

# PT 1X2-48DC-ST - Surge protection plug



2803658

<https://www.phoenixcontact.com/us/products/2803658>

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Protective plug PT with protective circuit for a 2-wire floating signal circuit.



## Your advantages

- Easy testing and documentation with CHECKMASTER 2 with pluggable protective modules
- Maximum ease of maintenance, thanks to the 2-piece design
- Easy selection for all possible demands in MCR applications with a complete product portfolio
- The signal is not influenced during maintenance work, thanks to the impedance-neutral insertion and removal of protective plugs

## Commercial data

Item number	2803658
Packing unit	10 pc
Minimum order quantity	1 pc
Sales key	CL21
Product key	CL2111
GTIN	4046356299268
Weight per piece (including packing)	20.35 g
Weight per piece (excluding packing)	19.75 g
Customs tariff number	85363010
Country of origin	DE

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## Technical data

### Notes

#### General

Note	Technical data is valid in association with the following specified base elements:
	PT 1X2+F-BE 2856126
	PT 1X2-BE 2856113

### Product properties

Product type	Surge protection for MCR technology
Product family	PLUGTRAB PT
IEC test classification	C1
	C2
	C3
	D1
Type	Male
Number of positions	2
Surge protection fault message	none
Arrester can be tested with CHECKMASTER from software version:	From SW rev. 3.15
Wire pairs per module	1

#### Insulation characteristics

Overvoltage category	III
Pollution degree	2

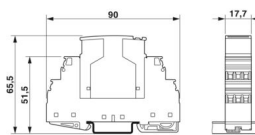
### Electrical properties

Nominal voltage $U_N$	48 V DC
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### Connection data

Connection method	Screw connection (in connection with the base element)
Screw thread	M3
Tightening torque	0.5 Nm
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12

### Dimensions

Dimensional drawing	
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Width	17.7 mm
Height	45 mm
Depth	52 mm
Horizontal pitch	1 Div.
Complete module width	17.7 mm
Complete module height	90 mm
Complete module depth	65.5 mm

## Material specifications

Color	black (RAL 9005)
Flammability rating according to UL 94	V-0
Housing material	PA 6.6

## Mechanical properties

### Mechanical data

Open side panel	No
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## Protective circuit

Direction of action	Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground
Nominal voltage $U_N$	48 V DC
Maximum continuous operating voltage $U_C$	53 V DC 37 V AC
Rated current	450 mA (45 °C)
Operating effective current $I_C$ at $U_C$	$\leq 5 \mu\text{A}$
Protective conductor current $I_{PE}$	$\leq 2 \mu\text{A}$ (with PT 1X2-BE) $\leq 1 \mu\text{A}$ (with PT 1X2+F-BE)
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-line)	10 kA
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-ground)	10 kA
Pulse discharge current $I_{imp}$ (10/350) $\mu\text{s}$	2.5 kA
Total discharge current $I_{Total}$ (8/20) $\mu\text{s}$	20 kA
Max. discharge current $I_{max}$ (8/20) $\mu\text{s}$ maximum (line-line)	10 kA
Max. discharge current $I_{max}$ (8/20) $\mu\text{s}$ maximum (line-earth)	20 kA (in total)
Nominal pulse current $I_{an}$ (10/1000) $\mu\text{s}$ (line-line)	18 A
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-line) spike	$\leq 70 \text{ V}$
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-earth) spike	$\leq 450 \text{ V}$ (with PT 1X2-BE) $\leq 1 \text{ kV}$ (with PT 1X2+F-BE)
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-line) static	$\leq 70 \text{ V}$
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-earth) static	$\leq 25 \text{ V}$ (with PT 1X2-BE) $\leq 50 \text{ V}$ (with PT 1X2+F-BE)
Voltage protection level $U_p$ (line-line)	$\leq 80 \text{ V}$ (C1 - 1 kV / 500 A) $\leq 85 \text{ V}$ (C2 - 2 kV/1 kA) $\leq 120 \text{ V}$ (C2 - 10 kV / 5 kA) $\leq 450 \text{ V}$ (C1 - 1 kV / 500 A with PT 1X2-BE)

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Voltage protection level $U_p$ (line-earth)	$\leq 550$ V (C2 - 2 kV / 1 kA with PT 1X2-BE)
	$\leq 600$ V (C2 - 10 kV / 5 kA with PT 1X2-BE)
	$\leq 800$ V (C1 - 1 kV / 500 A with PT 1x2+F-BE)
	$\leq 900$ V (C2 - 2 kV / 1 kA with PT 1x2+F-BE)
	$\leq 1000$ V (C2 - 10 kV / 5 kA with PT 1X2+F-BE)
Response time $t_A$ (line-line)	$\leq 1$ ns
Response time $t_A$ (line-earth)	$\leq 100$ ns
Input attenuation $a_E$ , sym.	typ. 0.5 dB ( $\leq 2$ MHz / 50 $\Omega$ )
	typ. 0.2 dB ( $\leq 600$ kHz / 150 $\Omega$ )
Cut-off frequency $f_g$ (3 dB), sym. in 50 $\Omega$ system	typ. 10 MHz
Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system	typ. 3.5 MHz
Capacity (Core-Core)	typ. 1 nF
Capacity (Core-Earth)	typ. 4 pF (with PT 1X2-BE)
	typ. 2 pF (with PT 1X2+F-BE)
Resistance per path	2.2 $\Omega \pm 10$ %
Surge protection fault message	none
Max. required back-up fuse	500 mA (T)
Impulse durability (line-line)	C1 - 1 kV / 500 A
	C2 - 2 kV / 1 kA
	C2 - 10 kV / 5 kA
Impulse durability (line-earth)	C1 - 1 kV / 500 A
	C2 - 2 kV / 1 kA
	C2 - 10 kV / 5 kA
	D1 - 2.5 kA

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 85 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	$\leq 2000$ m (amsl)

## Standards and regulations

Standards/specifications	IEC 61643-21
Note	2000 + corrigendum 2001 + A1:2008, modified + A2:2012
Standards/specifications	EN 61643-21
Note	2001 + A1:2009 + A2:2013

## Mounting

Mounting type	on base element
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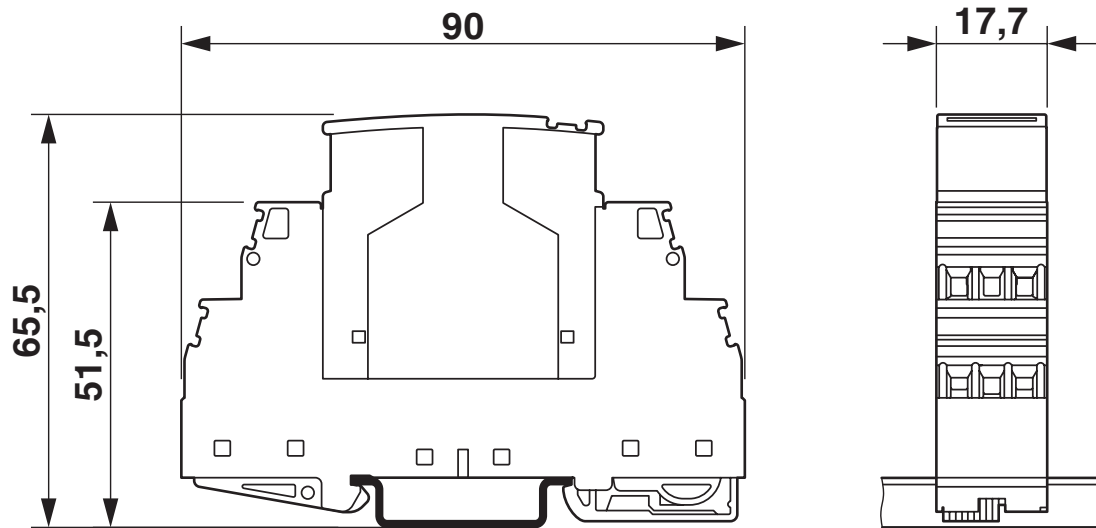
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## Drawings

Dimensional drawing



The figure shows the complete module consisting of a base element and connector

Diagram



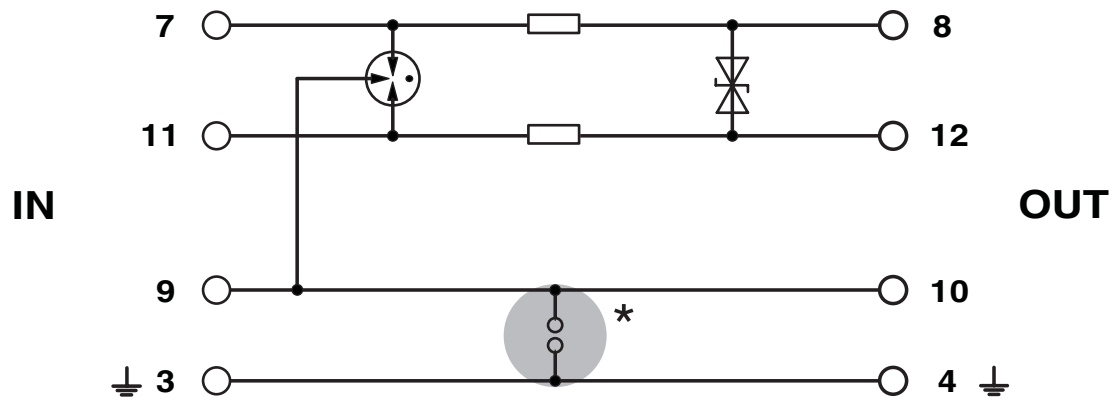
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Circuit diagram



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## Classifications

### ECLASS

ECLASS-13.0	27171501
ECLASS-15.0	27171501

### ETIM

ETIM 10.0	EC001466
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### UNSPSC

UNSPSC 21.0	39121600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	812bd96f-44cb-4789-b420-6a3c5f8050ab

### EF3.1 Climate Change

CO2e kg	0.896 kg CO2e
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