# TTC-6-3-HF-F-M-24DC-PT-I - Surge protection device

2906779

https://www.phoenixcontact.com/us/products/2906779

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Surge protection with integrated status indicator and knife disconnection for three signal wires with common reference potential. For HF applications and telecommunications interfaces without supply voltage (up to 90 Mbps). Indirect grounding via gas discharge tube, HART-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
- Signal circuits easily interrupted for maintenance work, thanks to vertical knife disconnection

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2906779 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL23 |
| Product key | CL2262 |
| GTIN | 4055626145679 |

| | |
|---|---|
| Weight per piece (including packing) | 38.7 g |
| Weight per piece (excluding packing) | 38.3 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

# 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 |

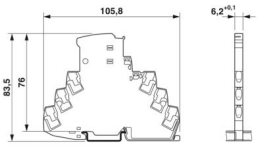
## Electrical properties

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

## Connection data

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section rigid | 0.2 mm² ... 4 mm² |
| 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) |
| | light gray (RAL 7035) |
| Flammability rating according to UL 94 | V-0 |
| Insulating material | PBT |
| 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 |
| Nominal voltage $U_N$ | 24 V DC |
| Maximum continuous operating voltage $U_C$ | 30 V DC |
| | 21 V AC |
| Rated current | 600 mA (40 °C) |
| Operating effective current $I_C$ at $U_C$ | ≤ 5 µA |
| Protective conductor current $I_{PE}$ | ≤ 1 µA |
| 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) | ≤ 150 V (C1 - 1 kV / 500 A) |
| | ≤ 275 V (C2 - 10 kV / 5 kA) |
| | ≤ 45 V (C3 - 25 A) |
| | ≤ 55 V (C3 - 100 A) |
| Voltage protection level $U_p$ (line-earth) | ≤ 750 V (C1 - 1 kV / 500 A) |
| | ≤ 750 V (C2 - 10 kV / 5 kA) |
| | ≤ 1.1 kV (C3 - 25 A) |
| | ≤ 1.2 kV (C3 - 100 A) |
| Voltage protection level $U_p$ static (line-line) | ≤ 75 V (C1 - 1 kV / 500 A) |
| | ≤ 120 V (C2 - 10 kV / 5 kA) |
| Voltage protection level $U_p$ static (line-earth) | ≤ 750 V (C1 - 1 kV / 500 A) |
| | ≤ 750 V (C2 - 10 kV / 5 kA) |
| Response time $t_A$ (line-line) | ≤ 1 ns |
| Response time $t_A$ (line-earth) | ≤ 100 ns |
| Input attenuation aE, sym. | typ. 0.3 dB (≤ 8.7 MHz/150 Ω) |
| Input attenuation aE, asym. | typ. 0.3 dB (≤ 10.5 MHz/150 Ω) |
| Cut-off frequency fg (3 dB), sym. in 150 Ω system | typ. 60 MHz |
| Capacity (Core-Core) | typ. 32 pF |
| Resistance per path | 1.65 Ω ±20 % |
| Surge protection fault message | optical |
| 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) | ≤ 600 ms |

| | |
|---|---|
| Pulse reset time (line-earth) | ≤ 30 ms |

Additional technical data

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

## 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

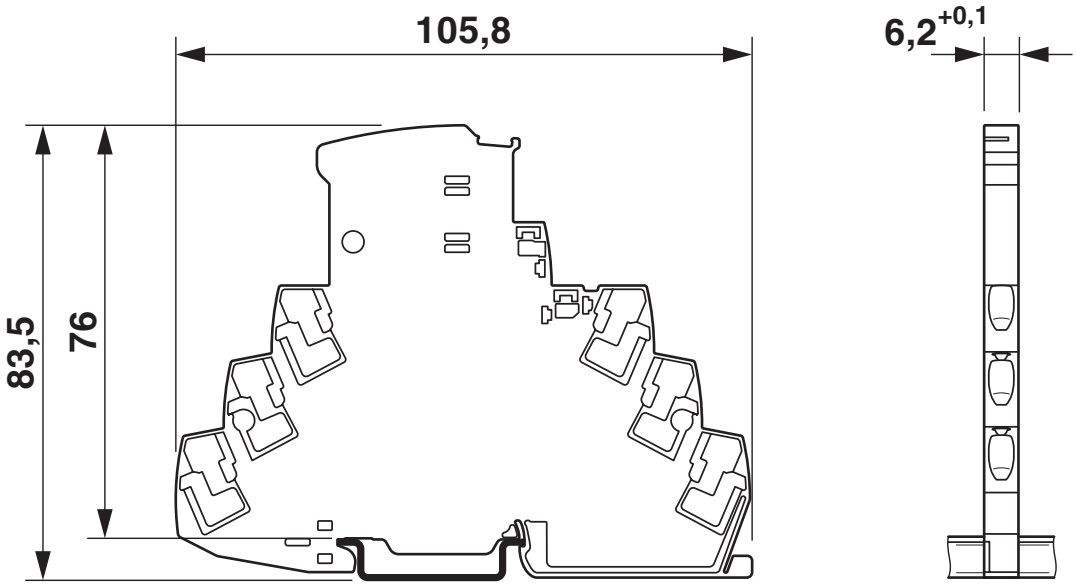
| | |
|---|---|
| Standards/specifications | EN 61643-21 |
| Note | 2001 + A1:2009 + A2:2013 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail: TH 35 - 7.5 mm |

## Drawings

Dimensional drawing

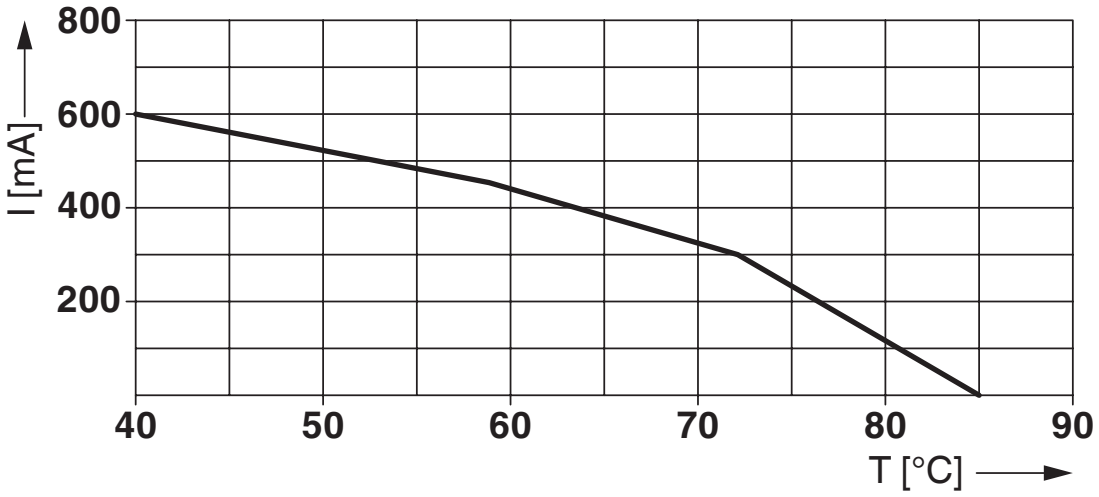



Schematic diagram

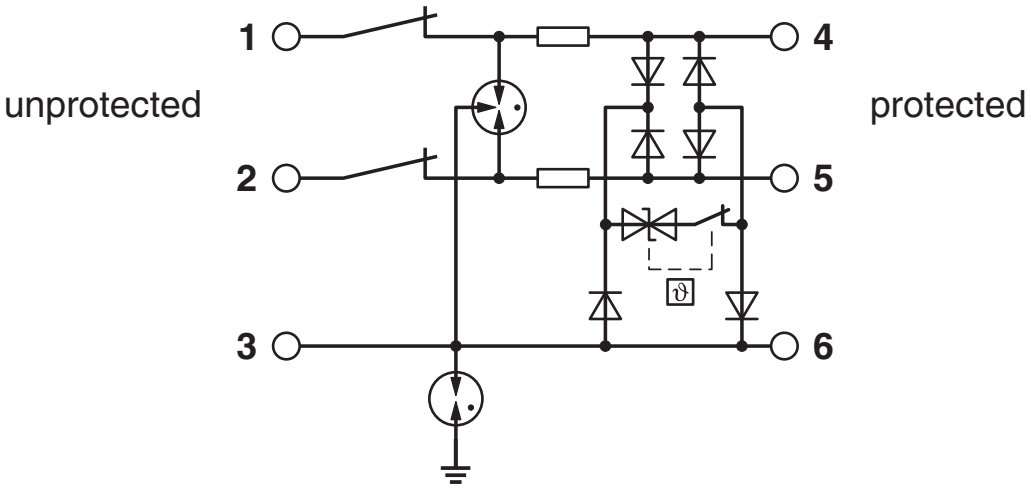
| TTC-6-3-HF-F-M-...-I | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Category | 1oo1 architecture, HFT=0 | | | | 1oo2 architecture, HFT=1 | | | | |
| | $PFD_{AVG}$ | PFH | Used budget of SIL 2 SIF | | $PFD_{AVG}$ | PFH | CCF | Used budget of SIL 3 SIF | |
| | | | $PFD_{AVG}$ | PFH | | | | $PFD_{AVG}$ | PFH |
| | $3.26_{x10^{-5}}$ | $5.80_{x10^{-9}}$ 1/h | 0.3 % | 0.6 % | $1.63_{x10^{-6}}$ | $2.90_{x10^{-10}}$ 1/h | 5 % | 0.2 % | 0.3 % |
| | | | | | $3.26_{x10^{-6}}$ | $5.80_{x10^{-10}}$ 1/h | 10 % | 0.3 % | 0.6 % |
| | Calculation based on exida report, Phoenix Contact 16/06-072 R023 V3R1<br>exida Profile 1, FMEDA Analysis 2, $T_{proof}$: 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




Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2906779

**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

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## 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 | 0a7fd8cf-f2b0-4b19-b20b-51af41c32dd5 |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 1.492 kg CO2e |

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