

TTC-6P-3-APL-24DC-UT-I - Surge protection device



1635592

<https://www.phoenixcontact.com/us/products/1635592>

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Surge protection, consisting of protective plug and base element, with integrated status indicator for three signal wires. For HF applications. Protective circuit exclusively with gas discharge tubes. For use in two-wire Ethernet systems with cable shielding up to 10 Mbps (SPE). Ex e approval for zone 2. 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
- Fulfillment of the APL application specification thanks to the optimized protective circuit
- Easy integration of shielding thanks to a third terminal block level on the product
- Continuous monitoring of protective devices, plus mechanical status indicator with optional remote signaling
- The signal is not influenced during maintenance work, thanks to the impedance-neutral insertion and removal of protective plugs

Commercial data

Item number	1635592
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to order (non-returnable)
Sales key	CL23
Product key	CL2162
GTIN	4067923158009
Weight per piece (including packing)	44.2 g
Weight per piece (excluding packing)	44.2 g
Customs tariff number	85363030
Country of origin	DE

Technical data

Product properties

Product type	Surge protection for MCR technology
Product family	TERMITRAB complete
IEC test classification	C1
	C2
	C3
	D1
Type	DIN rail module, two-section, divisible

Insulation characteristics

Overvoltage category	III
Pollution degree	2

Electrical properties

Nominal voltage U_N	24 V DC
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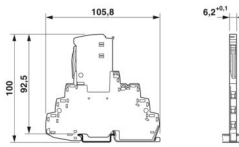
Connection data

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

Ex data

Maximum input current	3 A
Maximum input voltage	30 V DC
Ambient temperature (operation)	-40 °C ... 85 °C

Dimensions

Dimensional drawing	
Width	6.2 mm +0.1 mm
Height	105.8 mm
Depth	100 mm (incl. DIN rail 7.5 mm)

Material specifications

Color (Male connector)	light gray (RAL 7035)
Color (Base element)	gray (RAL 7042)

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Flammability rating according to UL 94	V-0
Insulating material	PBT
Housing material	PBT

Mechanical properties

Mechanical data

Open side panel	No
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Protective circuit

Direction of action	Line-Line & Line-Signal Ground/Shield & Signal Ground/Shield-Earth Ground
Maximum continuous operating voltage U_C	30 V DC
Operating effective current I_C at U_C	$\leq 1 \mu A$
Protective conductor current I_{PE}	$\leq 1 \mu A$
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-earth)	< 1000 V (C1 - 1 kV / 500 A) < 1300 V (C2 - 10 kV / 5 kA) < 1300 V (C3 - 100 A)
Response time t_A (line-earth)	≤ 100 ns
Input attenuation aE, sym.	< 0.1 dB (≤ 20 MHz / 100 Ω) < 1 dB (≤ 220 MHz / 100 Ω)
Cut-off frequency f_g (3 dB), sym. in 100 Ω system	> 250 MHz
Capacity (Core-Earth)	< 13 pF
Resistance per path	< 0.1 $\Omega \pm 20$ %
Surge protection fault message	optical
Max. required back-up fuse	3.15 A (FF)
Impulse durability (line-earth)	C1 - 1 kV / 500 A C2 - 10 kV / 5 kA C3 - 100 A D1 - 500 A
Pulse reset time (line-earth)	≤ 500 ms

Additional technical data

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

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Approvals

Conformity/Approvals

UL, USA / Canada	Class I, Div. 2
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Standards and regulations

Standards/specifications	EN IEC 60079-0
Note	2018
Standards/specifications	EN IEC 60079-7
Note	2015 + A1:2018
Standards/specifications	IEC 61643-21
Note	2000 + corrigendum 2001 + A1:2008, modified + A2:2012
Standards/specifications	EN 61643-21
Note	2001 + A1:2009 + A2:2013
Standards/specifications	IEC 60079-0
Note	2017
Standards/specifications	IEC 60079-7
Note	2017

Mounting

Mounting type	DIN rail: TH 35 - 7.5 mm
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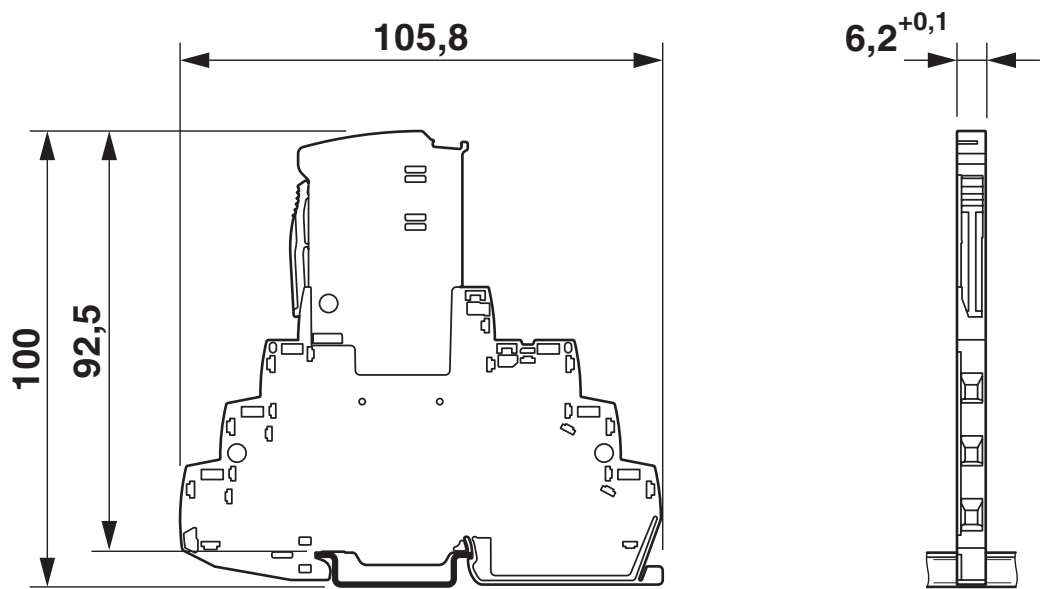
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Drawings

Dimensional drawing



Schematic diagram

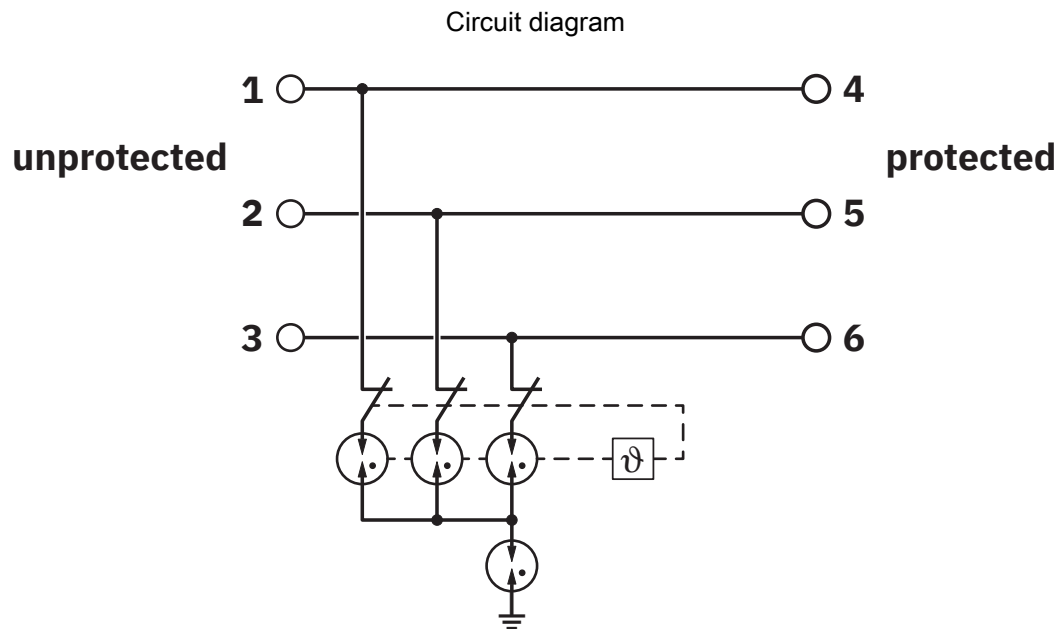
TTC-6P-3-APL-(EX-)24DC-UT-I									
Category	1oo1 architecture, HFT=0				1oo2 architecture, HFT=1				
	PFD _{AVG}	PFH	Used budget of SIL 2 SIF		PFD _{AVG}	PFH	CCF	Used budget of SIL 3 SIF	
			PFD _{AVG}	PFH				PFD _{AVG}	PFH
	1,49 _{x10⁻⁷}	1,80 _{x10⁻¹¹}	0,0 %	0,0 %	7,47 _{x10⁻⁹}	1,13 _{x10⁻¹²} 1/h	5 %	0,0 %	0,0 %
					1,49 _{x10⁻⁸}	2,25 _{x10⁻¹²} 1/h	10 %	0,0 %	0,0 %
Calculation based on exida report, Phoenix Contact 16/06-072 R022 V4R2 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

TTC-6P-3-APL-24DC-UT-I - Surge protection device

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Approvals

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Functional Safety

Approval ID: 16-06-072 R022 V4R3



UL Listed

Approval ID: FILE E 138168



DNV GL

Approval ID: TAE000027G



IECEx

Approval ID: IECEx BVS 21.0057X



ATEX

Approval ID: BVS 21 ATEX E 052 X



CCC

Approval ID: 2022122304116080



NEPSI-EX

Approval ID: HT25-037



cULus Listed

Approval ID: File E 333250

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Classifications

ECLASS

ECLASS-13.0	27171501
ECLASS-15.0	27171501

ETIM

ETIM 9.0	EC000943
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