

# TTC-6-MOV-D-24DC-PT-I - Surge protection device



2906859

<https://www.phoenixcontact.com/us/products/2906859>

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Medium surge protection with integrated status indicator for one 2-wire floating signal circuit. 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                          | 2906859       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL23          |
| Product key                          | CL2265        |
| GTIN                                 | 4055626137148 |
| Weight per piece (including packing) | 27.7 g        |
| Weight per piece (excluding packing) | 28 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                                  |
| Type                           | DIN rail module, one-piece          |
| Surge protection fault message | optical                             |
| Wire pairs per module          | 1                                   |

### 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 <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                          |
| Height              | 92 mm                           |
| Depth               | 69.5 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 | Yes |
|-----------------|-----|

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## Protective circuit

|  |  |
|--|--|
| Direction of action  | Line-Line  |
| Nominal voltage $U_N$  | 24 V DC  |
| Maximum continuous operating voltage $U_C$                       | 30 V DC  |
|  | 21 V AC  |
| Rated current  | 10 A (60 °C)                                     |
| Operating effective current $I_C$ at $U_C$                       | $\leq 100 \mu\text{A}$                           |
| Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-line) | 2 kA   |
| Voltage protection level $U_p$ (line-line)                       | $\leq 110 \text{ V}$ (C1 - 700 V/350 A)          |
|  | $\leq 160 \text{ V}$ (C2 - 4 kV)                 |
|  | $\leq 80 \text{ V}$ (C3 - 25 A)                  |
| Response time $t_A$ (line-line)                                  | $\leq 25 \text{ ns}$                             |
| Input attenuation aE, sym.                                       | typ. 0.3 dB ( $\leq 60 \text{ kHz}/150 \Omega$ ) |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system      | typ. 200 kHz                                     |
| Capacity (Core-Core)   | 10 nF  |
| Resistance per path  | $\leq 100 \text{ m}\Omega$                       |
| Surge protection fault message                                   | optical  |
| Impulse durability (line-line)                                   | C1 - 350 A                                       |
|  | C2 - 2 kA  |
|  | C3 - 25 A  |

## Environmental and real-life conditions

### Ambient conditions

|   |                              |
|---|------------------------------|
| Degree of protection                    | IP20 (with end cover)        |
| 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 %                 |

## 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: 35 mm |
|---------------|-----------------|

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## Drawings

Dimensional drawing



Schematic diagram

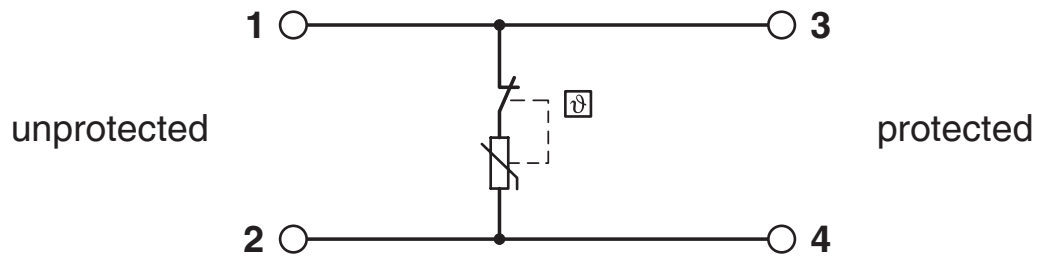
| TTC-6-MOV  |                          |                           |                          |       |                          |                            |      |                          |       |
|--|--------------------------|---------------------------|--------------------------|-------|--------------------------|----------------------------|------|--------------------------|-------|
| 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   |
|  | 1.57x10 <sup>-5</sup>    | 2.80x10 <sup>-9</sup> 1/h | 0.2 %                    | 0.3 % | 7.87x10 <sup>-7</sup>    | 1.40x10 <sup>-10</sup> 1/h | 5 %  | 0.1 %                    | 0.1 % |
|  |                          |                           |                          |       | 1.57x10 <sup>-6</sup>    | 2.80x10 <sup>-10</sup> 1/h | 10 % | 0.2 %                    | 0.3 % |
| Calculation based on exida report, Phoenix Contact 16/06-072 R024 V2R0<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



Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906859>

 **CSA**  
Approval ID: 70136717

 **DNV GL**  
Approval ID: TAE000027G

 **UL Listed**  
Approval ID: FILE E 138168

 **CSAus**  
Approval ID: 70136717

**UAE-RoHS**  
Approval ID: 22-06-16192

**Functional Safety**  
Approval ID: 16-06-072 R024 V2R0

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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

### China RoHS

|  |  |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|  | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |                |
|---------|----------------|
| CO2e kg | 41.595 kg CO2e |
|---------|----------------|

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