

# TTC-6P-2X1-F-48DC-UT-I - Surge protection device



2908208

<https://www.phoenixcontact.com/it/products/2908208>

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Surge protection, consisting of protective plug and base element, with integrated status indicator for two signal wires with common reference potential, e.g., Digital IN/OUT. Indirect grounding via gas-filled surge arrester.

## Your advantages

- Space-saving and cost-saving with a narrow overall width of just 6 mm
- Continuous monitoring of protective devices, plus mechanical status indicator with optional remote signaling
- Finding the right product for all possible requirements in MCR applications is easy, thanks to the complete range of products with customized features
- Easy testing and documentation with CHECKMASTER 2 with pluggable protective modules
- The signal is not influenced during maintenance work, thanks to the impedance-neutral insertion and removal of protective plugs

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2908208             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | CL2                 |
| Product key                          | CL2161              |
| Catalog page                         | Page 129 (C-4-2019) |
| GTIN                                 | 4055626282916       |
| Weight per piece (including packing) | 46.7 g              |
| Weight per piece (excluding packing) | 42.27 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          | TERMITRAB complete                      |
| IEC test classification | C1                                      |
|                         | C2                                      |
|                         | C3                                      |
|                         | D1                                      |
| Type                    | DIN rail module, two-section, divisible |

### Insulation characteristics

|                      |     |
|----------------------|-----|
| Overvoltage category | III |
| Pollution degree     | 2   |

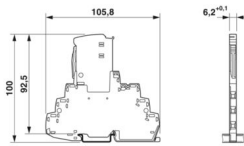
### Electrical properties

|                       |         |
|-----------------------|---------|
| Nominal voltage $U_N$ | 48 V DC |
|-----------------------|---------|

### Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Screw thread                     | M3                                          |
| Tightening torque                | 0.5 Nm ... 0.6 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               | 6.2 mm +0.1 mm                                                                       |
| Height              | 105.8 mm                                                                             |
| Depth               | 100 mm (incl. DIN rail 7.5 mm)                                                       |

### Material specifications

|                                        |                       |
|----------------------------------------|-----------------------|
| Color (Base element)                   | gray (RAL 7042)       |
| Color (Male connector)                 | light grey (RAL 7035) |
| Flammability rating according to UL 94 | V-0                   |
| Insulating material                    | PBT                   |
| Housing material                       | PBT                   |

### Mechanical properties

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## 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                                                                            |
|                                                                              | 30 V AC                                                                            |
| Rated current                                                                | 220 mA DC (75 °C)                                                                  |
|                                                                              | 600 mA AC (56 °C)                                                                  |
| Operating effective current $I_C$ at $U_C$                                   | $\leq 5 \mu A$                                                                     |
| Residual current $I_{PE}$                                                    | $\leq 1 \mu A$                                                                     |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-ground)                 | 5 kA                                                                               |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-signal ground)          | 5 kA                                                                               |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$ (line-earth)              | 0.5 kA                                                                             |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$ (line-signalground)       | 0.5 kA                                                                             |
| Total discharge current $I_{total}$ (8/20) $\mu s$                           | 10 kA                                                                              |
| Voltage protection level $U_p$ (line-earth)                                  | $\leq 750 V$ (C1 - 1 kV / 500 A)                                                   |
|                                                                              | $\leq 750 V$ (C2 - 10 kV / 5 kA)                                                   |
|                                                                              | $\leq 800 V$ (C3 - 25 A)                                                           |
|                                                                              | $\leq 1.1 kV$ (C3 - 50 A)                                                          |
| Voltage protection level $U_p$ (line-signalground)                           | $\leq 110 V$ (C1 - 1 kV / 500 A)                                                   |
|                                                                              | $\leq 150 V$ (C2 - 10 kV / 5 kA)                                                   |
|                                                                              | $\leq 80 V$ (C3 - 25 A)                                                            |
|                                                                              | $\leq 90 V$ (C3 - 50 A)                                                            |
| Voltage protection level $U_p$ static (line-earth)                           | $\leq 750 V$ (C1 - 1 kV / 500 A)                                                   |
|                                                                              | $\leq 750 V$ (C2 - 10 kV / 5 kA)                                                   |
| Voltage protection level $U_p$ static (line-signalground)                    | $\leq 105 V$ (C1 - 1 kV / 500 A)                                                   |
|                                                                              | $\leq 150 V$ (C2 - 10 kV / 5 kA)                                                   |
| Response time $t_A$ (line-earth)                                             | $\leq 100 ns$                                                                      |
| Response time $t_A$ (line-signalground)                                      | $\leq 1 ns$                                                                        |
| Input attenuation aE, asym.                                                  | typ. 0.3 dB ( $\leq 480 kHz / 150 \Omega$ )                                        |
| Cut-off frequency $f_g$ (3 dB), asym. (signal ground) in 150 $\Omega$ system | typ. 1.7 MHz                                                                       |
| Capacity (Core-Earth)                                                        | typ. 1.2 nF                                                                        |
| Capacity (line-signalground)                                                 | typ. 5 pF                                                                          |
| Resistance per path                                                          | 1.65 $\Omega \pm 20 \%$                                                            |
| Surge protection fault message                                               | optical                                                                            |
| Max. required back-up fuse                                                   | 160 mA DC (FF)                                                                     |
|                                                                              | 630 mA AC (FF)                                                                     |
| Impulse durability (line-earth)                                              | C1 - 1 kV / 500 A                                                                  |
|                                                                              | C2 - 10 kV / 5 kA                                                                  |
|                                                                              | C3 - 57 A                                                                          |
|                                                                              | D1 - 500 A                                                                         |

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|                                        |                   |
|----------------------------------------|-------------------|
| Impulse durability (line-signalground) | C1 - 1 kV / 500 A |
|                                        | C2 - 10 kV / 5 kA |
|                                        | C3 - 57 A         |
|                                        | D1 - 500 A        |
| Pulse reset time (line-earth)          | ≤ 30 ms           |
| Pulse reset time (line-signalground)   | ≤ 600 ms          |

## Additional technical data

|                                                                        |            |
|------------------------------------------------------------------------|------------|
| Max. total discharge current $I_{\text{total max}} (8/20) \mu\text{s}$ | 20 kA (1x) |
|------------------------------------------------------------------------|------------|

## 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                                | ≤ 4000 m (amsl)  |
| Permissible humidity (operation)        | 5 % ... 95 %     |

## Standards and regulations

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

### EN 61643-21

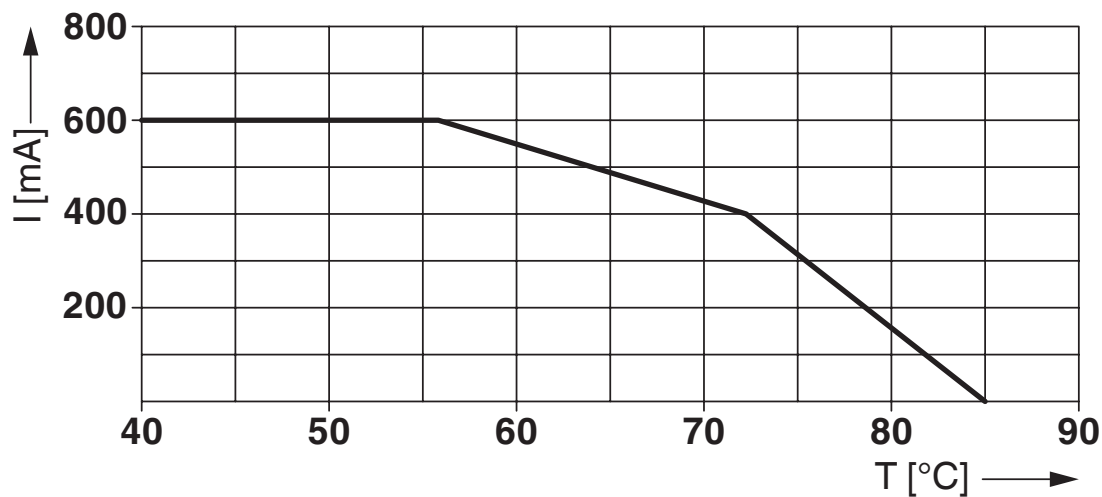
|                          |                          |
|--------------------------|--------------------------|
| Standards/specifications | EN 61643-21              |
| Note                     | 2001 + A1:2009 + A2:2013 |

## Mounting

|               |                          |
|---------------|--------------------------|
| Mounting type | DIN rail: TH 35 - 7.5 mm |
|---------------|--------------------------|

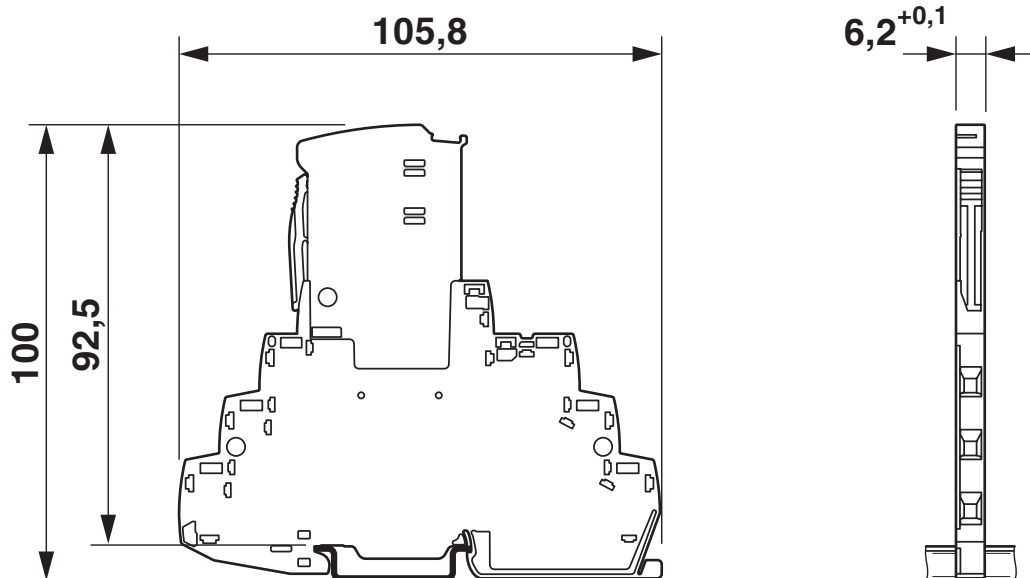
## Drawings

Diagram



Derating curve at 30 V AC

Dimensional drawing



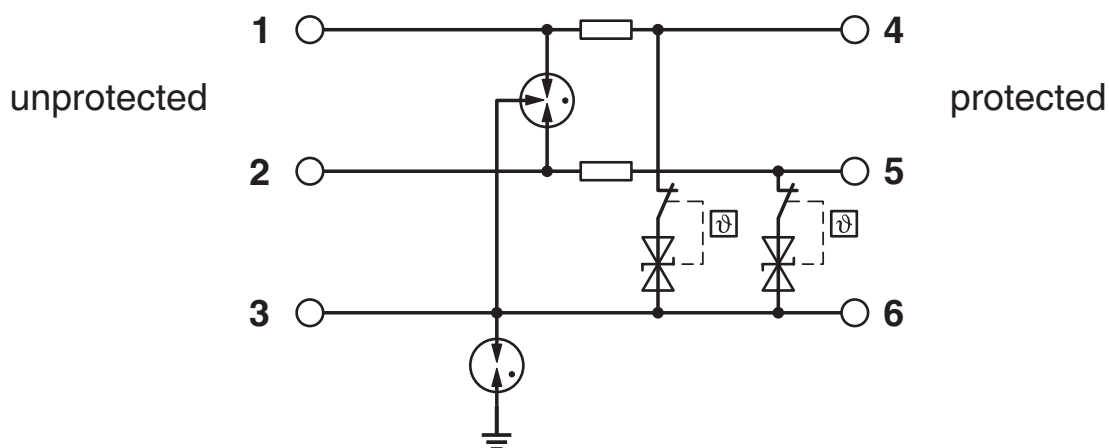
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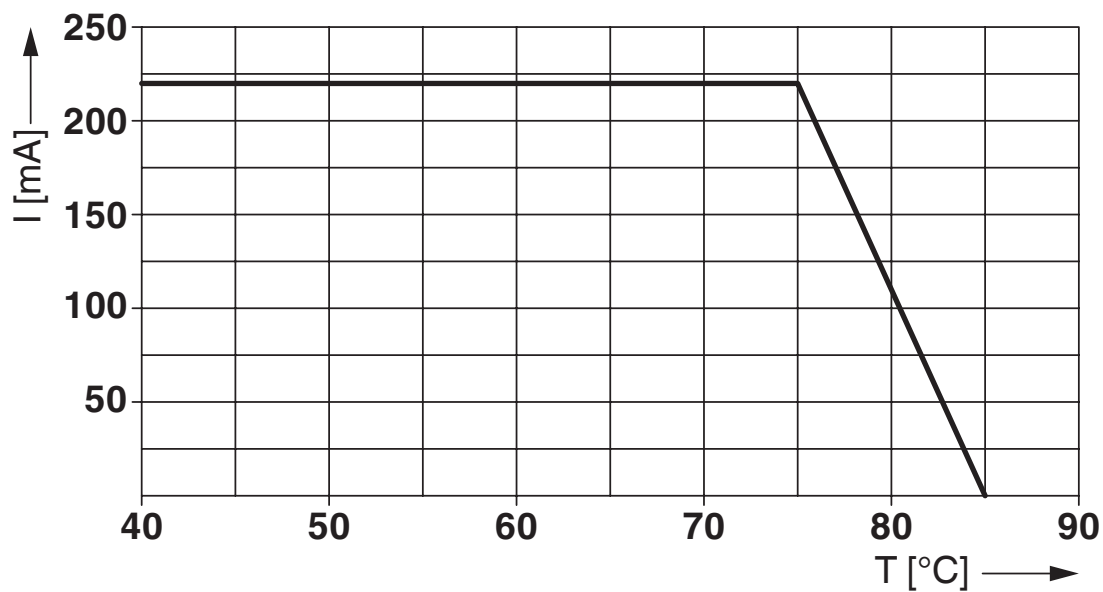
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Circuit diagram



Diagram



Derating curve at 55.2 V DC

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/it/products/2908208>



**CSA**

Approval ID: 70136717



**DNV GL**

Approval ID: TAE000027G



**UL Listed**

Approval ID: FILE E 138168



**CSAus**

Approval ID: 70136717

**UAE-RoHS**

Approval ID: 22-06-16781

**Functional Safety**

Approval ID: 16-06-072 R022 V4R2

**cCSAus**

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

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## Environmental product compliance

|            |                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                               |
| China RoHS | Environmentally Friendly Use Period = 50 years                                                               |
|            | For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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