

# TTC-6-MOV-C-60DC-UT-I - Surge protection device



2906839

<https://www.phoenixcontact.com/us/products/2906839>

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Medium surge protection with integrated status indicator for one signal wire with grounded reference potential. 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	2906839
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL23
Product key	CL2264
GTIN	4055626136950
Weight per piece (including packing)	30.5 g
Weight per piece (excluding packing)	25.26 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

### Insulation characteristics

Overvoltage category	III
Pollution degree	2

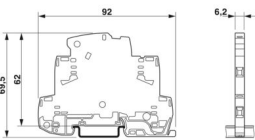
### Electrical properties

Nominal voltage $U_N$	60 V DC
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### Connection data

Connection method	Screw connection
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm
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

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Open side panel	Yes
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## Protective circuit

Direction of action	Line-Earth Ground
Nominal voltage $U_N$	60 V DC
Maximum continuous operating voltage $U_C$	75 V DC 53 V AC
Rated current	10 A (60 °C)
Operating effective current $I_C$ at $U_C$	$\leq 100 \mu\text{A}$
Protective conductor current $I_{PE}$	$\leq 100 \mu\text{A}$
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-ground)	2 kA
Voltage protection level $U_p$ (line-earth)	$\leq 200 \text{ V}$ (C1 - 600 A) $\leq 270 \text{ V}$ (C2 - 4 kV) $\leq 190 \text{ V}$ (C3 - 25 A) $\leq 200 \text{ V}$ (C3 - 35 A)
Response time $t_A$ (line-earth)	$\leq 25 \text{ ns}$
Input attenuation aE, asym.	typ. 0.3 dB ( $\leq 200 \text{ kHz} / 150 \Omega$ )
Cut-off frequency $f_g$ (3 dB), asym. (PE) in 150 $\Omega$ system	typ. 650 kHz
Capacity (Core-Earth)	5 nF
Resistance per path	$\leq 100 \text{ m}\Omega$
Surge protection fault message	optical
Impulse durability (line-earth)	C1 - 600 A C2 - 2 kA C3 - 35 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 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

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Diagram



Circuit diagram



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## Classifications

### ECLASS

ECLASS-13.0

27171501

### ETIM

ETIM 9.0

EC000943

### UNSPSC

UNSPSC 21.0

39121600

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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### 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%
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### EF3.1 Climate Change

CO2e kg	0.175 kg CO2e
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