

# TTC-6-GDT-D-24AC-PT-I - Surge protection device



2906862

<https://www.phoenixcontact.com/us/products/2906862>

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Coarse surge protection with integrated status indicator for a 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                          | 2906862       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL23          |
| Product key                          | CL2265        |
| GTIN                                 | 4055626137179 |
| Weight per piece (including packing) | 25.57 g       |
| Weight per piece (excluding packing) | 20.57 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, one-piece          |
| Surge protection fault message | optical                             |
| Wire pairs per module          | 1                                   |

### Insulation characteristics

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

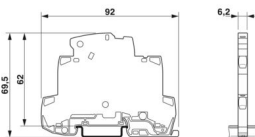
### Electrical properties

|                       |         |
|-----------------------|---------|
| Nominal voltage $U_N$ | 24 V AC |
|-----------------------|---------|

### 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

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

## Protective circuit

|                                                                |                                         |
|----------------------------------------------------------------|-----------------------------------------|
| Direction of action                                            | Line-Line                               |
| Maximum continuous operating voltage $U_C$                     | 28 V DC                                 |
|                                                                | 30 V AC                                 |
| Rated current                                                  | 1 A DC (60 °C)                          |
|                                                                | 2 A AC (60 °C)                          |
| Operating effective current $I_C$ at $U_C$                     | $\leq 1 \mu A$                          |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)     | 5 kA                                    |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$ (line-line) | 0.5 kA                                  |
| Voltage protection level $U_p$ (line-line)                     | $\leq 800 V$ (C1 - 2 kV)                |
|                                                                | $\leq 1 kV$ (C2 - 10 kV)                |
|                                                                | $\leq 800 V$ (C3 - 25 A)                |
|                                                                | $\leq 900 V$ (C3 - 100 A)               |
| Response time $t_A$ (line-line)                                | $\leq 100 ns$                           |
| Input attenuation aE, sym.                                     | typ. 0.3 dB ( $\leq 8 MHz/150 \Omega$ ) |
|                                                                | typ. 0.3 dB ( $\leq 30 MHz/50 \Omega$ ) |
| Cut-off frequency $f_g$ (3 dB), sym. in 50 $\Omega$ system     | typ. 130 MHz                            |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system    | typ. 25 MHz                             |
| Capacity (Core-Core)                                           | 5 pF                                    |
| Resistance per path                                            | $\leq 100 m\Omega$                      |
| Surge protection fault message                                 | optical                                 |
| Impulse durability (line-line)                                 | C1 - 1 kA                               |
|                                                                | C2 - 5 kA                               |
|                                                                | C3 - 100 A                              |
|                                                                | D1 - 500 A                              |
| Pulse reset time (line-line)                                   | $\leq 1 ms$                             |

## 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 |

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## Mounting

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

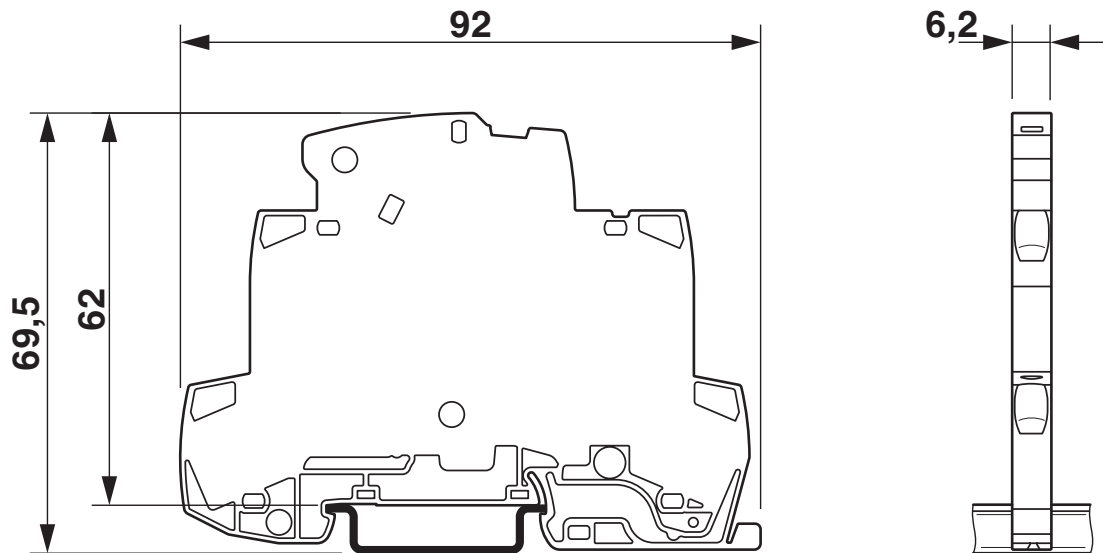
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Drawings

Dimensional drawing

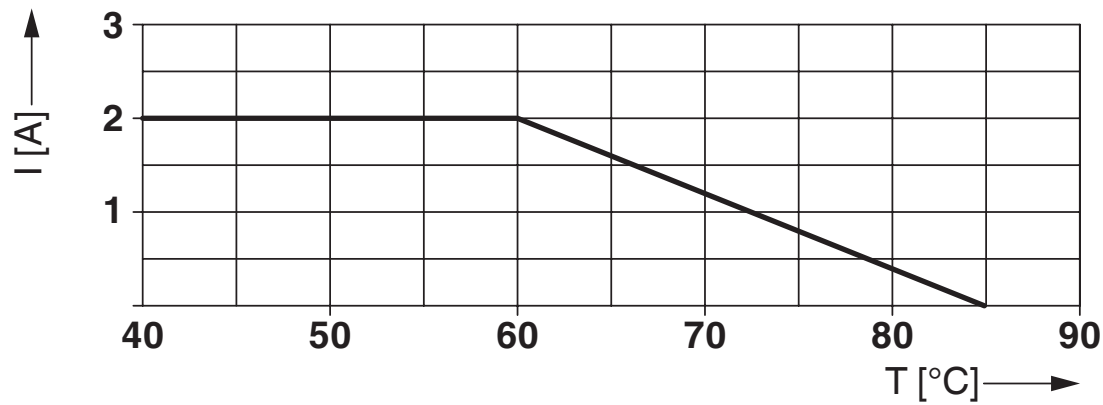


Schematic diagram

| 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>       | PFH   |
|                                                                                                                                                                                  |                          |                            |                          |       |                          |                            |      |                          |       |
|                                                                                                                                                                                  | 5.62·10 <sup>-7</sup>    | 1.00·10 <sup>-10</sup> 1/h | 0.0 %                    | 0.0 % | 2.81·10 <sup>-8</sup>    | 5.00·10 <sup>-12</sup> 1/h | 5 %  | 0.0 %                    | 0.0 % |
|                                                                                                                                                                                  |                          |                            |                          |       | 5.62·10 <sup>-8</sup>    | 1.00·10 <sup>-11</sup> 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 <sub>proof</sub> : 1 year, MT: 10 years, MTTR: 24 hours, PTC: 99% |                          |                            |                          |       |                          |                            |      |                          |       |
| 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  
Table also applies to the TTC-6-GDT item group

Diagram



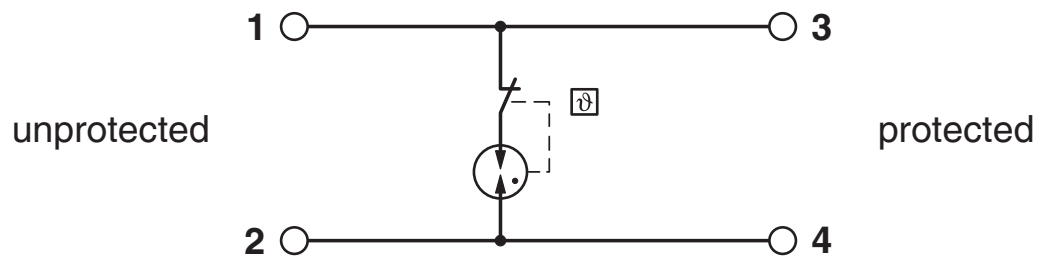
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Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906862>



**CSA**

Approval ID: 70136717



**DNV GL**

Approval ID: TAE000027G



**UL Listed**

Approval ID: FILE E 138168



**CSAus**

Approval ID: 70136717

**UAE-RoHS**

Approval ID: 22-06-16192

**Functional Safety**

Approval ID: 16-06-072 R024 V2R0

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27171501 |
| ECLASS-15.0 | 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, No exemptions                       |
| China RoHS                              |                                          |
| Environment friendly use period (EFUP)  | EFUP-E                                   |
|                                         | No hazardous substances above the limits |
| EU REACH SVHC                           |                                          |
| REACH candidate substance (CAS No.)     | No substance above 0.1 wt%               |

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