



Power & Signal Quality TRABTECH

# Surge Protection

Arresters for every application



# Interference-free mains supply and signal transmission

A constant power supply and secure data links are especially important for the operational reliability of electrical systems, installations, and devices.

Phoenix Contact meets these requirements with the comprehensive TRABTECH product range. Tailored solutions consisting of surge protection, monitoring, device circuit breakers, and EMC products ensure a consistently high power and signal quality for maximum availability.



**Surge protection**



**Monitoring**



**Device circuit breakers**



**EMC solutions**



**Services**

## Surge voltages – the underestimated danger



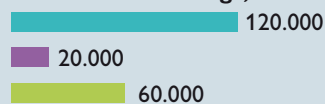
### Every day there are more than four million lightning discharges worldwide.\*

Of these, ten percent are considered as ground lightning strikes with surge currents of up to 200,000 A. In addition to these daily 400,000 discharges caused by storms, surge voltages also occur within local power grids. Here, it is switching operations, faults or switched-mode power supply units, for example, that are responsible.

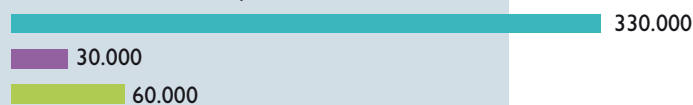
Regardless of the cause, surge voltages repeatedly lead to unexpected faults in devices or system failures. TRABTECH surge protection prevents such effects comprehensively and effectively.

\* Source: en.Wikipedia.org > Lightning

#### Residential buildings, fire



#### Household contents, fire



Device failure or defects caused by surge voltages **are more frequent than expected**. According to the statistics of German insurers - GDV, this is the most frequent cause of damage. These figures only apply to damage that resulted in fire.

Source: GDV Die Deutschen Versicherer 2009 (GDV, the German Insurers 2009)

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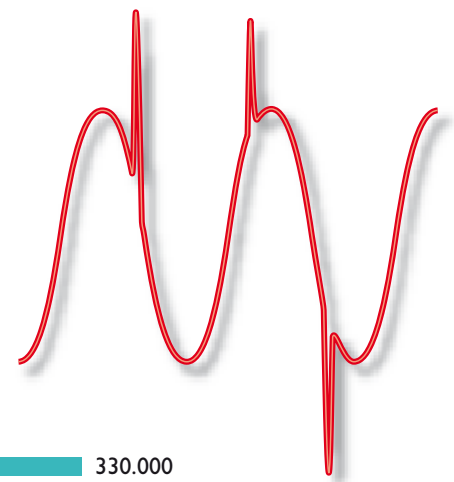
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- Surge voltage
- Lightning
- Other



# The protective circuit for safety all round

The principle of the protective circuit defines a comprehensive safety measure against surge voltages. An imaginary circle encloses devices, plants or systems to be protected. Surge protection devices that correspond to the nominal data of the respective power supply unit or signal type are to be installed at all points where lines cut this circle. In order to protect objects consistently from conductor-specific surge voltage couplings, the following areas must be considered:

## ■ Power supply

Perfectly coordinated arresters for feeders, distributors and termination devices guarantee the power supply.

## ■ MCR technology

Optimized arresters are available for different types of signals and measuring principles.

## ■ Information technology

High-speed protection (CAT.6+) for data and communication technology.

## ■ Transceiver technology

This keeps local communication, mobile phones and satellite or wireless systems on the air whatever the weather.







# Surge protection for the power supply unit

Efficient protection against surge voltage always starts in the power supply unit. A multi-stage protection concept made up of performance-related lightning current and surge arresters is considered to be the most reliable basis.

## Protection level, type 1:

High-capacity lightning arresters

## Protection level, type 2:

Surge protection, which should not be missing in any power supply

## Protection level, type 3:

Surge protection for sensitive devices

Further arrester combinations are a sensible addition to the product range.



### Plugging instead of screwing

Universal pluggability ensures a high degree of comfort during insulation measurements in the system, for example. Instead of tampering with the installation, just pull out the plug.



### Whichever way you turn it

The protective devices of the compact series can be installed flexibly. This avoids unnecessary cable lengths and offers optimum protection for any installation environment.



### Status at a glance

Each arrester plug has its own mechanical display to display its functional status.



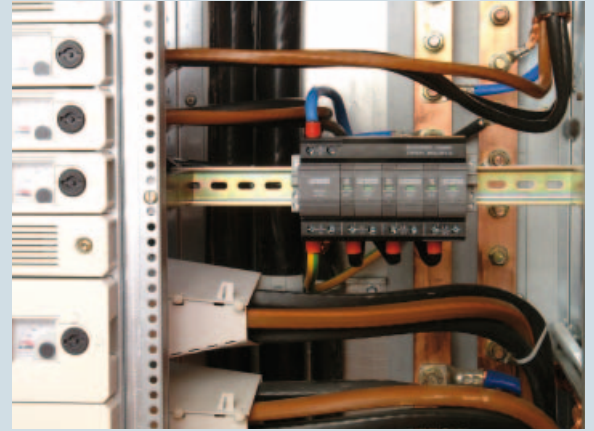
### Remote signaling

A common floating PDT contact makes remote signaling possible without taking up extra space. Regardless of the type of signal (current, voltage), the interface can be used as N/C or N/O contact.

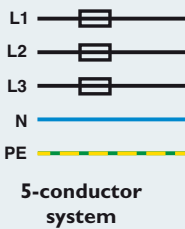
## FLASHTRAB compact PLUS:

Powerful spark gap technology for power supply systems up to 240/415 V AC.

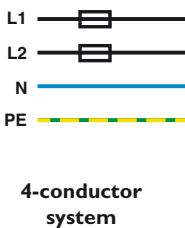
- Type 1 lightning arrester with low protection level
- For low-voltage high-current systems with high short-circuiting power
- For the main power distribution/industrial distribution
- In pre-meter or post-meter area
- At the transition of lightning protection zones LPZ\* 0<sub>A</sub> → LPZ 1
- For buildings with external lightning protection
- For buildings with overhead line supply



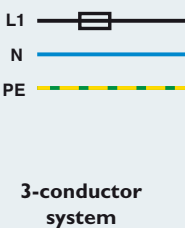
### TN-S/TT systems



FLT-CP-PLUS-3S-350  
Order No. 2882640

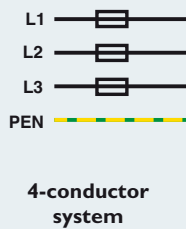


FLT-CP-PLUS-2S-350  
Order No. 2882666

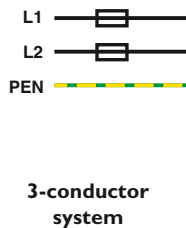


FLT-CP-PLUS-1S-350  
Order No. 2882682

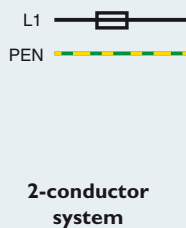
### TN-C systems



FLT-CP-PLUS-3C-350  
Order No. 2882653



FLT-CP-PLUS-2C-350  
Order No. 2882679



FLT-CP-PLUS-1C-350  
Order No. 2882695

FLT-CP-PLUS...	...3S-350	...3C-350	...2S-350	...2C-350	...1S-350	...1C-350
IEC category/EN type	I / T1					
Lightning protection level	I	I	II	II	III – IV	III – IV
Nominal voltage U <sub>N</sub>	230/400 V AC ... 240/415 V AC 50/60 Hz				230 V AC ... 240 V AC 50/60 Hz	
Maximum continuous voltage U <sub>C</sub>	350 V AC 50/60 Hz L-N (L-PEN)					
Follow current quenching capacity I <sub>f</sub>	50 kA (264 V AC)					
Lightning test current I <sub>imp</sub> (10/350)μs	100 kA	75 kA	75 kA	50 kA	50 kA	25 kA
Nominal discharge surge current I <sub>n</sub> (8/20)μs	25 kA (per channel)					
Protection level U <sub>p</sub>	≤ 1.5 kV					
Backup fuse max. acc. to IEC 61643-1	315 A gL/gG					

\* LPZ: Lightning Protection Zone

# Lightning current and surge arresters, type 1 + type 2

## FLASHTRAB compact:

Combination of lightning current and surge arresters for power supply systems up to 240 / 415 V.

- Combined arresters, type 1 and type 2
- For the main power distribution/industrial distribution
- In the post-meter area
- At the transition of lightning protection zones LPZ\* 0 → LPZ 2
- For buildings with external lightning protection
- For buildings with overhead line supply



TN-S / TT systems		TN-C systems	
<p>5-conductor system</p>	<p>FLT-CP-3S-350 Order No. 2859712</p> <p>144 mm</p>	<p>4-conductor system</p>	<p>FLT-CP-3C-350 Order No. 2859725</p> <p>108 mm</p>
<p>4-conductor system</p>	<p>FLT-CP-2S-350 Order No. 2859767</p> <p>108 mm</p>	<p>3-conductor system</p>	<p>FLT-CP-2C-350 Order No. 2859770</p> <p>72 mm</p>
<p>3-conductor system</p>	<p>FLT-CP-1S-350 Order No. 2859738</p> <p>72 mm</p>	<p>2-conductor system</p>	<p>FLT-CP-1C-350 Order No. 2859741</p> <p>36 mm</p>

FLT-CP-...	...3S-350	...3C-350	...2S-350	...2C-350	...1S-350	...1C-350
IEC category/EN type	I + II / T1 + T2					
Lightning protection level	I	I	II	II	III – IV	III – IV
Nominal voltage $U_N$	230/400 V AC ... 240/415 V AC 50/60 Hz				230 V AC ... 240 V AC 50/60 Hz	
Maximum continuous voltage $U_C$	350 V AC 50/60 Hz L-N (L-PEN)					
Follow current quenching capacity $I_{fi}$	25 kA (264 V AC)					
Lightning test current $I_{imp}$ (10/350) $\mu$ s	100 kA	75 kA	75 kA	50 kA	50 kA	25 kA
Nominal discharge surge current $I_n$ (8/20) $\mu$ s	25 kA (per channel)					
Protection level $U_p$	$\leq 1.5$ kV					
Backup fuse max. acc. to IEC 61643-1	315 A gL/gG					

\* LPZ: Lightning Protection Zone



## Surge arrester, type 2



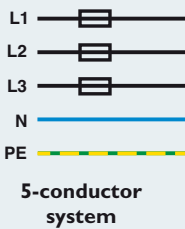
### VALVETRAB compact:

Space-saving surge arresters for all standard power supply systems up to 240 / 415 V.

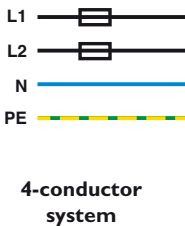
- Surge arrester, type 2
- In sub-distribution boards and distribution boxes on the various floors
- Upstream of the residual current circuit breaker
- At the transition of lightning protection zones  
LPZ\* 0<sub>B</sub> → LPZ 1 / LPZ 1 → LPZ 2
- For buildings without external lightning protection



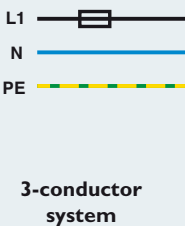
### TN-S/ TT systems



VAL-CP-3S-350  
Order No. 2859521

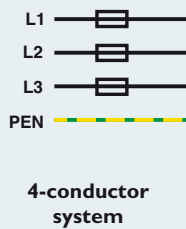


VAL-CP-2S-350  
Order No. 2859505

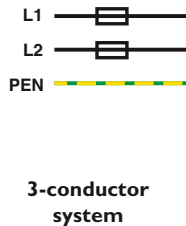


VAL-CP-1S-350  
Order No. 2859563

### TN-C systems



VAL-CP-3C-350  
Order No. 2859547



VAL-CP-2C-350  
Order No. 2859589

VAL-CP-...	...3S-350	...3C-350	...2S-350	...2C-350	...1S-350
IEC category/EN type	II / T2				
Nominal voltage U <sub>N</sub>	230/400 V AC ... 240/415 V AC 50/60 Hz				230 V AC ... 240 V AC 50/60 Hz
Maximum continuous voltage U <sub>C</sub>	350 V AC 50/60 Hz L-N (L-PEN)				
Nominal discharge surge current I <sub>n</sub> (8/20)μs	20 kA (per channel)				
Max. discharge surge current I <sub>max</sub> (8/20)μs	40 kA (per channel)				
Protection level U <sub>p</sub>	≤ 1.4 kV				
Backup fuse max. acc. to IEC 61643-1	125 A gL/gG				

**Note:** VALVETRAB compact is also available for 120 V power supply systems or as a residual current free variant (VF-type).

\* LPZ: Lightning Protection Zone

## Surge arrester, type 2 – combined solutions

### Combi-RCD\*: Surge protection with residual current circuit breaker



FI circuit breaker (RCD)	Surge arrester (VAL-CP)
Sensitive for residual currents: Type A	IEC category/EN type: II / <u>T2</u>
Rated residual current $I_{\Delta n}$ : 30 mA/300 mA	Discharge surge current $I_{max}$ (8/20) $\mu$ s: 30 kA/path
Release time at $I_{\Delta n}$ : $\leq 300$ ms	Maximum continuous voltage $U_C$ : 350 V AC

#### VAL-CP-RCD-3S/40/0.03

Order No. 2882802

#### VAL-CP-RCD-3S/40/0.3/SEL

Order No. 2808001

Nominal voltage  $U_N$ : 230/400 ... 240/415 V AC

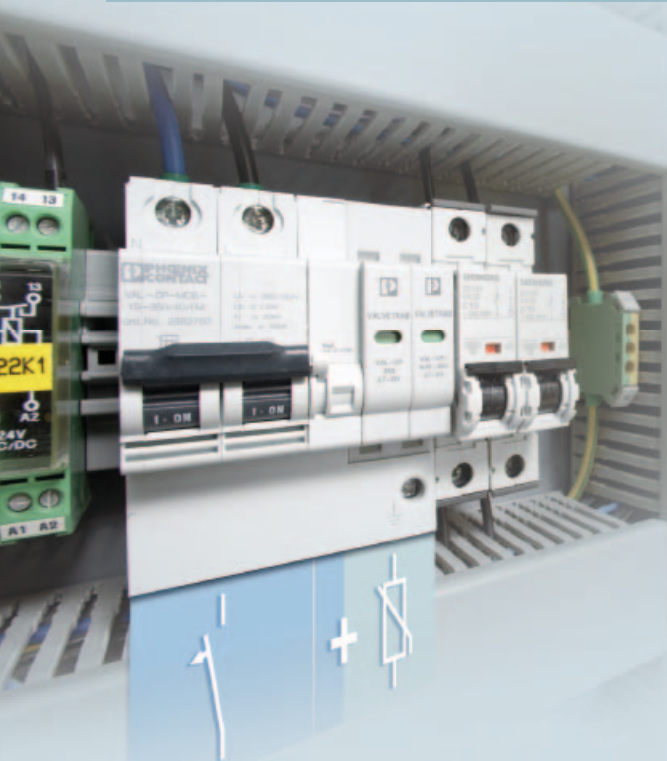
Nominal load current  $I_L$ : 40 A



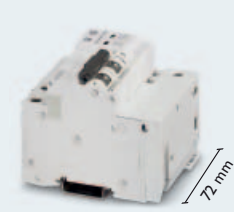
Dimensions (W x H x D): 120 mm x 90 mm x 75 mm

The Combi-RCD combines the properties of a residual current circuit breaker\* and a type 2 surge arrester in a single housing. This innovative “2 in 1” concept defines an entirely new device type for the simultaneous protection of persons and devices.

\* Residual current device = RCD

### Combi-MCB\*\*: Surge protection with a coordinated backup fuse



		
VAL-CP-MCB-3S-350/40/FM Order No. 2882750	VAL-CP-MCB-3C-350/40/FM Order No. 2882776	VAL-CP-MCB-1S-350/40/FM Order No. 2882763
IEC category/EN type: II / <u>T2</u>		
Nominal voltage $U_N$ : 230/400 V AC ... 240/415 V AC		
Maximum continuous voltage $U_C$ : 350 V AC		
Nominal discharge surge current $I_n$ (8/20) $\mu$ s: 20 kA/path		
Protection level $U_p$ : $\leq 2.5$ kV		

The integrated arrester backup fuses of the VAL-CP-MCB ensure maximum utilization of the performance capability of the surge protection. Their application is independent of the operating current fuses of the system – Faults in connection with fuses for surge protection are thus ruled out.

\*\* Mains Circuit Breaker = MCB

## Device protection, type 3

### PLUGTRAB TN-S / TT systems



35.4 mm

**230 V / 400 V**

PT 4-PE/S-230AC/FM

Order No. 2882459

### PLUGTRAB TN-S / TT / IT systems



17.7 mm

**230 V**

PT 2-PE/S-230AC/FM

Order No. 2858357

**230 V IT**

PT 2-IT-230AC/FM

Order No. 2805130

**120 V**

PT 2-PE/S-120AC/FM

Order No. 2856812

**24 V**

PT 2-PE/S-24AC/FM

Order No. 2800457

**60 V**

PT 2-PE/S-60AC/FM

Order No. 2800961

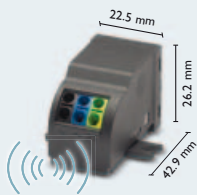
PT ...	... 4-PE/S-230AC	... 2-PE/S-230AC	... 2-IT...	... 2-PE/S-120AC	... 2-PE/S-24AC
Nominal voltage $U_N$	230 V AC	230 V AC	230 V AC	120 V AC	24 V AC
Maximum continuous voltage $U_C$	275 V AC	253 V AC	275 V AC [L-N] 440 V AC [L(N)-PE]	150 V AC	34 V AC / 44 V DC
Nominal current $I_N$	26 A	26 A	26 A	26 A	26 A
Nominal discharge surge current $I_n$ (8/20) $\mu$ s	1.5 kA (per channel L-N)	3 kA	3 kA	2.5 kA	1 kA
Max. discharge surge current $I_{max}$ (8/20) $\mu$ s	4.5 kA (per channel L-N)	10 kA	8 kA	10 kA	2 kA
Protection level $U_p$ : L-N / L(N)-PE	$\leq 1.2$ kV / $\leq 1.5$ kV	$\leq 1.1$ kV / $\leq 1.5$ kV	$\leq 1.2$ kV / $\leq 1.5$ kV	$\leq 620$ V / $\leq 850$ V	$\leq 180$ V / $\leq 550$ V

### BLOCKTRAB TN-S / TT / IT systems

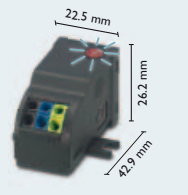


**230 V**

For every commercially available distribution box and for 60 mm deep installation box



BT-1S 230AC/A  
Order No. 2803409



BT-1S-230AC/O  
Order No. 2800625

### SOCKETTRAB TN-S / TT / IT systems



**230 V**

For every commercially available flush-type or cable duct socket



BT-SKT 230/A  
Order No. 2859343

### MAINTRAB TN-S / TT systems



**230 V**

Socket attachment plug combined with antenna or telecommunication protection



**D, A, NL, N, FIN**

...with SAT connection  
...with ISDN connection  
...with TAE connection

MNT-1 D

Order No. 2882200

MNT-TV-SAT D

Order No. 2882284

MNT-ISDN D

Order No. 2882336

MNT-TAE D

Order No. 2882381

**E, P**

MNT-1 E

Order No. 2882239

**S, FIN, N**

MNT-1 S/WH

Order No. 2880862

**CH**

MNT-1 CH II

Order No. 2882255

**D, A, NL, E, P**

MNT-POWERLINE

Order No. 2858001

**B, F, CZ, SVK, PL**

MNT-NET B/F

Order No. 2882226

### COMBITRAB TN-S / TT systems



**230 V**

Multi-socket strip combined with TV/SAT or ISDN protection



CBT-SCHUKO  
Order No. 2857280

...with TV-SAT connection

CBT-TV-SAT

Order No. 2857303

...with ISDN connection

CBT-ISDN

Order No. 2857316

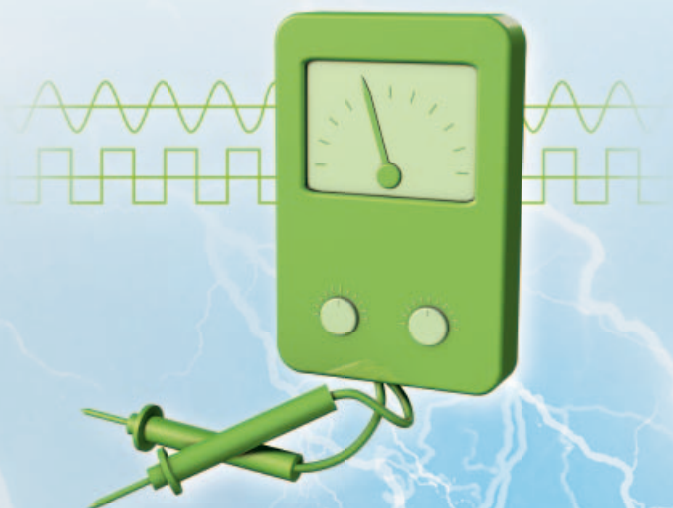


# Surge protection for measurement and control technology

Signal interfaces are particularly sensitive to surge voltages. Combined protective circuits with components which are powerful and respond quickly are used in this case.

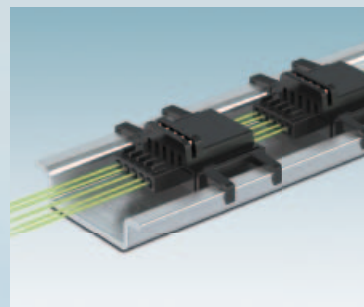
In addition, the arresters of the PLUGTRAB family are impressive thanks to their practical functions. The plug-in capability of the arresters allows a function check, even during system operation.

This selection guide helps you find the right protection quickly and easily in line with the application – giving you greater availability.



## **Forward-looking monitoring**

PLUGTRAB PT-IQ performs multi-stage monitoring of all protective devices. A controller supplies up to 28 devices with voltage and implements remote signaling.



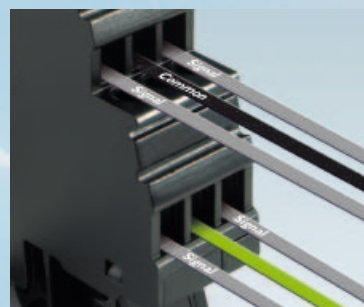
## **Permanent installation**

Individual DIN rail connectors can be converted into a bus using PT-IQ. This transmits voltage and status information. Conventional wiring is not used.



## **Error-free installation**

Voltage keying and protection against polarity reversal. Incorrect connection is not possible.



## **Space-saving installation**

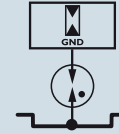
Up to five signal lines can be protected with one device. This requires a design width of just 17.5 mm on the DIN rail.

## Intelligent and systematic surge protection

**PLUGTRAB PT-IQ** is a range of self-monitoring surge protective devices with multi-stage status indicator. A controller supplies up to 28 protection modules with voltage, collects the status of all connected protection devices and implements remote signaling via a DIN rail bus (T-BUS). A surge protective device consists of the plug, base element and T-BUS adapter.

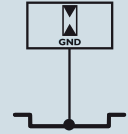


## Grounding



### Indirect grounding

In the **PT...+F-... or -BE modules**, the connections for the shield or the reference potential are connected to the metal mounting foot and therefore the DIN rail via a gas-filled surge arrester.



### Direct grounding

In the **PT-...-UT or -BE modules**, the connections for the shield or the reference potential are connected to the DIN rail via the metal mounting foot.

## Floating signal circuits

		Controller for voltage supply	Protection device	
			Indirect grounding	Direct grounding
	Protection for two double conductors* e.g., standard signals 0/4 ... 20 mA	 PT-IQ-PTB-UT Order No. 2800768	+ PT-IQ-1x2+F-24DC-UT Order No. 2800977	PT-IQ-1x2- <b>24DC</b> -UT Order No. 2800976
	Protection for two double conductors e.g., standard signals 0/4 ... 20 mA	 PT-IQ-PTB-UT Order No. 2800768	+ PT-IQ-2x2+F-24DC-UT Order No. 2800981	PT-IQ-2x2- <b>24DC</b> -UT Order No. 2800980

## Signal circuits with common reference potential

	Protection for two conductors* e.g., binary switching signals	 PT-IQ-PTB-UT Order No. 2800768	+ PT-IQ-2x1+F-24DC-UT Order No. 2800788	PT-IQ-2x1- <b>24DC</b> -UT Order No. 2800787
	Protection for four conductors e.g., binary switching signals	 PT-IQ-PTB-UT Order No. 2800768	+ PT-IQ-4x1+F-24DC-UT Order No. 2800983	PT-IQ-4x1- <b>24DC</b> -UT Order No. 2800982



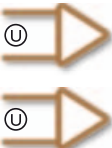

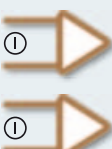





\* other voltage levels are available > [www.phoenixcontact.com](http://www.phoenixcontact.com)

## PLUGTRAB PT – plug-in surge protection

PLUGTRAB PT consists of base element and protective plug. Various different grounding options were implemented via the corresponding base element. Each protective plug can be tested using the Checkmaster arrester test device.



### Floating signal circuits

The products on this page support the HART protocol**	Plug	Base element		
		Indirect grounding	Direct grounding	
 <p>Protection for a double conductor* e.g., standard signals 0/4 ... 20 mA</p>	 <p>PT 1x2-<b>12DC</b>-ST Order No. 2856029</p> <hr/> <p>PT 1x2-<b>24DC</b>-ST Order No. 2856032</p>	+	<p>PT 1x2+F-BE Order No. 2856126</p>	<p>PT 1x2-BE Order No. 2856113</p>
 <p>Protection for two double conductors* e.g., standard signals 0/4 ... 20 mA</p>	 <p>PT 2x2-<b>12DC</b>-ST Order No. 2838254</p> <hr/> <p>PT 2x2-<b>24DC</b>-ST Order No. 2838228</p>	+	<p>PT 2x2+F-BE Order No. 2839224</p>	<p>PT 2x2-BE Order No. 2839208</p>
 <p>Protection for intrinsically safe circuits one or two double conductors</p>	 <p>PT 2xEX(I)-<b>24DC</b>-ST Order No. 2838225</p>	+	-	<p>PT 2xEX(I)-BE Order No. 2839279</p>
 <p>Protection for temperature, 2, 3 or 4-wire measurement</p>	 <p>PT 4-<b>24DC</b>-ST Order No. 2839240</p>	+	<p>PT 4+F-BE Order No. 2839415</p>	<p>PT 4-BE Order No. 2839402</p>
 <p>Protection for intrinsically safe circuits 2, 3 or 4-wire measurement</p>	 <p>PT 4-EX(I)-<b>24DC</b>-ST Order No. 2839253</p>	+	-	<p>PT 4-EX(I)-BE Order No. 2839486</p>







\* other voltage levels are available > [www.phoenixcontact.com](http://www.phoenixcontact.com)

\*\* HART = Highway Addressable Remote Transducer Protocol (Phoenix Contact is a registered member of the HART Communication Foundation)



## Signal circuits with common reference potential



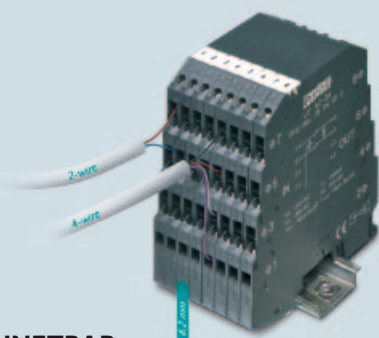
	Plug	Base element		
		Indirect grounding	Direct grounding	
 <p>Protection for two conductors* e.g., binary switching signals</p>	 <p>PT 2x1-<b>24DC</b>-ST Order No. 2856074</p> <hr/> <p>PT 2x1-<b>24AC</b>-ST Order No. 2856100</p>	+	<p>PT 2x1+F-BE Order No. 2856142</p>	<p>PT 2x1-BE Order No. 2856139</p>
 <p>Protection for four conductors* e.g., binary switching signals</p>	 <p>PT 4x1-<b>24DC</b>-ST Order No. 2838319</p> <hr/> <p>PT 4x1-<b>24AC</b>-ST Order No. 2838351</p>	+	<p>PT 4x1+F-BE Order No. 2839376</p>	<p>PT 4x1-BE Order No. 2839363</p>
 <p>Protection for high signal voltages*</p>	 <p>PT 2x1VA-<b>120AC</b>-ST Order No. 2839185</p> <hr/> <p>PT 2x1VA-<b>230AC</b>-ST Order No. 2839198</p>	+	–	<p>PT-BE/FM Order No. 2839282</p>

## Single-stage protection with gas-filled arrester as coarse protection



 <p>Protection for two conductors</p>	 <p>PT 2-F-ST Order No. 2859000</p>	+	–	<p>PT-BE/FM Order No. 2839282</p>
 <p>Protection for four conductors</p>	 <p>PT 4-F-ST Order No. 2858441</p>	+	–	<p>PT 4-BE Order No. 2839402</p>

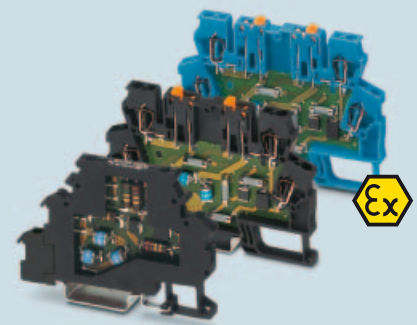
## Further surge protection devices for measurement and control technology



**LINETRAB** –  
the standard in the  
6.2 mm class



**SURGETRAB** –  
Protection directly at the measuring  
head

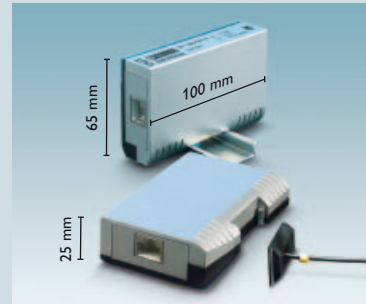
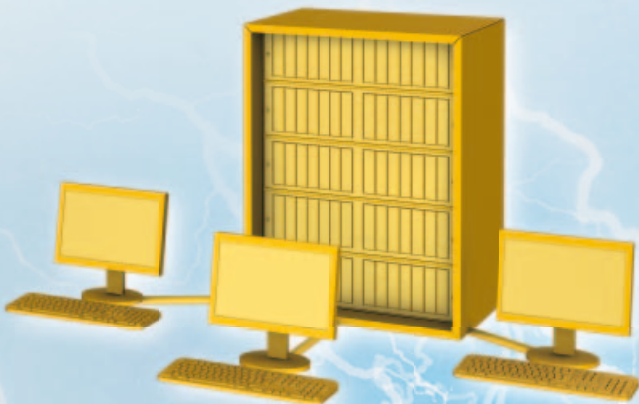


**TERMITRAB** –  
Protection in the modular terminal  
block

# Surge protection for information technology

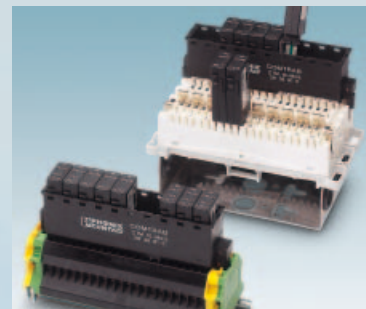
Reliable data exchange and telecommunication is indispensable nowadays. Sensitive systems operate at high frequencies with low signal levels and expansive networking. Surge voltages would here result in widespread failures and, in the worst case, data loss.

This selection guide helps you find the right protection quickly and easily in line with the application – giving you greater availability.



## **The perfect fit**

The DATATRAB series can be used as adapter or DIN rail module.



## **Small and modular**








Two-channel protective plug for CT-TERMIBLOCK and LSA-Plus strips.



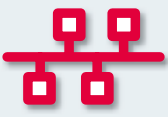


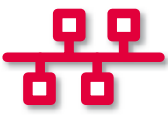

## **Many applications and just one solution**

Solutions on the basis of PLUGTRAB series are especially suitable for installation in the control cabinet.

## Information and data technology (BUS systems)

	Plug	Base element*		
		Indirect grounding	Direct grounding	
 Profibus DP	 PT 3-PB-ST Order No. 2858030	+	-	PT 1X2-BE Order No. 2856113
INTERBUS-INLINE remote bus	 PT 5-HF-5DC-ST Order No. 2838762	+	PT 2X2+F-BE Order No. 2839224	-
INTERBUS-INLINE (I/O) Analog	 PT 2X2-24AC-ST Order No. 2838283	+	-	PT 2X2-BE Order No. 2839208
INTERBUS-INLINE (I/O) Digital	 PT 4X1-24AC-ST Order No. 2838351	+	-	PT 4X1-BE Order No. 2839363
 Profibus PA Foundation Fieldbus	 PT 2XEX(I)-24DC-ST Order No. 2838225	+	-	PT 2XEX(I)-BE Order No. 2839279

\* For an explanation, see page 13 "Grounding"

 <b>ETHERNET</b> (inkl. PoE) - 100 Base T - 1000 Base T - 10G Base T  <b>TOKEN Ring</b>  <b>VG-AnyLAN</b>	 DT-LAN-CAT.6+ Order No. 2881007
 <b>PROFINET</b>	
 <b>ETHERNET</b> - 100 Base T - 1000 Base T  <b>TOKEN Ring</b>	 D-LAN-19"-24 Order No. 2838791  D-LAN-19"-16 Order No. 2880147

## Accessories

RJ45 patch cable, length: 0.5 m	 FL CAT6 PATCH 0,5 Order No. 2891288
RJ45 patch cable, length: 3 m	 FL CAT6 PATCH 3,0 Order No. 2891686

### High-speed data protection

The DATATRAB family is synonymous with effective surge protection for high-speed data transfers.

As a result, the DT-LAN-CAT.6+ provides universal protection for network speeds up to 10 Gbps without influencing the signals.



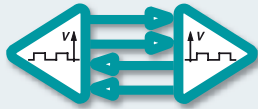


## Data technology (serial interfaces)

	Plug	Base element		
		Indirect grounding	Direct grounding	
 <p>Data systems RS 485 RS 422A</p>	 <p>PT 5-HF-12DC-ST Order No. 2838775</p>	+	PT 2X2+F-BE Order No. 2839224	–
 <p>Data systems RS 232 C</p>	 <p>PT 3-HF-12DC-ST Order No. 2858043</p>	+	PT 1X2+F-BE Order No. 2856126	–

## Telecommunications

	<p><b>ADSL, HDSL, T-DSL, V-DSL</b> Analog telephony ISDN U<sub>K0</sub></p>		<p>PT 2-TELE Order No. 2882828</p>
	<p><b>ADSL, HDSL, T-DSL, V-DSL</b> Analog telephony ISDN U<sub>K0</sub></p>		<p>DT-TELE-RJ45 Order No. 2882925</p>
	<p><b>ATM</b> ISDN S<sub>0</sub> ISDN S<sub>2M</sub></p>		<p>DT-LAN-CAT.6+ Order No. 2881007</p>
	<p><b>Analog telephony</b> Coarse protection with fail-safe contact</p>		<p>CTM 2X1-180DC-GS Order No. 2838636</p>
	<p><b>Analog telephony</b> Coarse protection with fail-safe contact and power cross protection</p>		<p>CTM 2X1-180DC-GS-P Order No. 2838623</p>
	<p><b>Analog telephony</b> Coarse and fine protection</p>		<p>CTM 1X2-110AC Order No. 2838539</p>



**RS 485**

**RS 232 C / V.24**  
with D-SUB 9 connection

**RS 232 C / V.24**  
with adapter cable from D-SUB 9 on D-SUB 25



DT-UFB-485/BS  
Order No. 22920612

DT-UFB-V24/S-9-SB  
Order No. 2803069

DT-UFB-V24/S-SB-SET  
Order No. 2803072

**DSL**

**ADSL/T-DSL**  
- Up to 16,000 kbps  
**Analog telephony**  
**ISDN U<sub>K0</sub>**



CTM 1X2-110AC  
Order No. 2838539



**ISDN S<sub>0</sub>**  
**ISDN S<sub>2M</sub>**



CTM ISDN  
Order No. 2838555

## Accessories

### Magazine with grounding rail

- To accommodate up to 10 CTM connectors



CTM 10-MAG  
Order No. 2838610

### Disconnect strip screw terminal block

- For standard rails of type NS-32 and NS-35/7.5
- compatible with the CTM 10-MAG with connections for 20 conductors up to 4 mm<sup>2</sup> and with disconnect contacts for CTM protective connectors

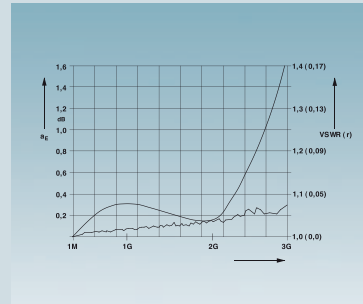


CT-TERMIBLOCK 10DA  
Order No. 0441711

# Surge protection for transceiver systems

The high frequencies of wireless transmission require the use of protective devices with reduced insertion attenuation. COAXTRAB fulfills this requirement.

The coaxial arresters are suitable for all common transmission systems in mobile and public safety wireless networks in the field of video or television transmission.



## Customized products

Thanks to their very low attenuation values, surge protection devices ensure interference-free signal transmission in all standard applications.



## Shielding

Good shielding properties are indispensable for a "clean" transmission. Robust metal housings ensure a perfect shielding and are suitable for use in harsh environments.



## Connection technology

A connection system suitable for the relevant application: F and N connector, TV connector and 7/16, UHF, BNC connections.



## Many applications and just one solution

Solutions on the basis of PLUGTRAB series are especially suitable for installation in the control cabinet.





## Protection for transceiver systems

**GSM**  
**UMTS**  
**LTE**  
**WiMAX**



**GPS or GSM (900, 1800 MHz) UMTS**

- With N connector

**GPS or GSM (900, 1800 MHz) UMTS**

- With 7/16 connector

**GSM (900, 1800, 1900 MHz) UMTS**

- Without supply voltage on the coaxial cable
- Very low protection level
- With N connector

**GSM (900, 1800, 1900 MHz) UMTS**

- Without supply voltage on the coaxial cable
- Very low protection level
- With 7/16 connector

**WiMAX (2.4... 6 GHz)**

- Without supply voltage on the coaxial cable
- Very low protection level
- With N connector



CN-UB-280DC-SB  
Order No. 2818148

CN-UB-280DC-BB  
Order No. 2818850



C7/16-UB-280DC-SB-SET  
Order No. 2881544



CN-LAMBDA/4-2.25-BB  
Order No. 2801057

CN-LAMBDA/4-2.25-SB  
Order No. 2801056



C7/16-LAMBDA/4-2.25-BB  
Order No. 2801060

C7/16-LAMBDA/4-2.25-SB  
Order No. 2801059



CN-LAMBDA/4-5.9-BB  
Order No. 2838490

CN-LAMBDA/4-5.9-SB  
Order No. 2800023

## Accessories

### Mounting plate

- For individually securing the CN-UB-280DC



CN-UB/MP  
Order No. 2818135





### Mounting plate, 90° angled

- For individually securing the CN-UB-280DC e.g. for wall mounting

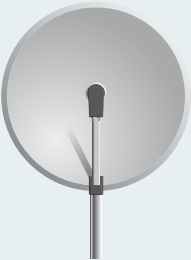
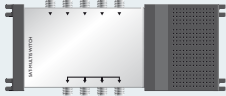



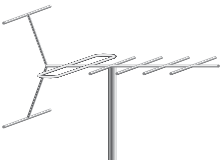




CN-UB/MP-90DEG-50  
Order No. 2803137



## Protection for video monitoring systems

	<b>with BNC connection</b>	50 Ohm		C-UFB-5DC/E Order No. 2782300
				75 Ohm
	<b>with screw connection</b>	for one video signal		PT 3-PB-ST Order No. 2858030 PT 1X2+F-BE Order No. 2856126
				for two video signals

## Protection for television and radio systems

		<b>Satellite television</b> Upstream of the distributor (multiswitch)		C-SAT-BOX Order No. 2880561
		<b>Satellite television</b> Upstream of the SAT receiver or television		C-TV-SAT Order No. 2856993
		<b>Cable/terrestrial television</b> Upstream of the television, radio or tuner of the HiFi system		C-TV/HIFI Order No. 2857002

## Accessories

<p><b>F connector adapter (plug-to-plug)</b></p> <ul style="list-style-type: none"> <li>- Ideal for direct connection of the C-SAT-BOX to a multiswitch with the same pitch</li> <li>- No thread plug-in coupling allows a quick connection</li> <li>- Secure hold via clamping ring</li> </ul>		ADAPTER KOAX TYP F Order No. 2880972
<p><b>F connector cable (connector to connector)</b></p> <ul style="list-style-type: none"> <li>- For flexibly connecting the C-SAT-BOX to a multiswitch with a different pitch</li> </ul>		KBL-SAT/20 Order No. 2880985

## Combined protection for television/radio connections and the power supply unit

### Satellite television

Use with simultaneous protection of power supply upstream of the SAT receiver or television.



**MAINTRAB  
MNT...**

**Country: D, A, NL**

MNT-TV-SAT D

Order No. 2882284

MNT-TV-SAT D/WH

Order No. 2882297

**Country: B, F, CZ, SVK,  
PL**

MNT-TV-SAT B/F

Order No. 2882307

**Country: E, P**

MNT-TV-SAT E

Order No. 2882310

**Country: S, FIN, N**

MNT-TV-SAT S/WH

Order No. 2880888



**COMBITRAB  
CBT...**



**Country: D, I, NL, E, P**

CBT-TV-SAT

Order No. 2857303

### Cable/terrestrial television

Use with simultaneous protection of power supply upstream of the television, radio or tuner of the HiFi system.



**MAINTRAB  
MNT...**

**Country: D, A, NL**

MNT-TV-SAT D

Order No. 2882284

MNT-TV-SAT D/WH

Order No. 2882297

**Country: B, F, CZ, SVK,  
PL**

MNT-TV-SAT B/F

Order No. 2882307

**Country: E, P**

MNT-TV-SAT E

Order No. 2882310

**Country: S, FIN, N**

MNT-TV-SAT S/WH

Order No. 2880888



**COMBITRAB  
CBT...**



**Country: D, I, NL, E, P**

CBT-TV-SAT

Order No. 2857303



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