

# TTC-6-TVSD-D-60DC-PT-I - Surge protection device



2906853

<https://www.phoenixcontact.com/us/products/2906853>

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Fine surge protection with integrated status indicator for one 2-wire floating signal circuit. 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

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2906853       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL23          |
| Product key                          | CL2265        |
| GTIN                                 | 4055626137094 |
| Weight per piece (including packing) | 25.8 g        |
| Weight per piece (excluding packing) | 25 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        | C3                                  |
| Type                           | DIN rail module, one-piece          |
| Surge protection fault message | optical                             |
| Wire pairs per module          | 1                                   |

### Insulation characteristics

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

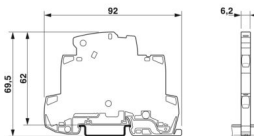
### Electrical properties

|                       |         |
|-----------------------|---------|
| Nominal voltage $U_N$ | 60 V DC |
|-----------------------|---------|

### Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Push-in connection                          |
| 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                                                                               |
| 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

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|                                                             |                                             |
|-------------------------------------------------------------|---------------------------------------------|
| Direction of action                                         | Line-Line                                   |
| Nominal voltage $U_N$                                       | 60 V DC                                     |
| Maximum continuous operating voltage $U_C$                  | 75 V DC                                     |
|                                                             | 53 V AC                                     |
| Rated current                                               | 10 A (60 °C)                                |
| Operating effective current $I_C$ at $U_C$                  | $\leq 5 \mu A$                              |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)  | 60 A                                        |
| Voltage protection level $U_p$ (line-line)                  | $\leq 110 V$ (C3 - 12 A)                    |
| Response time $t_A$ (line-line)                             | $\leq 1 ns$                                 |
| Input attenuation aE, sym.                                  | typ. 0.3 dB ( $\leq 1.2 MHz / 150 \Omega$ ) |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system | typ. 4 MHz                                  |
| Capacity (Core-Core)                                        | 0.6 nF                                      |
| Resistance per path                                         | $\leq 100 m\Omega$                          |
| Surge protection fault message                              | optical                                     |
| Impulse durability (line-line)                              | C3 - 12 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                                | $\leq 4000 m$ (amsl)  |
| Permissible humidity (operation)        | 5 % ... 95 %          |

## Standards and regulations

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

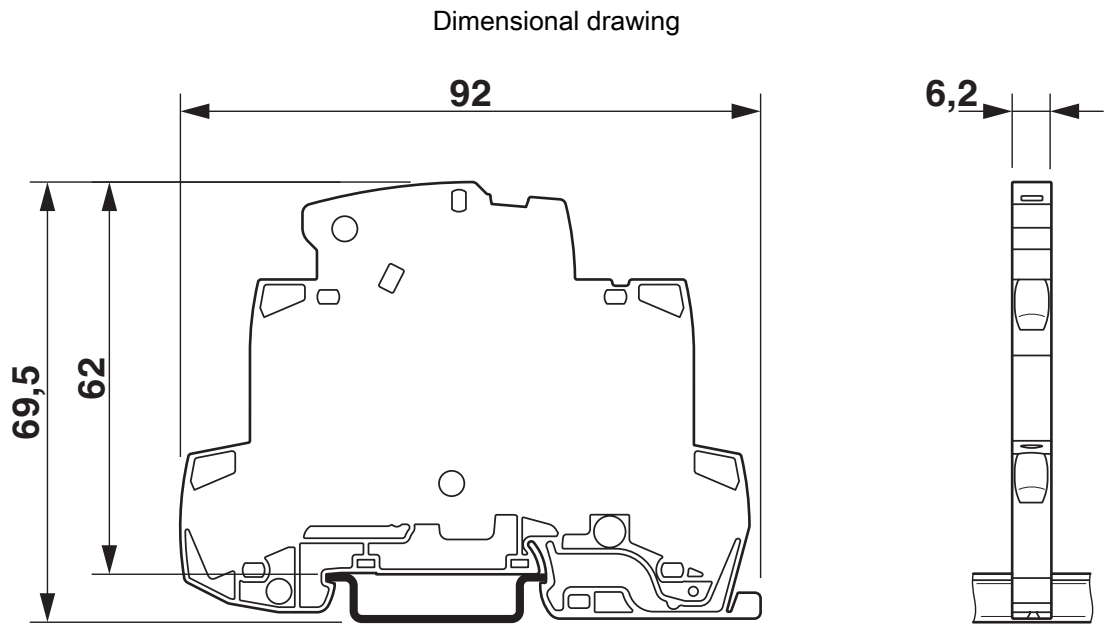
### EN 61643-21

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

## Mounting

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

Drawings

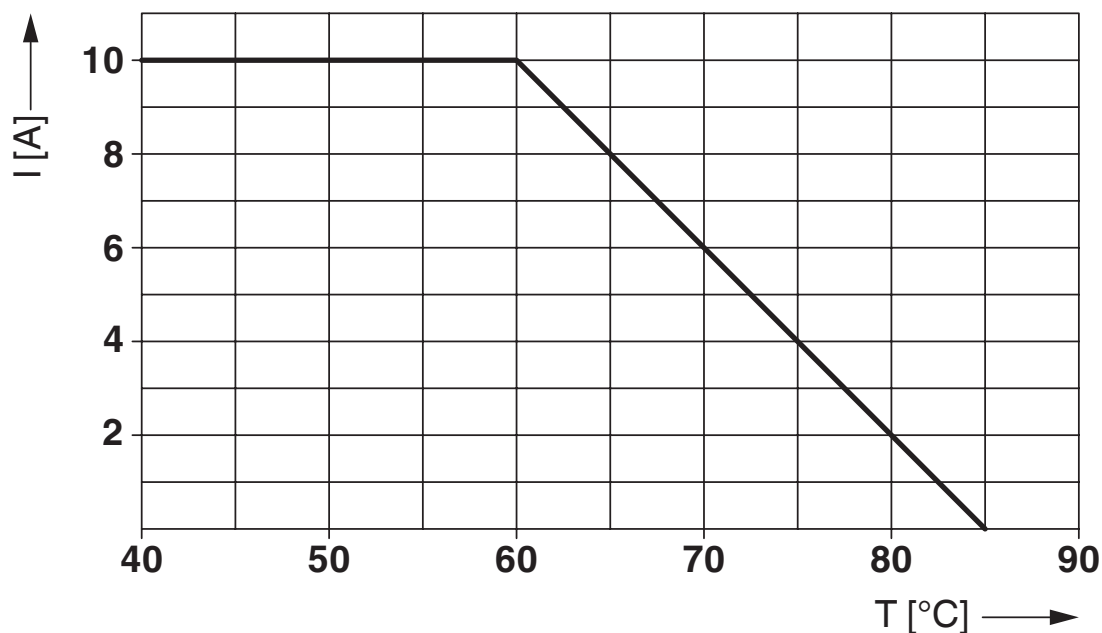


Schematic diagram

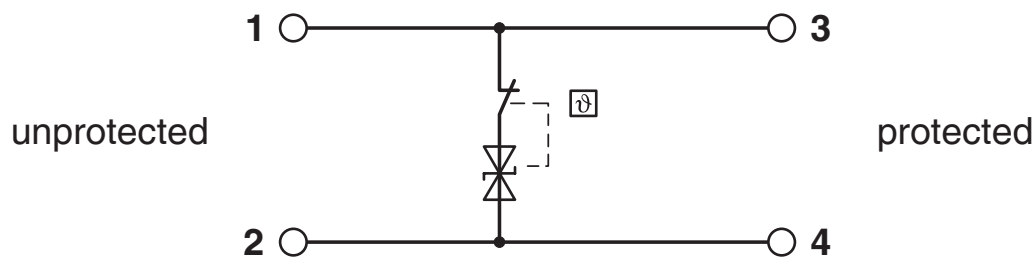
| TTC-6-TVSD                                                                                                                                                                                                                                                                                                               |                          |                            |                          |       |                          |                            |      |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------|--------------------------|-------|--------------------------|----------------------------|------|--------------------------|
| Category                                                                                                                                                                                                                                                                                                                 | 1oo1 architecture, HFT=0 |                            |                          |       | 1oo2 architecture, HFT=1 |                            |      |                          |
|                                                                                                                                                                                                                                                                                                                          | PFD <sub>avg</sub>       | PFH                        | Used budget of SIL 2 SIF |       | PFD <sub>avg</sub>       | PFH                        | CCF  | Used budget of SIL 3 SIF |
|                                                                                                                                                                                                                                                                                                                          |                          |                            | PFD <sub>avg</sub>       | PFH   |                          |                            |      | PFD <sub>avg</sub>       |
|                                                                                                                                                                                                                                                                                                                          | 5.62x10 <sup>-7</sup>    | 1.00x10 <sup>-10</sup> 1/h | 0.0 %                    | 0.0 % | 2.81x10 <sup>-8</sup>    | 5.00x10 <sup>-12</sup> 1/h | 5 %  | 0.0 %                    |
|                                                                                                                                                                                                                                                                                                                          |                          |                            |                          |       | 5.62x10 <sup>-8</sup>    | 1.00x10 <sup>-11</sup> 1/h | 10 % | 0.0 %                    |
| Calculation based on exida report, Phoenix Contact 16/06-072 R024 V2R0<br>exida Profile 1, FMEDA Analysis 2, T <sub>proof</sub> : 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



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## Classifications

### ECLASS

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

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC000943 |
|----------|----------|

### 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                                | 210559a0-891c-474b-9fe3-da96035f0ac3 |

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