

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



2803658

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

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



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               | 10 pc               |
| Sales key                            | CL21                |
| Product key                          | CL2111              |
| Catalog page                         | Page 122 (C-4-2019) |
| 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                  |

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



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

## 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 |
|-----------------------|---------|

### 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 |  |
|---------------------|--|

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



2803658

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

|                        |         |
|------------------------|---------|
| 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 |
|-----------------|----|

## Protective circuit

|                                                                      |                                                                                    |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Direction of action                                                  | Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground |
| Maximum continuous voltage $U_C$                                     | 53 V DC                                                                            |
|                                                                      | 37 V AC                                                                            |
| Rated current                                                        | 450 mA (45 °C)                                                                     |
| Operating effective current $I_C$ at $U_C$                           | $\leq 5 \mu A$                                                                     |
| Residual current $I_{PE}$                                            | $\leq 2 \mu A$ (with PT 1X2-BE)                                                    |
|                                                                      | $\leq 1 \mu A$ (with PT 1X2+F-BE)                                                  |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)           | 10 kA                                                                              |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-ground)         | 10 kA                                                                              |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$                   | 2.5 kA                                                                             |
| Total discharge current $I_{total}$ (8/20) $\mu s$                   | 20 kA                                                                              |
| Max. discharge current $I_{max}$ (8/20) $\mu s$ maximum (line-line)  | 10 kA                                                                              |
| Max. discharge current $I_{max}$ (8/20) $\mu s$ maximum (line-earth) | 20 kA (in total)                                                                   |
| Nominal pulse current $I_{an}$ (10/1000) $\mu s$ (line-line)         | 18 A                                                                               |
| Output voltage limitation at 1 kV/ $\mu s$ (line-line) spike         | $\leq 70 V$                                                                        |
| Output voltage limitation at 1 kV/ $\mu s$ (line-earth) spike        | $\leq 450 V$ (with PT 1X2-BE)                                                      |
|                                                                      | $\leq 1 kV$ (with PT 1X2+F-BE)                                                     |
| Output voltage limitation at 1 kV/ $\mu s$ (line-line) static        | $\leq 70 V$                                                                        |
| Output voltage limitation at 1 kV/ $\mu s$ (line-earth) static       | $\leq 25 V$ (with PT 1X2-BE)                                                       |
|                                                                      | $\leq 50 V$ (with PT 1X2+F-BE)                                                     |
|                                                                      |                                                                                    |
| Voltage protection level $U_p$ (line-line)                           | $\leq 80 V$ (C1 - 1 kV / 500 A)                                                    |
|                                                                      | $\leq 85 V$ (C2 - 2 kV/1 kA)                                                       |
|                                                                      | $\leq 120 V$ (C2 - 10 kV / 5 kA)                                                   |
| Voltage protection level $U_p$ (line-earth)                          | $\leq 450 V$ (C1 - 1 kV / 500 A with PT 1X2-BE)                                    |
|                                                                      | $\leq 550 V$ (C2 - 2 kV / 1 kA with PT 1X2-BE)                                     |

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



2803658

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

|                                                      |                                               |
|------------------------------------------------------|-----------------------------------------------|
|                                                      | ≤ 600 V (C2 - 10 kV / 5 kA with PT 1X2-BE)    |
|                                                      | ≤ 800 V (C1 - 1 kV / 500 A with PT 1x2+F-BE)  |
|                                                      | ≤ 900 V (C2 - 2 kV / 1 kA with PT 1x2+F-BE)   |
|                                                      | ≤ 1000 V (C2 - 10 kV / 5 kA with PT 1X2+F-BE) |
| Response time $t_A$ (line-line)                      | ≤ 1 ns                                        |
| Response time $t_A$ (line-earth)                     | ≤ 100 ns                                      |
| Input attenuation aE, sym.                           | typ. 0.5 dB (≤ 2 MHz / 50 Ω)                  |
|                                                      | typ. 0.2 dB (≤ 600 kHz / 150 Ω)               |
| Cut-off frequency $f_g$ (3 dB), sym. in 50 Ω system  | typ. 10 MHz                                   |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 Ω 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 Ω ±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                                | ≤ 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 |
|---------------|-----------------|

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

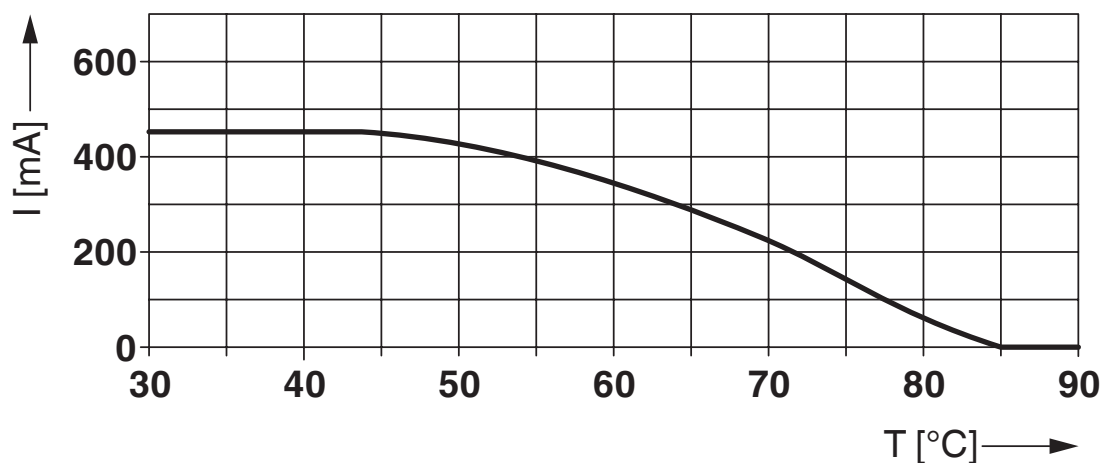
2803658

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

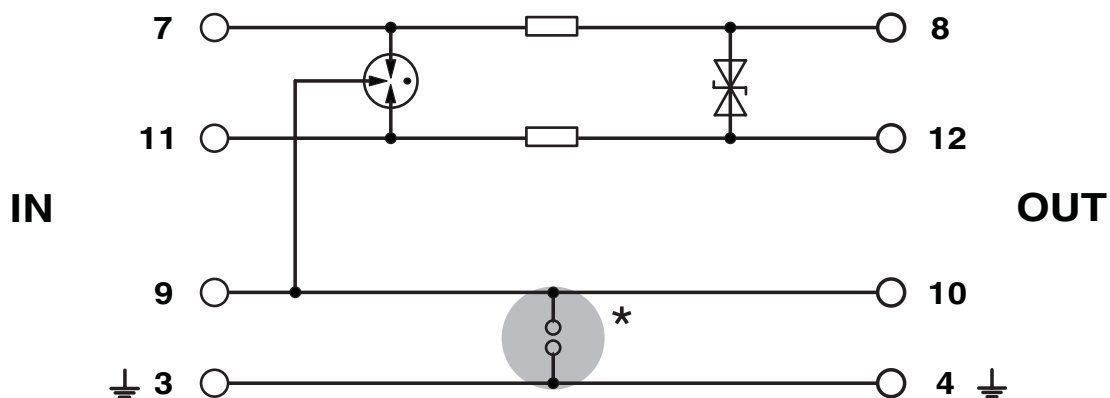


## Drawings

Diagram



Circuit diagram



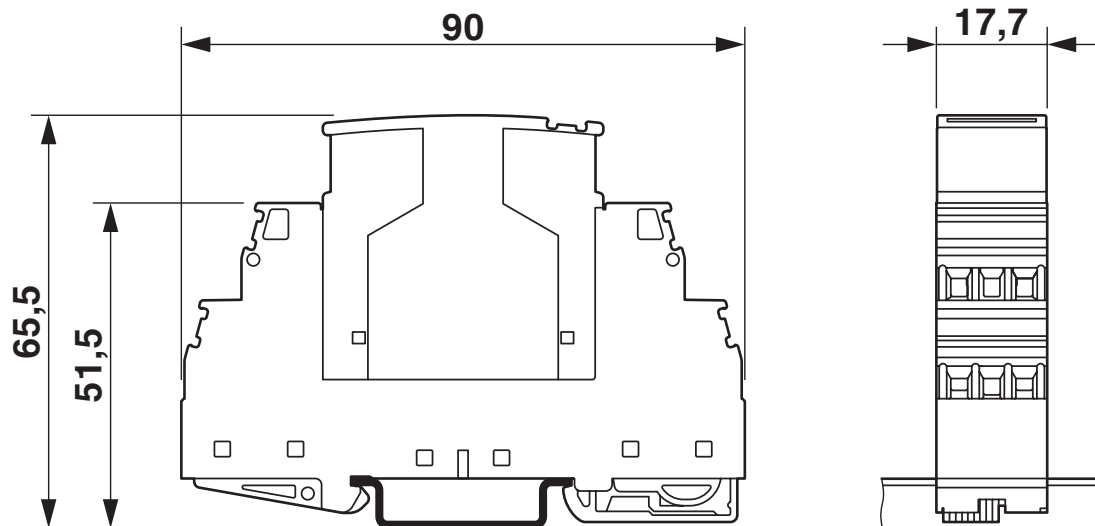
# PT 1X2-48DC-ST - Surge protection plug

2803658

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



Dimensional drawing



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

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



2803658

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

## Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2803658>



**EAC**

Approval ID: RU C-DE.\*09.B.00169

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



2803658

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

## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27130807 |
| ECLASS-13.0 | 27171501 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001625 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121600 |
|-------------|----------|

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



2803658

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

## 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                                                                                                                                                                                              |

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



2803658

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

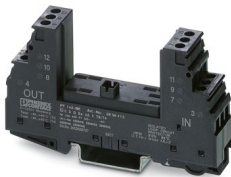
## Mandatory accessories

### PT 1X2-BE - Surge protection base-element

2856113

<https://www.phoenixcontact.com/us/products/2856113>

Base element for protective plug PT with protective circuit for a 2-core floating signal circuit. Mounting on NS 35/7.5 and NS 35/15, housing width: 17.5 mm.



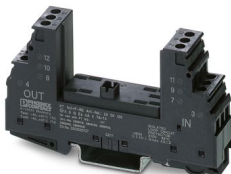
---

### PT 1X2+F-BE - Surge protection base-element

2856126

<https://www.phoenixcontact.com/us/products/2856126>

Base element for protective plug PT with protective circuit for a 2-core floating signal circuit. Integrated gas arrester as coarse protection between GND and PE. Mounting on NS 35/7.5 and NS 35/15, housing width: 17.5 mm.



---

## Accessories

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

2803658

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



### ZBF 5:UNBEDRUCKT - Zack Marker strip, flat

0808642

<https://www.phoenixcontact.com/us/products/0808642>



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.1 x 5.2 mm, Number of individual labels: 10

---

### ZBF 5/WH-100:UNBEDRUCKT - Zack Marker strip, flat

0808668

<https://www.phoenixcontact.com/us/products/0808668>



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.15 x 5.15 mm, Number of individual labels: 1000

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

2803658

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



## ZBF 5,LGS:FORTL.ZAHLEN - Zack Marker strip, flat

0808671

<https://www.phoenixcontact.com/us/products/0808671>



Zack Marker strip, flat, Strip, white, labeled, printed horizontally: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 491 ... 500, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.15 x 5.15 mm, Number of individual labels: 10

---

## ZBF 5,LGS:GERADE ZAHLEN - Zack Marker strip, flat

0810821

<https://www.phoenixcontact.com/us/products/0810821>



Zack Marker strip, flat, Strip, white, labeled, printed horizontally: consecutive even numbers 2 ... 20, 22 ... 40, etc. up to 82 ... 100, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.15 x 5.15 mm, Number of individual labels: 10

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

2803658

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



## ZBF 5,LGS:UNGERADE ZAHLEN - Zack Marker strip, flat

0810863

<https://www.phoenixcontact.com/us/products/0810863>



Zack Marker strip, flat, Strip, white, labeled, printed horizontally: Odd numbers 1 - 19, 21 - 39, etc. up to 81 - 99, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.15 x 5.15 mm, Number of individual labels: 10

---

## ZBF 5,QR:FORTL.ZAHLEN - Zack Marker strip, flat

0808697

<https://www.phoenixcontact.com/us/products/0808697>



Zack Marker strip, flat, Strip, white, labeled, Printed vertically: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 91 ... 100, mounting type: snapped, for terminal block width: 5 mm, lettering field size: 5.15 x 5.15 mm, Number of individual labels: 10

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

2803658

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



## ZBN 18:UNBEDRUCKT - Zack marker strip

2809128

<https://www.phoenixcontact.com/us/products/2809128>



Zack marker strip, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

---

## ZBN 18 CUS - Zack marker strip

0825059

<https://www.phoenixcontact.com/us/products/0825059>



Zack marker strip, can be ordered: Strip, white, labeled according to customer specifications, mounting type: snap into tall marker groove, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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

2803658

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



## SSA 3-6 - Shield connection

2839295

<https://www.phoenixcontact.com/us/products/2839295>

Shield fast connection for 3 ... 6 mm cable diameter. Potential connecting cable:  
200 mm, 1 mm<sup>2</sup>, color: black



---

## SSA 5-10 - Shield connection

2839512

<https://www.phoenixcontact.com/us/products/2839512>

Shield fast connection for 5 ... 10 mm cable diameter. Potential connecting cable:  
200 mm, 1 mm<sup>2</sup>, color: black



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

2803658

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



## X-PEN 0,35 - Marker pen

0811228

<https://www.phoenixcontact.com/us/products/0811228>



Marker pen without ink cartridge, for manual labeling of markers, labeling extremely wipe-proof, line thickness 0.35 mm

---

## SZS 0,6X3,5 VDE - Screwdriver

1212602

<https://www.phoenixcontact.com/us/products/1212602>



Screwdriver, slot-headed, VDE insulated, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip

---

Phoenix Contact 2024 © - all rights reserved  
<https://www.phoenixcontact.com>

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