

# TTC-6-2-24DC-UT - Surge protection device



2906800

<https://www.phoenixcontact.com/in/products/2906800>

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Surge protection for resistance-dependent measuring signals. Can be used in safety-related circuits up to SIL 3.

## Your advantages

- Space saving with a narrow overall width of just 6 mm
- Cost-optimized with tailored product features
- Easy selection for all possible demands in MCR applications with a complete product portfolio

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2906800       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL2           |
| Product key                          | CL2261        |
| GTIN                                 | 4055626135557 |
| Weight per piece (including packing) | 37.2 g        |
| Weight per piece (excluding packing) | 30 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          |

### Insulation characteristics

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

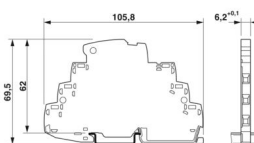
### Electrical properties

|                       |         |
|-----------------------|---------|
| Nominal voltage $U_N$ | 24 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               | 69.5 mm (incl. DIN rail 7.5 mm)                                                      |

### Material specifications

|                                        |                       |
|----------------------------------------|-----------------------|
| Color                                  | gray (RAL 7042)       |
|                                        | light gray (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 operating voltage $U_C$                      | 30 V DC<br>21 V AC                                                                                                             |
| Rated current                                                   | 450 mA (80 °C)                                                                                                                 |
| Operating effective current $I_C$ at $U_C$                      | $\leq 5 \mu A$                                                                                                                 |
| Protective conductor current $I_{PE}$                           | $\leq 1 \mu A$                                                                                                                 |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)      | 0.5 kA                                                                                                                         |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-ground)    | 5 kA                                                                                                                           |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$ (line-earth) | 0.5 kA                                                                                                                         |
| Total discharge current $I_{Total}$ (8/20) $\mu s$              | 10 kA                                                                                                                          |
| Voltage protection level $U_p$ (line-line)                      | $\leq 60 V$ (C1 - 1 kV / 500 A)<br>$\leq 45 V$ (C3 - 25 A)<br>$\leq 50 V$ (C3 - 100 A)                                         |
| Voltage protection level $U_p$ (line-earth)                     | $\leq 650 V$ (C1 - 1 kV / 500 A)<br>$\leq 1.1 kV$ (C2 - 10 kV / 5 kA)<br>$\leq 600 V$ (C3 - 25 A)<br>$\leq 700 V$ (C3 - 100 A) |
| Voltage protection level $U_p$ static (line-earth)              | $\leq 1.1 kV$ (C2 - 10 kV / 5 kA)                                                                                              |
| Response time $t_A$ (line-line)                                 | $\leq 1 ns$                                                                                                                    |
| Response time $t_A$ (line-earth)                                | $\leq 100 ns$                                                                                                                  |
| Input attenuation aE, sym.                                      | typ. 0.3 dB ( $\leq 300 kHz$ / 150 $\Omega$ )                                                                                  |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system     | typ. 965 kHz                                                                                                                   |
| Capacity (Core-Earth)                                           | typ. 2.2 nF                                                                                                                    |
| Resistance per path                                             | $\leq 100 m\Omega$                                                                                                             |
| Surge protection fault message                                  | none                                                                                                                           |
| Max. required back-up fuse                                      | 500 mA (FF)                                                                                                                    |
| Impulse durability (line-line)                                  | C1 - 1 kV / 500 A<br>C3 - 100 A                                                                                                |
| Impulse durability (line-earth)                                 | C1 - 1 kV / 500 A<br>C2 - 10 kV / 5 kA<br>C3 - 100 A<br>D1 - 500 A                                                             |
| Pulse reset time (line-earth)                                   | $\leq 1 s$                                                                                                                     |

## Additional technical data

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

## Environmental and real-life conditions

### Ambient conditions

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

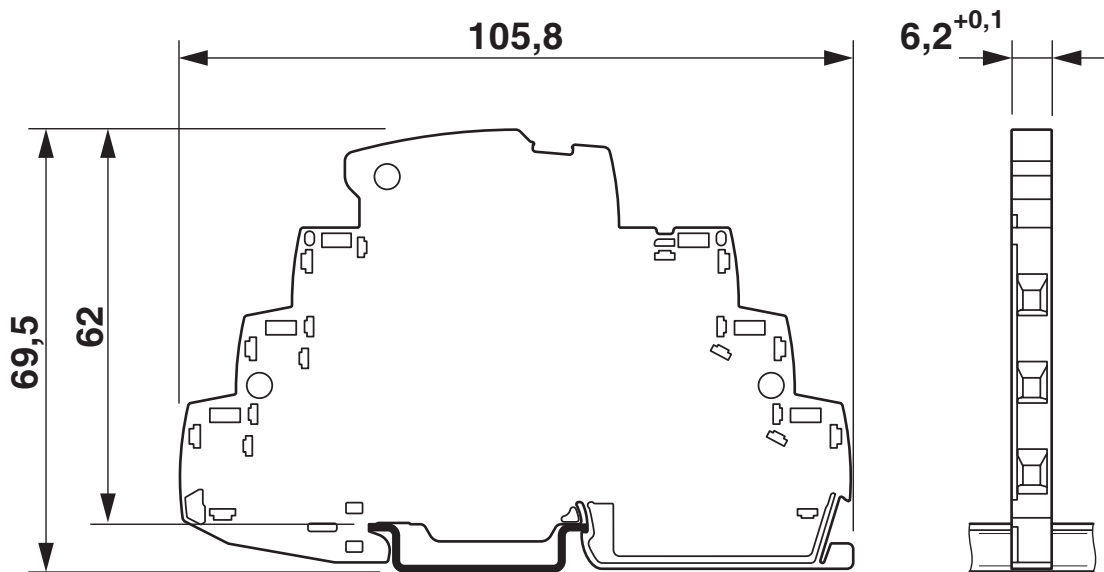
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Drawings

Dimensional drawing

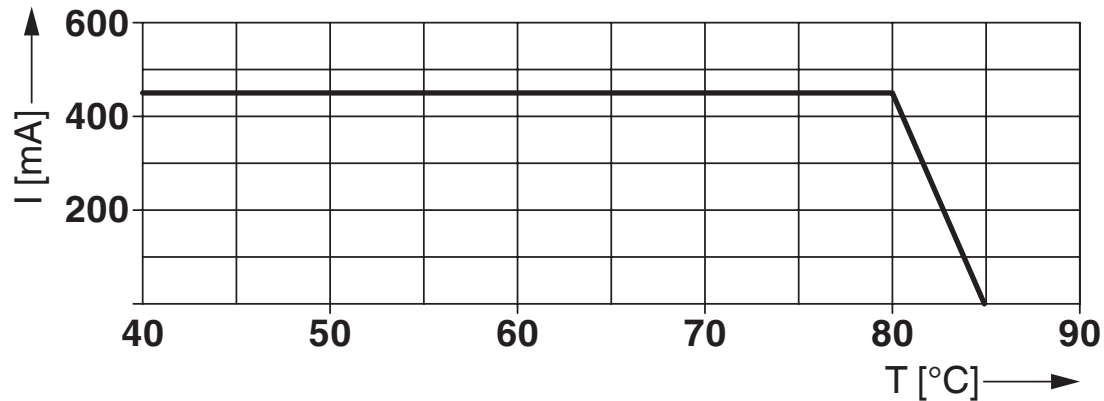


Schematic diagram

| TTC-6-2-...DC-...                                                                                                                                                                                                                                                                                                        |                          |                           |                          |      |                          |                            |     |                          |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------|--------------------------|------|--------------------------|----------------------------|-----|--------------------------|------|
| 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  |
|                                                                                                                                                                                                                                                                                                                          |                          |                           |                          |      |                          |                            |     |                          |      |
|                                                                                                                                                                                                                                                                                                                          | 1.01·10 <sup>-5</sup>    | 1.80·10 <sup>-9</sup> 1/h | 0.1%                     | 0.2% | 5.06·10 <sup>-7</sup>    | 9.00·10 <sup>-11</sup> 1/h | 5%  | 0.1%                     | 0.1% |
|                                                                                                                                                                                                                                                                                                                          |                          |                           |                          |      | 1.01·10 <sup>-6</sup>    | 1.80·10 <sup>-10</sup> 1/h | 10% | 0.1%                     | 0.2% |
| Calculation based on exida report, Phoenix Contact 16/06-072 R023 V3R1<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

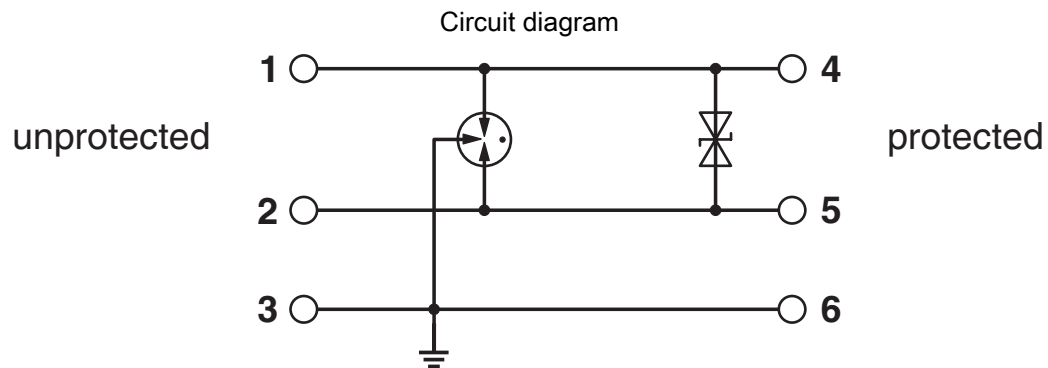
Diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/2906800>



**CSA**

Approval ID: 70136717



**DNV GL**

Approval ID: TAE000027G



**UL Listed**

Approval ID: FILE E 138168



**CSAus**

Approval ID: 70136717

**UAE-RoHS**

Approval ID: 22-06-16191

**Functional Safety**

Approval ID: 16-06-072 R023 V3R1

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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  |
| Exemption                               | 7(a) |

### 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: n/a)                       |
| SCIP                                | 00fdb313-ca27-4703-847b-b01254ed9928 |

### EF3.0 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.767 kg CO2e |
|---------|---------------|

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## Accessories

### ZBF 6 CUS - Zack Marker strip, flat

0825027

<https://www.phoenixcontact.com/in/products/0825027>



Zack Marker strip, flat, Strip, can be ordered: Strip, white, labeled according to customer specifications, mounting type: snap into flat marker groove, for terminal block width: 6.2 mm, Number of individual labels: 10, text field height: 6.15 mm, text field width: 5.15 mm

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### ZBF 6:UNBEDRUCKT - Zack Marker strip, flat

0808710

<https://www.phoenixcontact.com/in/products/0808710>



Zack Marker strip, flat, Strip, white, unmarked, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: latching, for terminal block width: 6.2 mm, Number of individual labels: 10, text field height: 6.15 mm, text field width: 5.15 mm

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## ZBF 6/WH-100:UNBEDRUCKT - Zack Marker strip, flat

0808736

<https://www.phoenixcontact.com/in/products/0808736>



Zack Marker strip, flat, Strip, white, unmarked, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: latching, for terminal block width: 6.2 mm, Number of individual labels: 1000, text field height: 6.15 mm, text field width: 5.15 mm

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## ZBF 6,QR:FORTL.ZAHLEN - Zack Marker strip, flat

0808765

<https://www.phoenixcontact.com/in/products/0808765>



Zack Marker strip, flat, Strip, white, labeled, Printed vertically: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 91 ... 100, mounting type: latching, for terminal block width: 6.2 mm, Number of individual labels: 10, text field height: 6.15 mm, text field width: 5.15 mm

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## CLIPFIX 35-5 - End bracket

3022276

<https://www.phoenixcontact.com/in/products/3022276>



Quick mounting end clamp for NS 35/7,5 DIN rail or NS 35/15 DIN rail, with marking option, with parking option for FBS...5, FBS...6, KSS 5, KSS 6, width: 5.15 mm, color: gray

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## TTC-6-FC-UT - Fuse holder

1054762

<https://www.phoenixcontact.com/in/products/1054762>



Fuse carrier for surge protective devices of the TERMITRAB complete product range with screw connection technology. Multi-level connection on TTC-6 housings possible. For conventional 5x20 mm miniature fuses.

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## SSA 3-6 - Shield connection

2839295

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

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



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## SSA 5-10 - Shield connection

2839512

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

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



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## X-PEN 0,35 - Marker pen

0811228

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



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

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

1212602

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



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

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