

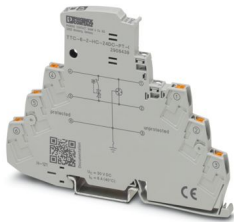
TTC-6-2-HC-24DC-PT-I - Surge protection device



2908439

<https://www.phoenixcontact.com/us/products/2908439>

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Surge protection with integrated status indicator for a 2-wire floating signal circuit with high nominal current, KNX-compatible. 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 | 2908439 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL23 |
| Product key | CL2262 |
| GTIN | 4055626300436 |
| Weight per piece (including packing) | 35.2 g |
| Weight per piece (excluding packing) | 28.84 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 |

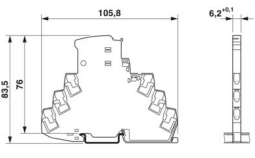
Electrical properties

| | |
|-----------------------|---------|
| Nominal voltage U_N | 24 V DC |
|-----------------------|---------|

Connection data

| | |
|----------------------------------|---|
| Connection method | Push-in connection |
| Conductor cross-section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section rigid | 0.2 mm ² ... 4 mm ² |
| Conductor cross-section AWG | 24 ... 12 |

Dimensions

| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 6.2 mm +0.1 mm |
| Height | 105.8 mm |
| Depth | 83.5 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 | No |
|-----------------|----|

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Protective circuit

| | |
|---|--|
| Direction of action | Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground |
| Nominal voltage U_N | 24 V DC |
| Maximum continuous operating voltage U_C | 30 V DC 21 V AC |
| Rated current | 6 A (55 °C) |
| Operating effective current I_C at U_C | $\leq 5 \mu\text{A}$ |
| Protective conductor current I_{PE} | $\leq 1 \mu\text{A}$ |
| Nominal discharge current I_n (8/20) μs (line-line) | 0.5 kA |
| Nominal discharge current I_n (8/20) μs (line-ground) | 5 kA |
| Pulse discharge current I_{imp} (10/350) μs (line-earth) | 0.5 kA |
| Total discharge current I_{Total} (8/20) μs | 5 kA |
| Voltage protection level U_p (line-line) | $\leq 50 \text{ V}$ (C1 - 1 kV / 500 A) $\leq 45 \text{ V}$ (C3 - 25 A) $\leq 50 \text{ V}$ (C3 - 100 A) |
| Voltage protection level U_p (line-earth) | $\leq 1.35 \text{ kV}$ (C1 - 1 kV / 500 A) $\leq 1.45 \text{ kV}$ (C2 - 10 kV / 5 kA) $\leq 850 \text{ V}$ (C3 - 25 A) $\leq 1.1 \text{ kV}$ (C3 - 100 A) |
| Response time t_A (line-line) | $\leq 1 \text{ ns}$ |
| Response time t_A (line-earth) | $\leq 100 \text{ ns}$ |
| Input attenuation aE, sym. | typ. 0.3 dB ($\leq 300 \text{ kHz}$ / 150 Ω) |
| Cut-off frequency f_g (3 dB), sym. in 150 Ω system | typ. 1 MHz |
| Capacity (Core-Earth) | typ. 2.2 nF |
| Resistance per path | $\leq 100 \text{ m}\Omega$ |
| Surge protection fault message | optical |
| Max. required back-up fuse | 6.3 A (FF) |
| Impulse durability (line-line) | C1 - 1 kV / 500 A C3 - 100 A |
| Impulse durability (line-earth) | C1 - 1 kV / 500 A C2 - 10 kV / 5 kA C3 - 100 A D1 - 500 A |
| Pulse reset time (line-earth) | $\leq 40 \text{ ms}$ |

Environmental and real-life conditions

Ambient conditions

| | |
|---|------------------------------|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 85 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | $\leq 4000 \text{ m}$ (amsl) |
| Permissible humidity (operation) | 5 % ... 95 % |

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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-HC-...-I | | | | | | | | | |
|--|--------------------------|----------------------------|--------------------------|-------|--------------------------|----------------------------|------|--------------------------|-------|
| 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 |
| | 4.50·10 ⁻⁶ | 8.00·10 ⁻¹⁰ 1/h | 0.0 % | 0.1 % | 2.25·10 ⁻⁷ | 4.00·10 ⁻¹¹ 1/h | 5 % | 0.0 % | 0.0 % |
| | | | | | 4.50·10 ⁻⁷ | 8.00·10 ⁻¹¹ 1/h | 10 % | 0.0 % | 0.1 % |
| Calculation based on exida report, Phoenix Contact 16/06-072 R023 V3R1 exida Profile 1, FMEDA Analysis 2, T _{proof} : 1 year, MT: 10 years, MTTR: 24 hours, PTC: 99% Used standards IEC/EN 61508, edition 2010 (device specific) IEC/EN 61511, edition 2016 + COR1:2016 + A1:2017 (system specific) | | | | | | | | | |

Functional safety scenarios

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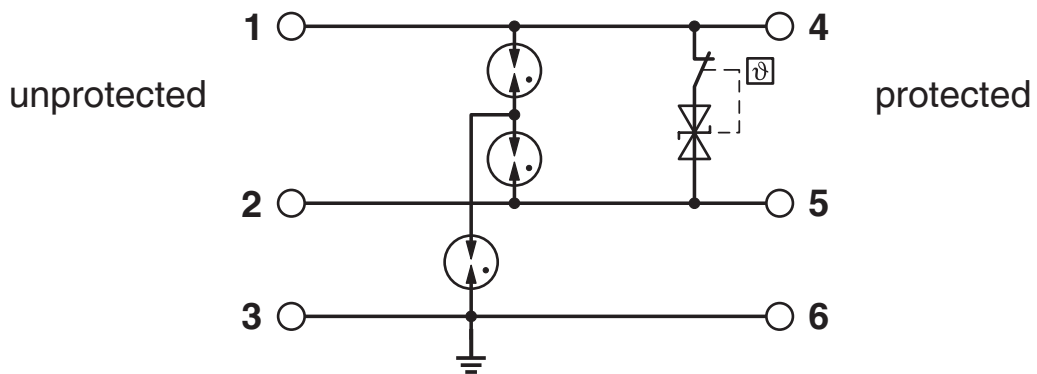
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Diagram



Circuit diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2908439>



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

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 | cf33bcc7-4589-4884-9387-e74fc06ceb6b |

EF3.1 Climate Change

| | |
|---------|---------------|
| CO2e kg | 1.648 kg CO2e |
|---------|---------------|

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