# TTC-6-TVSD-C-48DC-PT-I - Surge protection device

2906849

https://www.phoenixcontact.com/us/products/2906849

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Fine surge protection with integrated status indicator for one signal wire with grounded reference potential. Can be used in safety-related circuits up to SIL 3.

## 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

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2906849 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL23 |
| Product key | CL2265 |
| GTIN | 4055626137056 |
| Weight per piece (including packing) | 27.2 g |

| | |
|---|---|
| Weight per piece (excluding packing) | 22.7 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

## Technical data

### Product properties

| | |
|---|---|
| Product type | Surge protection for MCR technology |
| Product family | TERMITRAB complete |
| IEC test classification | C3 |
| Type | DIN rail module, one-piece |
| Surge protection fault message | optical |

Insulation characteristics

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

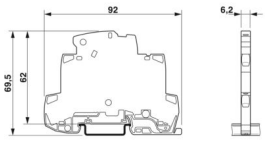
### Electrical properties

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

### Connection data

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section rigid | 0.2 mm² ... 4 mm² |
| Conductor cross-section AWG | 24 ... 12 |

### Dimensions

| | |
|---|---|
| Dimensional drawing |   |
| Width | 6.2 mm |
| Height | 92 mm |
| Depth | 69.5 mm (incl. DIN rail 7.5 mm) |

### Material specifications

| | |
|---|---|
| Color | gray (RAL 7042) |
| Flammability rating according to UL 94 | V-0 |
| Insulating material | PBT |
| Housing material | PBT |

### Mechanical properties

Mechanical data

| | |
|---|---|
| Open side panel | Yes |

### Protective circuit

| | |
|---|---|
| Direction of action | Line-Earth Ground |

| | |
|---|---|
| Nominal voltage $U_N$ | 48 V DC |
| Maximum continuous operating voltage $U_C$ | 53 V DC |
| | 37 V AC |
| Rated current | 10 A (60 °C) |
| Operating effective current $I_C$ at $U_C$ | ≤ 5 µA |
| Protective conductor current $I_{PE}$ | ≤ 5 µA |
| Nominal discharge current $I_n$ (8/20) µs (line-ground) | 90 A |
| Voltage protection level $U_p$ (line-earth) | ≤ 80 V (C3 - 18 A) |
| Response time $t_A$ (line-earth) | ≤ 1 ns |
| Input attenuation aE, asym. | typ. 0.3 dB (≤ 1 MHz / 150 Ω) |
| Cut-off frequency fg (3 dB), asym. (PE) in 150 Ω system | typ. 3.5 MHz |
| Capacity (Core-Earth) | 1 nF |
| Resistance per path | ≤ 100 mΩ |
| Surge protection fault message | optical |
| Impulse durability (line-earth) | C3 - 18 A |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 (with end cover) |
| 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

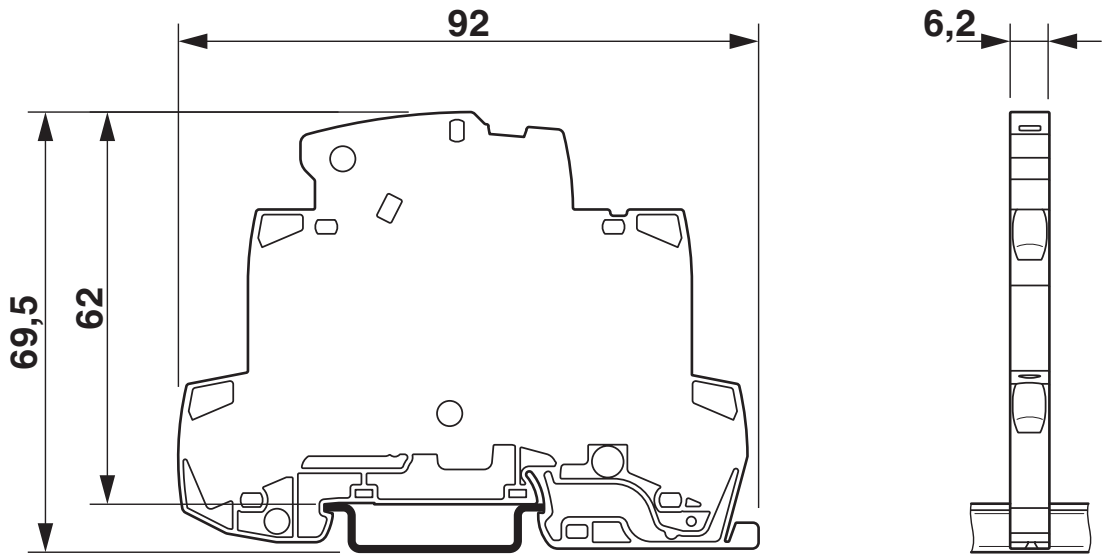
| | |
|---|---|
| Standards/specifications | EN 61643-21 |
| Note | 2001 + A1:2009 + A2:2013 |

## Mounting

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

## Drawings

Dimensional drawing

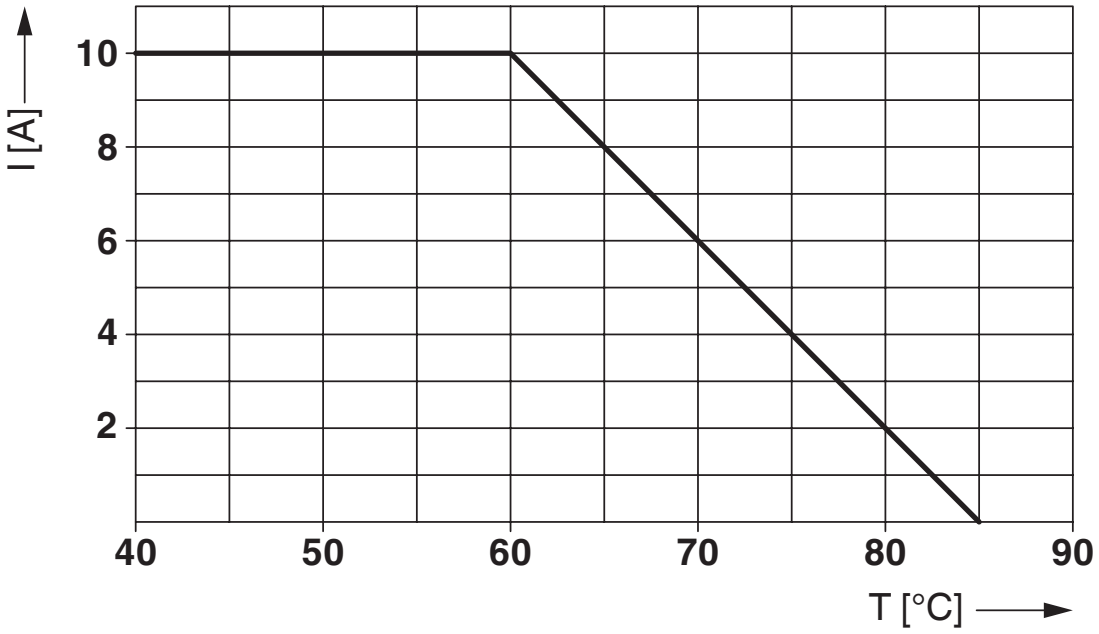



Schematic diagram

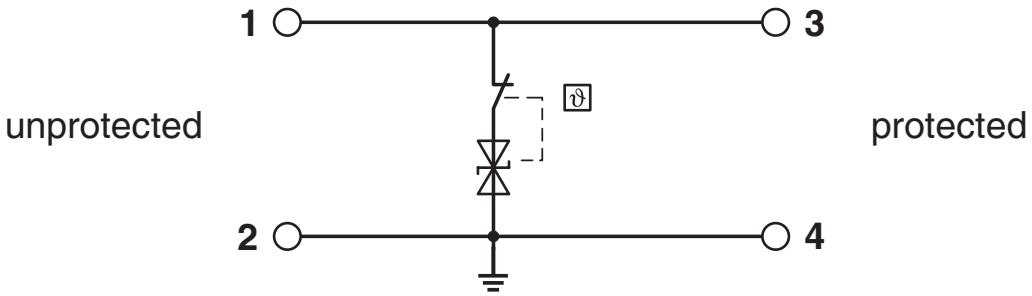
| TTC-6-TVSD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Category | 1oo1 architecture, HFT=0 | | | | 1oo2 architecture, HFT=1 | | | | |
| | $PFD_{AVG}$ | PFH | Used budget of SIL 2 SIF | | $PFD_{AVG}$ | PFH | CCF | Used budget of SIL 3 SIF | |
| | | | $PFD_{AVG}$ | PFH | | | | $PFD_{AVG}$ | PFH |
| | $5.62_{x10^{-7}}$ | $1.00_{x10^{-10}}$ 1/h | 0.0 % | 0.0 % | $2.81_{x10^{-8}}$ | $5.00_{x10^{-12}}$ 1/h | 5 % | 0.0 % | 0.0 % |
| | | | | | $5.62_{x10^{-8}}$ | $1.00_{x10^{-11}}$ 1/h | 10 % | 0.0 % | 0.0 % |
| | Calculation based on exida report, Phoenix Contact 16/06-072 R024 V2R0<br>exida Profile 1, FMEDA Analysis 2, $T_{proof}$: 1 year, MT: 10 years, MTTR: 24 hours, PTC: 99%<br>Used standards<br>IEC/EN 61508, edition 2010 (device specific)<br>IEC/EN 61511, edition 2016 + COR1:2016 + A1:2017 (system specific) | | | | | | | | |

Functional safety scenarios

Diagram




Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2906849

**CSA**
Approval ID: 70136717

**DNV GL**
Approval ID: TAE000027G

**UL Listed**
Approval ID: FILE E 138168

**CSAus**
Approval ID: 70136717

**UAE-RoHS**
Approval ID: 22-06-16783

**Functional Safety**
Approval ID: 16-06-072 R024 V2R0

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27171501 |
| ECLASS-15.0 | 27171501 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001466 |

### UNSPSC

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

## 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 | c5ac9b50-ad4d-47e0-8fec-2126f0994e98 |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 41.638 kg CO2e |

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