

TTC-6-3-HF-12DC-PT - Surge protection device



1065316

<https://www.phoenixcontact.com/us/products/1065316>

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Surge protection for three signal wires with common reference potential. For HF applications and telecommunications interfaces without supply voltage (up to 90 Mbps). 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

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1065316 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL23 |
| Product key | CL2262 |
| GTIN | 4055626725680 |
| Weight per piece (including packing) | 34 g |
| Weight per piece (excluding packing) | 34 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|-------------------------|---|
| Product type | Surge protection for information 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 |

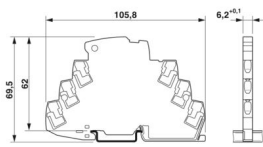
Electrical properties

| | |
|-----------------------|---------|
| Nominal voltage U_N | 12 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 | 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

Mechanical data

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| | |
|-----------------|----|
| Open side panel | No |
|-----------------|----|

Protective circuit

| | |
|---|--|
| Direction of action | Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground |
| Nominal voltage U_N | 12 V DC |
| Maximum continuous operating voltage U_C | 15 V DC 10 V AC |
| Rated current | 600 mA (40 °C) |
| Operating effective current I_C at U_C | $\leq 100 \mu\text{A}$ |
| Protective conductor current I_{PE} | $\leq 200 \mu\text{A}$ |
| Nominal discharge current I_n (8/20) μs (line-line) | 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 | 10 kA |
| Voltage protection level U_p (line-line) | $\leq 45 \text{ V}$ (C1 - 1 kV / 500 A) $\leq 85 \text{ V}$ (C2 - 10 kV / 5 kA) $\leq 30 \text{ V}$ (C3 - 100 A) |
| Voltage protection level U_p (line-earth) | $\leq 50 \text{ V}$ (C1 - 1 kV / 500 A) $\leq 90 \text{ V}$ (C2 - 10 kV / 5 kA) $\leq 30 \text{ V}$ (C3 - 100 A) |
| Response time t_A (line-line) | $\leq 1 \text{ ns}$ |
| Response time t_A (line-earth) | $\leq 1 \text{ ns}$ |
| Input attenuation aE, sym. | typ. 0.3 dB ($\leq 8.7 \text{ MHz}/150 \Omega$) |
| Input attenuation aE, asym. | typ. 0.3 dB ($\leq 10.5 \text{ MHz}/150 \Omega$) |
| Cut-off frequency f_g (3 dB), sym. in 150 Ω system | typ. 60 MHz |
| Cut-off frequency f_g (3 dB), asym. (PE) in 150 Ω system | typ. 60 MHz |
| Capacity (Core-Core) | typ. 32 pF |
| Capacity (Core-Earth) | typ. 32 pF |
| Resistance per path | 1.65 $\Omega \pm 20 \%$ |
| Surge protection fault message | none |
| Max. required back-up fuse | 630 mA (FF) |
| Impulse durability (line-line) | C1 - 1 kV / 500 A C2 - 10 kV / 5 kA 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-line) | $\leq 30 \text{ ms}$ |
| Pulse reset time (line-earth) | $\leq 30 \text{ ms}$ |

Additional technical data

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

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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 | ≤ 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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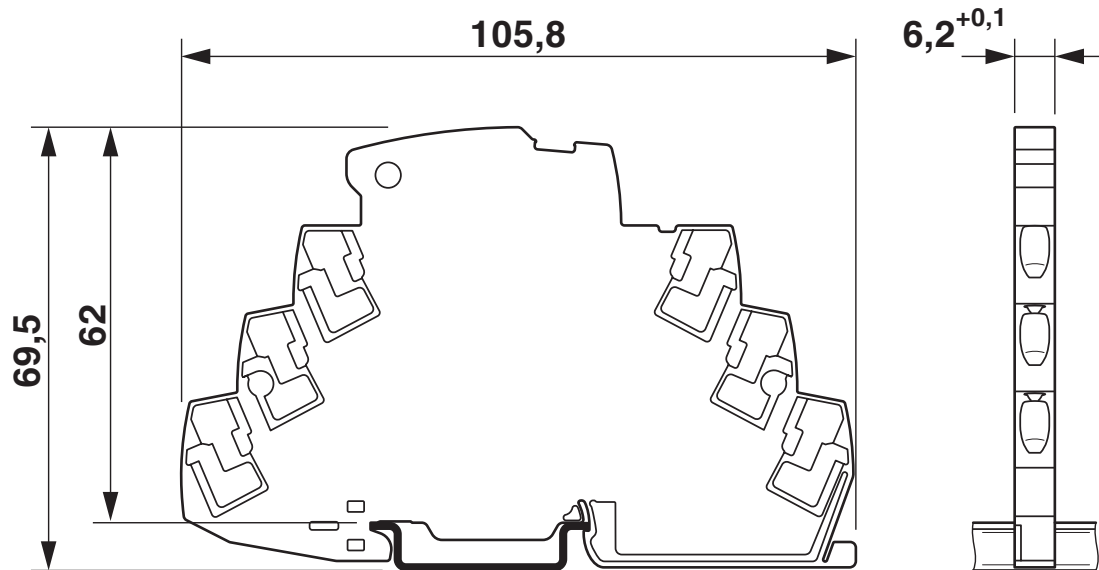


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Drawings

Dimensional drawing



Schematic diagram

| TTC-6-3-HF-...DC-PT | | | | | | | | | |
|--|--------------------------|---------------------------|--------------------------|-------|--------------------------|---------------------------|------|--------------------------|-------|
| 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 |
| | 1.21·10 ⁻⁴ | 2.16·10 ⁻⁸ 1/h | 1.2 % | 2.2 % | 6.09·10 ⁻⁶ | 1.08·10 ⁻⁹ 1/h | 5 % | 0.6 % | 1.1 % |
| | | | | | 1.22·10 ⁻⁵ | 2.16·10 ⁻⁹ 1/h | 10 % | 1.2 % | 2.2 % |
| 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) | | | | | | | | | |

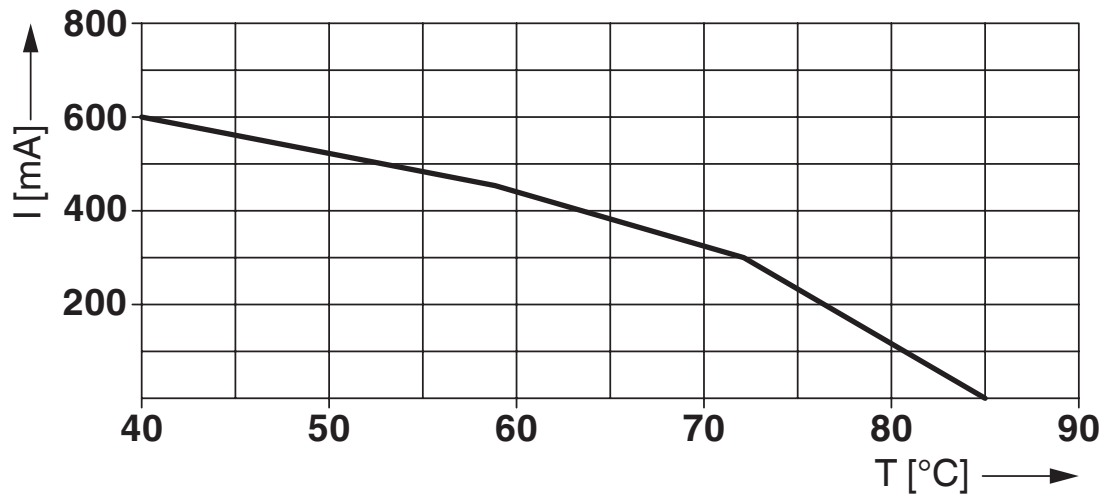
Functional safety scenarios

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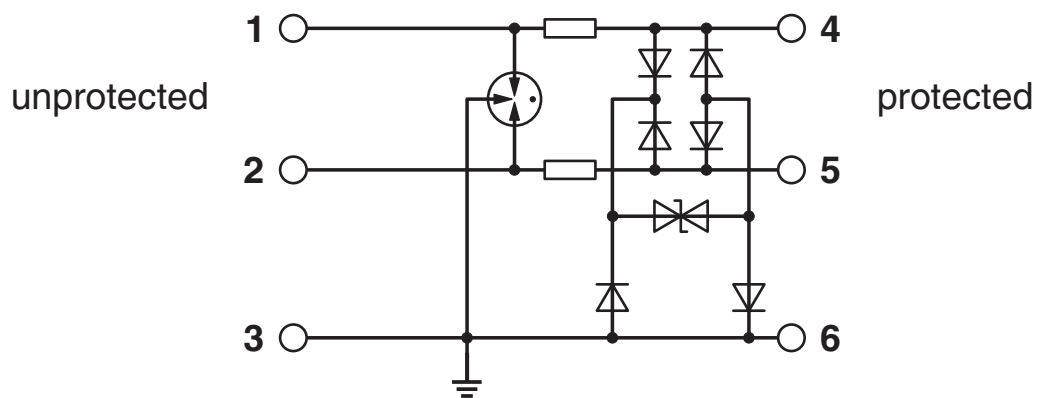
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Diagram



Circuit diagram



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Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1065316>



DNV GL

Approval ID: TAE000027G



UL Listed

Approval ID: FILE E 138168

UAE-RoHS

Approval ID: 22-06-16191

Functional Safety

Approval ID: 16-06-072 R023 V3R1



UL Listed

Approval ID: FILE E 138168



cUL Listed

Approval ID: FILE E 333250



UL Listed

Approval ID: FILE E 333250



cULus Listed

Approval ID: File E 333250

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27171503 |
| ECLASS-15.0 | 27171503 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001625 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121600 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 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 | c27f0443-56cd-4205-9d38-5b1c98c887f7 |

EF3.1 Climate Change

| | |
|---------|---------------|
| CO2e kg | 1.363 kg CO2e |
|---------|---------------|

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