPS-2G/1AC/1AC/230V/750VA	2905909	282
TRIO-UPS/1AC/24DC/ 5	2866611	300
TRIO2-DIODE/12-24DC/2X10/1X20	2907380	266
TRIO2-DIODE/12-24DC/2X20/1X40	2907379	267
TT-D-STTCO-BK	2858894	186
TT-ST-M-SFP-24AC	2858946	186
TTC-3-1X2-24DC-PT	2907325	95
TTC-3-2X1-24DC-PT	2907326	109
TTC-3-LCP	2908843	95
TTC-6-1X2-24DC-PT	2906804	94
TTC-6-1X2-24DC-UT	2906798	94
TTC-6-1X2-F-M-24DC-PT-I	2906772	94
TTC-6-1X2-F-M-24DC-UT-I	2906764	94
TTC-6-1X2-M-24DC-PT-I	2906726	94
TTC-6-1X2-M-24DC-UT-I	2906713	94
TTC-6-1X2-M-EX-24DC-UT-I	2906820	128
TTC-6-2-24DC-PT	2906806	120
TTC-6-2-24DC-UT	2906800	120
TTC-6-2-HC-24DC-PT-I	2908439	107
TTC-6-2-HC-24DC-UT-I	2908438	107
TTC-6-2-HC-M-24DC-PT-I	2906731	107
TTC-6-2-HC-M-24DC-UT-I	2906719	107
TTC-6-2X1-24DC-PT	2906805	108
TTC-6-2X1-24DC-UT	2906799	108
TTC-6-2X1-F-M-24DC-PT-I	2906776	108
TTC-6-2X1-F-M-24DC-UT-I	2906767	108
TTC-6-2X1-M-24DC-PT-I	2906729	108
TTC-6-2X1-M-24DC-UT-I	2906716	108
TTC-6-2X1-M-EX-24DC-UT-I	2906821	133
TTC-6-2XTVSD-24DC-PT	2906808	124
TTC-6-3-HF-F-M-12DC-PT-I	2906778	151
TTC-6-3-HF-F-M-12DC-UT-I	2906769	151
TTC-6-3-HF-F-M-24DC-PT-I	2906779	151
TTC-6-3-HF-F-M-24DC-UT-I	2906770	151
TTC-6-3-HF-F-M-EX-12DC-UT-I	2906822	156
TTC-6-3-HF-F-M-EX-24DC-UT-I	2906823	156
TTC-6-3-HF-M-12DC-PT-I	2906732	150
TTC-6-3-HF-M-12DC-UT-I	2906721	150
TTC-6-FMRS-PT	2907811	103
TTC-6-FMRS-UT	2907810	103
TTC-6-GDT-C-110AC-PT-I	2906861	127
TTC-6-GDT-C-110AC-UT-I	2906844	127
TTC-6-GDT-C-24AC-PT-I	2906860	127
TTC-6-GDT-C-24AC-UT-I	2906842	127
TTC-6-GDT-D-24AC-PT-I	2906862	127
TTC-6-GDT-D-24AC-UT-I	2906845	127
TTC-6-GDT-D-60AC-PT-I	2906863	127
TTC-6-GDT-D-60AC-UT-I	2906846	127
TTC-6-LCP	2908729	124
TTC-6-MOV-C-120AC-PT-I	2906858	126
TTC-6-MOV-C-120AC-UT-I	2906840	126
TTC-6-MOV-C-24DC-PT-I	2906854	126
TTC-6-MOV-C-24DC-UT-I	2906837	126
TTC-6-MOV-C-48DC-PT-I	2906855	126
TTC-6-MOV-C-48DC-UT-I	2906838	126
TTC-6-MOV-C-60DC-PT-I	2906857	126
TTC-6-MOV-C-60DC-UT-I	2906839	126
TTC-6-MOV-D-24DC-PT-I	2906859	126
TTC-6-MOV-D-24DC-UT-I	2906841	126
TTC-6-TVSD-C-12DC-PT-I	2906847	124
TTC-6-TVSD-C-12DC-UT-I	2906829	124
TTC-6-TVSD-C-24DC-PT-I	2906848	124
TTC-6-TVSD-C-24DC-UT-I	2906831	124
TTC-6-TVSD-C-48DC-PT-I	2906849	124
TTC-6-TVSD-C-48DC-UT-I	2906832	124
TTC-6-TVSD-C-60DC-PT-I	2906850	124
TTC-6-TVSD-C-60DC-UT-I	2906833	124
TTC-6-TVSD-D-24DC-PT-I	2906851	125
TTC-6-TVSD-D-24DC-UT-I	2906834	125
TTC-6-TVSD-D-48DC-PT-I	2906852	125
TTC-6-TVSD-D-48DC-UT-I	2906835	125
TTC-6-TVSD-D-60DC-PT-I	2906853	125
TTC-6-TVSD-D-60DC-UT-I	2906836	125
TTC-6P-1X2-12DC-PT-I	2908193	92
TTC-6P-1X2-12DC-UT-I	2908192	92
TTC-6P-1X2-24DC-PT-I	2906815	92
TTC-6P-1X2-24DC-UT-I	2906809	92
TTC-6P-1X2-48DC-PT-I	2908195	92
TTC-6P-1X2-48DC-UT-I	2908194	92
TTC-6P-1X2-F-12DC-PT-I	2908198	93
TTC-6P-1X2-F-12DC-UT-I	2908196	93
TTC-6P-1X2-F-48DC-PT-I	2908200	93
TTC-6P-1X2-F-48DC-UT-I	2908199	93
TTC-6P-1X2-F-M-24DC-PT-I	2906790	93
TTC-6P-1X2-F-M-24DC-UT-I	2906781	93
TTC-6P-1X2-M-24DC-PT-I	2906750	92
TTC-6P-1X2-M-24DC-UT-I	2906738	92
TTC-6P-1X2-M-EX-24DC-UT-I	2906824	128
TTC-6P-2-HC-24DC-PT-I	2906817	106
TTC-6P-2-HC-24DC-UT-I	2906811	106
TTC-6P-2-HC-M-24DC-PT-I	2906755	106
TTC-6P-2-HC-M-24DC-UT-I	2906743	106
TTC-6P-2X1-12DC-PT-I	2908202	104
TTC-6P-2X1-12DC-UT-I	2908201	104
TTC-6P-2X1-24DC-PT-I	2906816	104
TTC-6P-2X1-24DC-UT-I	2906810	104
TTC-6P-2X1-48DC-PT-I	2908204	104
TTC-6P-2X1-48DC-UT-I	2908203	104
TTC-6P-2X1-F-12DC-PT-I	2908206	105
TTC-6P-2X1-F-12DC-UT-I	2908205	105
TTC-6P-2X1-F-48DC-PT-I	2908209	105
TTC-6P-2X1-F-48DC-UT-I	2908208	105
TTC-6P-2X1-F-M-24DC-PT-I	2906794	105
TTC-6P-2X1-F-M-24DC-UT-I	2906784	105
TTC-6P-2X1-M-24DC-PT-I	2906753	104
TTC-6P-2X1-M-24DC-UT-I	2906741	104
TTC-6P-2X1-M-EX-24DC-UT-I	2906825	133
TTC-6P-3-HF-F-M-12DC-PT-I	2906796	151
TTC-6P-3-HF-F-M-12DC-UT-I	2906786	151
TTC-6P-3-HF-F-M-24DC-PT-I	2906797	151
TTC-6P-3-HF-F-M-24DC-UT-I	2906787	151
TTC-6P-3-HF-F-M-EX-12DC-UT-I	2906826	157
TTC-6P-3-HF-F-M-EX-24DC-UT-I	2906828	157
TTC-6P-3-HF-M-12DC-PT-I	2906756	151
TTC-6P-3-HF-M-12DC-UT-I	2906744	151

U

UC-TM 6 GN	0818360	197
UK 6-FSI/C	3118203	334
UK 6-FSI/C-LED12	3001925	334
UK 6-FSI/C-LED24	3001938	334
UNO-DIODE/5-24DC/2X10/1X20	2905489	267
UNO-PS/1AC/ 5DC/ 25W	2904374	230
UNO-PS/1AC/ 5DC/ 40W	2904375	230
UNO-PS/1AC/12DC/ 30W	2902998	229
UNO-PS/1AC/12DC/ 55W	2902999	229
UNO-PS/1AC/12DC/100W	2902997	229
UNO-PS/1AC/15DC/ 55W	2903001	231
UNO-PS/1AC/15DC/100W	2903002	231
UNO-PS/1AC/15DC/30W	2903000	231
UNO-PS/1AC/24DC/ 30W	2902991	226
UNO-PS/1AC/24DC/ 60W	2902992	226
UNO-PS/1AC/24DC/100W	2902993	227
UNO-PS/1AC/24DC/150W	2904376	227
UNO-PS/1AC/24DC/240W	2904372	227
UNO-PS/1AC/24DC/90W/C2LPS	2902994	228
UNO-PS/1AC/48DC/ 60W	2902995	232
UNO-PS/1AC/48DC/100W	2902996	232
UNO-PS/2AC/24DC/90W/C2LPS	2904371	228
UNO-PS/350-900DC/24DC/60W	2906300	233
UNO-UPS/24DC/24DC/60W	2905907	299
UPS-BAT/LI-ION/24DC/120WH	2320351	285
UPS-BAT/LI-ION/24DC/924WH	2908232	285
UPS-BAT/VRLA-WTR/24DC/13AH	2320416	288
UPS-BAT/VRLA-WTR/24DC/26AH	2320429	288
UPS-BAT/VRLA/24DC/1.3AH	2320296	286
UPS-BAT/VRLA/24DC/12AH	2320322	287
UPS-BAT/VRLA/24DC/3.4AH	2320306	286
UPS-BAT/VRLA/24DC/38AH	2320335	287
UPS-BAT/VRLA/24DC/7.2AH	2320319	287
UPS-CAP/24DC/10A/10KJ	2320377	284
UPS-CAP/24DC/20A/20KJ	2320380	284
UPS-CONF	2320403	290
UT 6-TMC M 0,5A	0916603	332
UT 6-TMC M 10A	0916610	332
UT 6-TMC M 12A	0916611	332
UT 6-TMC M 15A	0916612	332
UT 6-TMC M 16A	0916613	332
UT 6-TMC M 1A	0916604	332
UT 6-TMC M 2A	0916605	332
UT 6-TMC M 4A	0916606	332
UT 6-TMC M 5A	0916607	332
UT 6-TMC M 6A	0916608	332
UT 6-TMC M 8A	0916609	332
UWA 130	2901664	269
UWA 182/52	2938235	269

Type	Order No.	Page
V		
VAL-CP-350-ST-GY	2882718	66
VAL-CP-MCB-1S-350/40/FM	2882763	66
VAL-CP-MCB-3C-350/40/FM	2882776	66
VAL-CP-MCB-3S-350/40/FM	2882750	66
VAL-CP-MOSO 60-3C-FM	2804416	68
VAL-CP-MOSO 60-3S-FM	2804403	68
VAL-CP-N/PE-350-ST-GY	2882734	66
VAL-CP-RCD-3S/40/0.03	2882802	67
VAL-CP-RCD-3S/40/0.3/SEL	2808001	67
VAL-MB-T1/T2 1000DC-PV/2+V	2905639	41
VAL-MB-T1/T2 1000DC-PV/2+V-FM	2905638	41
VAL-MB-T1/T2 1500DC-PV/2+V	2905641	41
VAL-MB-T1/T2 1500DC-PV/2+V-FM	2905640	41
VAL-MB-T1/T2 600DC-PV/2+V	2906293	41
VAL-MB-T1/T2 600DC-PV/2+V-FM	2906292	41
VAL-MB-T2 1500DC-PV/2+V	2905647	64
VAL-MB-T2 1500DC-PV/2+V-FM	2905646	64
VAL-MS 60 ST	2807573	58
VAL-MS 1000DC-PV-ST	2800624	65
VAL-MS 1000DC-PV/2+V	2800628	65
VAL-MS 1000DC-PV/2+V-FM	2800627	65
VAL-MS 120 ST	2807586	58
VAL-MS 230 IT ST	2807599	59
VAL-MS 230 ST	2798844	59
VAL-MS 230-UD-ST	2858962	59
VAL-MS 230/1+1	2804429	53
VAL-MS 230/1+1-FM	2804432	53
VAL-MS 230/3+1	2838209	52
VAL-MS 230/3+1 FM	2838199	52
VAL-MS 320 ST	2838843	60
VAL-MS 320-UD ST	2858315	61
VAL-MS 320/1+1	2804380	53
VAL-MS 320/1+1-FM	2804393	53
VAL-MS 320/3+0	2920230	53
VAL-MS 320/3+0-FM	2920243	53
VAL-MS 320/3+1	2859178	52
VAL-MS 320/3+1/FM	2859181	52
VAL-MS 320/3+1/FM-UD	2856689	52
VAL-MS 350 VF ST	2856595	63
VAL-MS 350 VF/3+1	2858755	54
VAL-MS 350 VF/FM	2856579	54
VAL-MS 350VF	2856582	54
VAL-MS 350VF/3+1-FM	2858632	54
VAL-MS 4+V/BE/FM	2908725	65
VAL-MS 400 ST	2816399	61
VAL-MS 500 ST	2807609	61
VAL-MS 580-ST	2920434	62
VAL-MS 60	2868020	55
VAL-MS 60/FM	2868033	55
VAL-MS 600DC-PV-ST	2800623	65
VAL-MS 600DC-PV/2+V	2800642	65
VAL-MS 600DC-PV/2+V-FM	2800641	65
VAL-MS 75 VF ST	2805318	62
VAL-MS 750/30-ST	2920256	56
VAL-MS 750/30/3+0	2920269	56
VAL-MS 750/30/3+0-FM	2920272	56
VAL-MS 800/30 VF/FM	2805402	56
VAL-MS BE	2817741	58
VAL-MS BE/1+1/1U/FM	2909628	39
VAL-MS BE/2+0/1U/FM	2907037	58
VAL-MS BE/FM	2817738	58
VAL-MS-CN 1000DC-PV/4+V-FM	2907820	65
VAL-MS-T1/T2 1000DC-PV-ST	2801162	41
VAL-MS-T1/T2 1000DC-PV/2+V	2801160	41
VAL-MS-T1/T2 1000DC-PV/2+V-FM	2801161	41
VAL-MS-T1/T2 175/12.5 ST	2800676	37
VAL-MS-T1/T2 175/12.5/1+1-FM	2800674	37
VAL-MS-T1/T2 175/12.5/3+0-FM	2800672	37
VAL-MS-T1/T2 335/12.5 ST	2800190	36
VAL-MS-T1/T2 335/12.5/1+0	2801041	37
VAL-MS-T1/T2 335/12.5/1+0-FM	2801042	37
VAL-MS-T1/T2 335/12.5/1+1	2800187	37
VAL-MS-T1/T2 335/12.5/1+1-FM	2800186	37
VAL-MS-T1/T2 335/12.5/3+0	2800189	37
VAL-MS-T1/T2 335/12.5/3+0-FM	2800188	37
VAL-MS-T1/T2 335/12.5/3+1	2800184	36
VAL-MS-T1/T2 335/12.5/3+1-FM	2800183	36
VAL-MS-T1/T2 335/12.5/4+0	2800645	36
VAL-MS-T1/T2 335/12.5/4+0-FM	2800644	36
VAL-MS-T1/T2 48/12.5 ST	2801242	38
VAL-MS-T1/T2 48/12.5/1+0	2801241	38
VAL-MS-T1/T2 48/12.5/1+0-FM	2801240	38
VAL-MS-T1/T2 48/12.5/1+1/1U/FM	2909629	39
VAL-MS-T1/T2 48/12.5/1+1V	2801532	38
VAL-MS-T1/T2 48/12.5/1+1V-FM	2801533	38
VAL-MS-T1/T2 48/12.5/O	2906281	39
VAL-MS-T1/T2 48/12.5/O-FM	2906282	39
VAL-MS-T1/T2 600DC-PV-ST	2801165	41
VAL-MS-T1/T2 600DC-PV/2+V	2801163	41
VAL-MS-T1/T2 600DC-PV/2+V-FM	2801164	41
VAL-MS-T1/T2 BE/O	2905650	39
VAL-MS-T1/T2 BE/O-FM	2905652	39
VAL-MS/1+1-BE	2920528	58
VAL-MS/1+1-BE/FM	2920531	58
VAL-MS/2+0-BE	2804584	58
VAL-MS/2+0-BE/FM	2805321	58
VAL-MS/3+0-BE	2881816	59
VAL-MS/3+0-BE/FM	2881803	59
VAL-MS/3+1-BE	2838885	58
VAL-MS/3+1-BE/FM	2838898	58
VAL-MS/3+1-BE/FM-UD	2858674	59
VAL-MS/4+0-BE/FM RN.	2906484	59
VAL-SEC-T2-120DC-P	2907878	50
VAL-SEC-T2-175-P	2905355	48
VAL-SEC-T2-1S-175-FM	2905348	49
VAL-SEC-T2-1S-350	2905341	47
VAL-SEC-T2-1S-350-FM	2905333	47
VAL-SEC-T2-1S-350VF-FM	2909592	47
VAL-SEC-T2-2+0-120DC-FM	2907874	50
VAL-SEC-T2-2+0-220DC-FM	2907875	51
VAL-SEC-T2-2+0-380DC-FM	2907876	51
VAL-SEC-T2-2+0-48DC-FM	2907865	50
VAL-SEC-T2-220DC-P	2907879	51
VAL-SEC-T2-2C-175-FM	2905350	49
VAL-SEC-T2-2C-350	2905342	47
VAL-SEC-T2-2C-350-FM	2905337	47
VAL-SEC-T2-2S-175-FM	2905351	49
VAL-SEC-T2-2S-350	2905343	47
VAL-SEC-T2-2S-350-FM	2905338	47
VAL-SEC-T2-350-P	2905346	42
VAL-SEC-T2-350VF-P	2909596	46
VAL-SEC-T2-380DC-P	2907880	51
VAL-SEC-T2-3C-175-FM	2905353	48
VAL-SEC-T2-3C-350	2905344	46
VAL-SEC-T2-3C-350-FM	2905339	46
VAL-SEC-T2-3C-350VF-FM	2909591	46
VAL-SEC-T2-3C-440-FM	2909968	45
VAL-SEC-T2-3S-175-FM	2905354	48
VAL-SEC-T2-3S-350	2905345	46
VAL-SEC-T2-3S-350-FM	2905340	46
VAL-SEC-T2-3S-350/40	2909637	45
VAL-SEC-T2-3S-350/40-FM	2909635	45
VAL-SEC-T2-3S-350VF-FM	2909590	46
VAL-SEC-T2-440-P	2909969	45
VAL-SEC-T2-48DC-P	2907877	50
VAL-SEC-T2-N/PE-175-P	2905356	48
VAL-SEC-T2-N/PE-264/40-P	2909636	45
VAL-SEC-T2-N/PE-350-P	2905347	46
VIP-2/SC/PDM-2/16	2315256	268
VIP-2/SC/PDM-2/24	2315269	268
VIP-2/SC/PDM-2/32	2315272	268
VIP-2/SC/PDM-2/48	2903717	268
VIP-CAB-FLK16/FR/FR/0,14/0,5M	2900154	100
VIP-CAB-FLK16/FR/FR/0,14/1,0M	2900155	100
VIP-CAB-FLK16/FR/FR/0,14/2,0M	2900156	100
Z		
ZB 12:UNPRINTED	0812120	197
ZBN 18 CUS	0825059	197

For up-to-date modifications or supplements to the catalog contents, please visit:
phoenixcontact.net/webcode/#0132

PHOENIX CONTACT

INSPIRING INNOVATIONS