

# PT 2X1-24DC-ST - Surge protection plug

2856087

<https://www.phoenixcontact.com/us/products/2856087>

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Surge protection plug for the base element, coarse and fine protection for two signal wires with common reference potential, common mode voltage coarse protection to ground. Design: 24 V DC

## 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	2856087
Packing unit	10 pc
Minimum order quantity	1 pc
Sales key	CL21
Product key	CL2111
GTIN	4017918599164
Weight per piece (including packing)	20.8 g
Weight per piece (excluding packing)	20.1 g
Customs tariff number	85363010
Country of origin	DE

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## Technical data

### Product properties

Product type	Surge protection for MCR technology
Product family	PLUGTRAB PT
IEC test classification	C1
	C2
	C3
	D1
VDE requirement class	C1
	C2
	C3
	D1
Type	Male
Arrester can be tested with CHECKMASTER from software version:	From SW rev. 1.00

### Insulation characteristics

Overvoltage category	III
Pollution degree	2

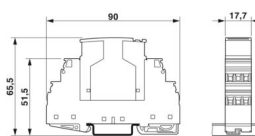
### Electrical properties

Nominal voltage $U_N$	24 V DC
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### Connection data

Connection method	Screw connection (in connection with the base element)
Screw thread	M3
Tightening torque	0.8 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	
Width	17.5 mm
Height	44.8 mm
Depth	51.7 mm
Horizontal pitch	1 Div.
Complete module width	17.7 mm
Complete module height	90 mm

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Complete module depth	65.5 mm
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## Material specifications

Color	black (RAL 9005) copper color
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 $U_N$	24 V DC
Maximum continuous operating voltage $U_C$	28 V DC 20 V AC
Rated current	300 mA (45 °C)
Operating effective current $I_C$ at $U_C$	$\leq 5 \mu\text{A}$
Protective conductor current $I_{PE}$	$\leq 1 \mu\text{A}$ (with PT 2X1+F-BE) $\leq 10 \mu\text{A}$ (Directly grounded)
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 (per path)
Total discharge current $I_{Total}$ (8/20) $\mu\text{s}$	20 kA
Max. discharge current $I_{max}$ (8/20) $\mu\text{s}$ maximum (line-earth)	10 kA
Nominal pulse current $I_{an}$ (10/1000) $\mu\text{s}$ (line-earth)	30 A
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-earth) spike	$\leq 45 \text{ V}$ $\leq 600 \text{ V}$ (with PT 2X1+F-BE)
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-earth) static	$\leq 40 \text{ V}$
Residual voltage at $I_n$ (conductor-ground)	$\leq 40 \text{ V}$
Residual voltage with $I_{an}$ (10/1000) $\mu\text{s}$ (line-earth)	$\leq 50 \text{ V}$
Voltage protection level $U_p$ (line-earth)	$\leq 60 \text{ V}$ (C1 - 1 kV / 500 A) $\leq 80 \text{ V}$ (C2 - 10 kV / 5 kA) $\leq 70 \text{ V}$ (6 kV / 3 kA) $\leq 50 \text{ V}$ (C3 - 30 A)
Response time $t_A$ (line-earth)	$\leq 1 \text{ ns}$
Input attenuation aE, asym.	0.5 dB ( $\leq 1 \text{ MHz}$ ) 0.3 dB ( $\leq 400 \text{ kHz} / 150 \Omega$ )
Cut-off frequency $f_g$ (3 dB), asym. (PE) in 50 $\Omega$ system	typ. 4.5 MHz
Capacity (Core-Earth)	typ. 0.7 nF
Resistance per path	4.7 $\Omega \pm 10 \%$ (7-8/11-12)
Surge protection fault message	none
Max. required back-up fuse	315 mA (T)

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Impulse durability (line-earth)	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

## Standards and regulations

VDE requirement class	C1
	C2
	C3
	D1

### Air clearances and creepage distances

Standards/regulations	VDE 0110-1 / IEC 60664-1
Standards/specifications	EN 61643-21/A1
Note	2009
Standards/specifications	IEC 61643-21/A1
Note	2008
Standards/specifications	UL 497B

## Mounting

Mounting type	on base element
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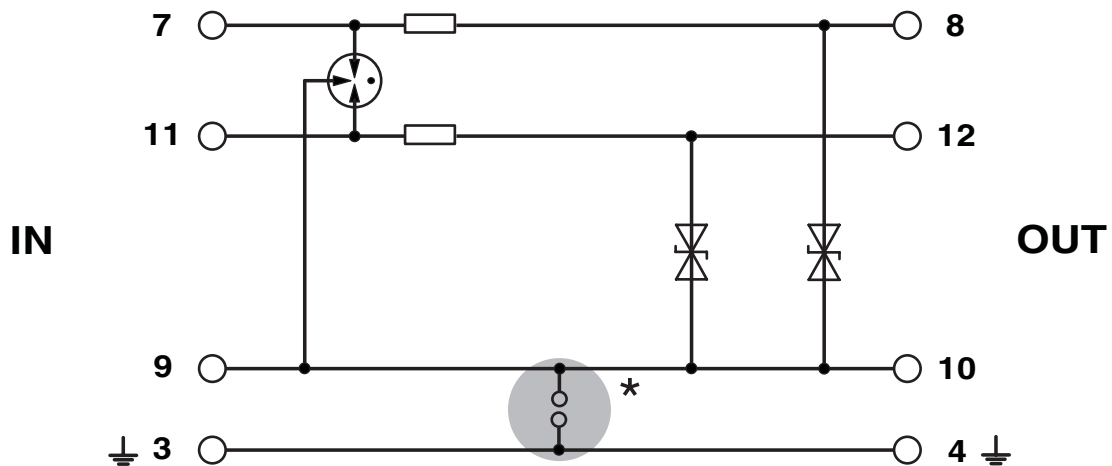
## Drawings

Dimensional drawing



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

Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2856087>



**DNV GL**

Approval ID: TAE00001N6



**UL Listed**

Approval ID: FILE E 138168

	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
keine				
	24 V	0.3 A	-	-



**cUL Listed**

Approval ID: FILE E 333250



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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	481df695-0cac-430a-a05c-cc4a45aa6308

### EF3.1 Climate Change

CO2e kg	0.496 kg CO2e
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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)