

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



2906851

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Fine 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	2906851
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL23
Product key	CL2265
GTIN	4055626137070
Weight per piece (including packing)	25.3 g
Weight per piece (excluding packing)	20.78 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	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
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### 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

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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 $U_C$	$\leq 5 \mu\text{A}$
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-line)	150 A
Voltage protection level $U_p$ (line-line)	$\leq 50 \text{ V}$ (C3 - 25 A)
	$\leq 50 \text{ V}$ (C3 - 30 A)
Response time $t_A$ (line-line)	$\leq 1 \text{ ns}$
Input attenuation aE, sym.	typ. 0.3 dB ( $\leq 520 \text{ kHz}/150 \Omega$ )
Cut-off frequency $f_g$ (3 dB), sym. in 150 $\Omega$ system	typ. 1.7 MHz
Capacity (Core-Core)	1.5 nF
Resistance per path	$\leq 100 \text{ m}\Omega$
Surge protection fault message	optical
Impulse durability (line-line)	C3 - 30 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-TVSD									
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
	5.62x10 <sup>-7</sup>	1.00x10 <sup>-10</sup> 1/h	0.0 %	0.0 %	2.81x10 <sup>-8</sup>	5.00x10 <sup>-12</sup> 1/h	5 %	0.0 %	0.0 %
					5.62x10 <sup>-8</sup>	1.00x10 <sup>-11</sup> 1/h	10 %	0.0 %	0.0 %
Calculation based on exida report, Phoenix Contact 16/06-072 R024 V2R0 exida Profile 1, FMEDA Analysis 2, T <sub>proof</sub> : 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

Diagram



Circuit diagram



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## Approvals

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 **CSA**  
Approval ID: 70136717

 **DNV GL**  
Approval ID: TAE000027G

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

 **CSAus**  
Approval ID: 70136717

**UAE-RoHS**  
Approval ID: 22-06-16783

**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
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### 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	d533c11d-ab13-4705-8f42-3191e31dc497

### EF3.1 Climate Change

CO2e kg	41.609 kg CO2e
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