

# TTC-6P-2-HC-24DC-UT-I - Surge protection device



2906811

<https://www.phoenixcontact.com/pc/products/2906811>

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Surge protection, consisting of protective plug and base element, with integrated status indicator for a 2-wire floating signal circuit with high nominal current. 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
- 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                          | 2906811             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Product key                          | CL2161              |
| Catalog page                         | Page 136 (C-4-2019) |
| GTIN                                 | 4055626135755       |
| Weight per piece (including packing) | 44.4 g              |
| Weight per piece (excluding packing) | 44.4 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 |

### Data management status

|                  |    |
|------------------|----|
| Article revision | 05 |
|------------------|----|

### Insulation characteristics

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

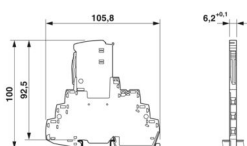
### Electrical properties

|                       |         |
|-----------------------|---------|
| 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               | 100 mm (incl. DIN rail 7.5 mm)                                                       |

### Material specifications

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

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|                  |     |
|------------------|-----|
| Housing material | PBT |
|------------------|-----|

## Mechanical properties

### 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 $U_C$                                | 30 V DC<br>21 V AC                                                                                                                 |
| Rated current                                                   | 6 A (55 °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-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) $\mu s$              | 5 kA                                                                                                                               |
| Voltage protection level $U_p$ (line-line)                      | $\leq 50 V$ (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)                     | $\leq 1.35 kV$ (C1 - 1 kV / 500 A)<br>$\leq 1.45 kV$ (C2 - 10 kV / 5 kA)<br>$\leq 850 V$ (C3 - 25 A)<br>$\leq 1.1 kV$ (C3 - 100 A) |
| 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. 1 MHz                                                                                                                         |
| Capacity (Core-Earth)                                           | typ. 2.2 nF                                                                                                                        |
| Resistance per path                                             | $\leq 100 m\Omega$                                                                                                                 |
| Surge protection fault message                                  | optical                                                                                                                            |
| Max. required back-up fuse                                      | 6.3 A (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)                                   | $\leq 40 ms$                                                                                                                       |

## Environmental and real-life conditions

### Ambient conditions

|                      |      |
|----------------------|------|
| Degree of protection | IP20 |
|----------------------|------|

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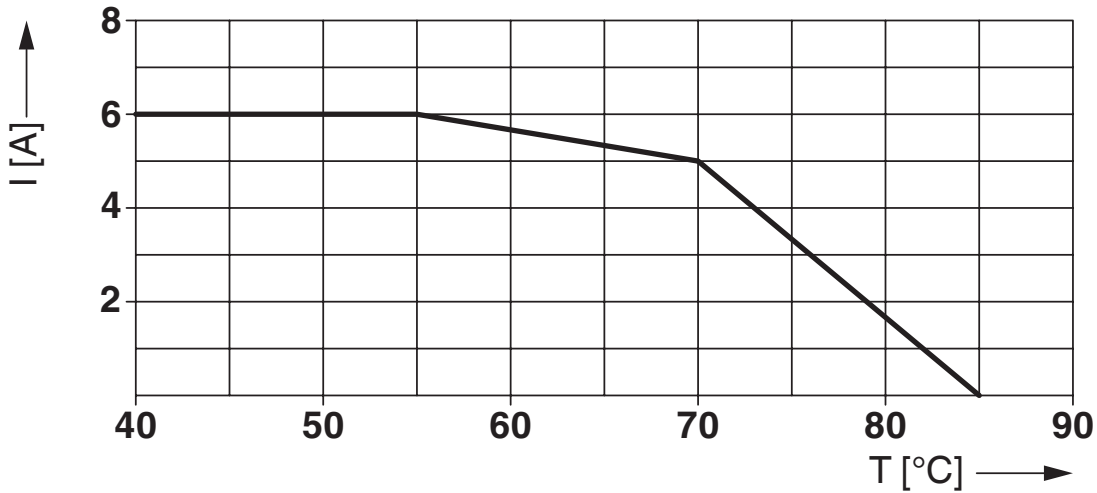


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Drawings

Diagram

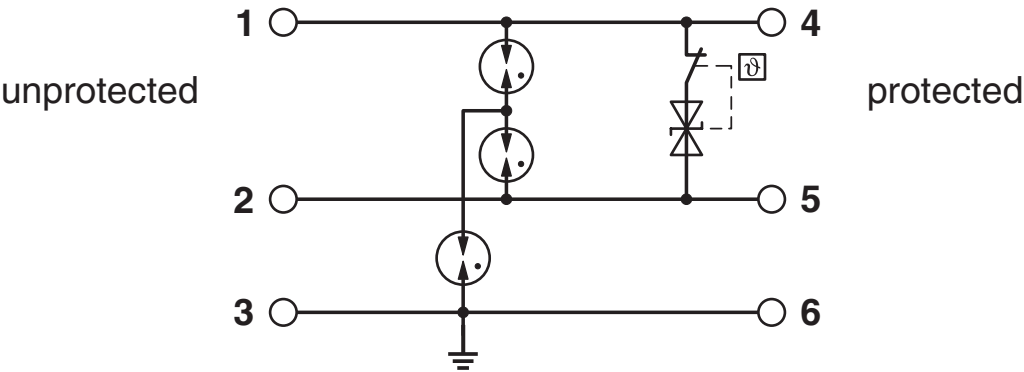


Schematic diagram

| TTC-6P-2-HC-...-I                                                                                                                                                                                                                                                                                                        |                                  |                                     |                          |       |                                  |                                       |      |                          |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------|--------------------------|-------|----------------------------------|---------------------------------------|------|--------------------------|-------|
| 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   |
|                                                                                                                                                                                                                                                                                                                          |                                  |                                     |                          |       |                                  |                                       |      |                          |       |
|                                                                                                                                                                                                                                                                                                                          | 1.29 <sub>x10<sup>-5</sup></sub> | 2.30 <sub>x10<sup>-9</sup></sub> /h | 0.1 %                    | 0.2 % | 6.47 <sub>x10<sup>-7</sup></sub> | 1.15 <sub>x10<sup>-10</sup></sub> /h  | 5 %  | 0.1 %                    | 0.1 % |
|                                                                                                                                                                                                                                                                                                                          |                                  |                                     |                          |       | 1.29 <sub>x10<sup>-6</sup></sub> | 2.30 <sub>x10<sup>-10</sup></sub> 1/h | 10 % | 0.1 %                    | 0.2 % |
| Calculation based on exida report, Phoenix Contact 16/06-072 R022 V4R2<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

Circuit diagram



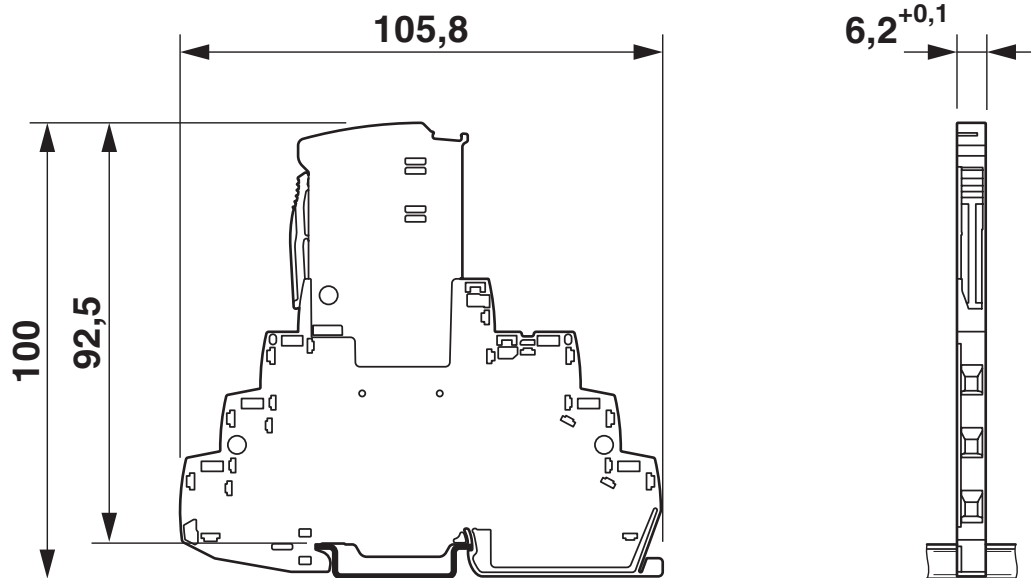
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Dimensional drawing



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/2906811>



**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

|                                         |                                                                                                                                                                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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: 7439-92-1)                                                                                                                                                                                                              |
| SCIP                                    | 46b1ee10-497d-4c3a-9946-4d2a5ea460ba                                                                                                                                                                                              |

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## Accessories

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

0825027

<https://www.phoenixcontact.com/pc/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, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

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

0808710

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



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

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

0808736

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



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 1000

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

0808765

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



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

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## CLIPFIX 35-5 - End bracket

3022276

<https://www.phoenixcontact.com/pc/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-FMRS-UT - Remote signaling set

2907810

<https://www.phoenixcontact.com/pc/products/2907810>



Module set for the optical monitoring and floating remote signaling of adjacent surge protective devices in the TERMITRAB complete or CLIXTRAB product family. Suitable for directly grounded DIN rails.

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

1054762

<https://www.phoenixcontact.com/pc/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/pc/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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<https://www.phoenixcontact.com/pc/products/2906811>

## SSA 5-10 - Shield connection

2839512

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

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



## TTC-6P-2-HC-24DC-I-P - Surge protection plug

2907845

<https://www.phoenixcontact.com/pc/products/2907845>

Surge protection plug with integrated status indicator on the module for a 2-wire floating signal circuit with high nominal current. Nominal voltage: 24 V DC



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