TTC-3-2X1-24DC-PT - Surge protection device

2907326

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Surge protection for two signal wires with common reference potential, e.g., Digital IN/OUT. Can be used in safety-related circuits up to SIL 3.

Your advantages

- Extremely space-saving installation with the narrowest overall width of just 3.5 mm
- Cost-optimized with tailored product features
- 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	2907326
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL23
Product key	CL2266
Catalog page	Page 131 (C-4-2019)
GTIN	4055626199924
Weight per piece (including packing)	24.3 g
Weight per piece (excluding packing)	24.2 g
Customs tariff number	85363010
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, one-piece

Data management status

Article revision	05

Insulation characteristics

Overvoltage category	III
Pollution degree	2

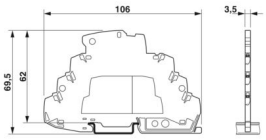
Electrical properties

Nominal voltage U_N	24 V DC

Connection data

Connection method	Push-in connection
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.2 mm² ... 1 mm²
Conductor cross section flexible, with ferrule without plastic sleeve	0.2 mm² ... 1.5 mm²
Conductor cross section flexible	0.2 mm² ... 1.5 mm²
Conductor cross section rigid	0.2 mm² ... 1.5 mm²
Conductor cross section AWG	24 ... 16

Dimensions

Dimensional drawing	
Width	3.5 mm
Height	106 mm
Depth	69.5 mm (incl. DIN rail 7.5 mm)

Material specifications

Color	gray (RAL 7042)
	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

Protective circuit

Direction of action	Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground
Maximum continuous voltage U_C	30 V DC
	21 V AC
Rated current	250 mA (70 °C)
Operating effective current I_C at U_C	≤ 1 µA
Residual current I_{PE}	≤ 2 µA
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)	≤ 50 V (C1 - 500 V / 250 A)
	≤ 100 V (C2 - 10 kV / 5 kA)
	≤ 50 V (C3 - 30 A)
Response time t_A (line-earth)	≤ 1 ns
Input attenuation aE, asym.	typ. 0.3 dB (≤ 600 kHz / 150 Ω)
Cut-off frequency fg (3 dB), asym. (signal ground) in 150 Ω system	typ. 2.4 MHz
Capacity (Core-Earth)	typ. 1 nF
Resistance per path	2.2 Ω ±10 %
Surge protection fault message	none
Max. required back-up fuse	250 mA (FF)
Impulse durability (line-earth)	C1 - 500 V / 250 A
	C2 - 10 kV / 5 kA
	C3 - 30 A
	D1 - 500 A
Pulse reset time (line-earth)	≤ 30 ms

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	≤ 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

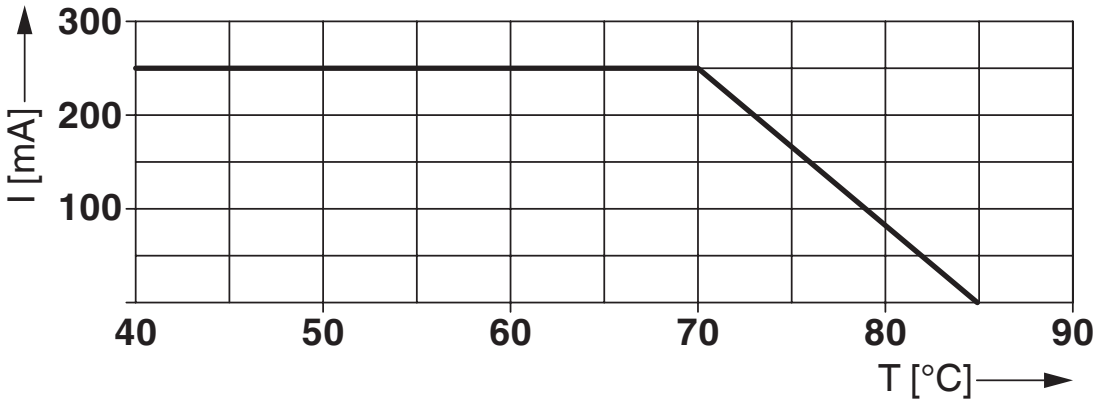
Standards/specifications	EN 61643-21
Note	2001 + A1:2009 + A2:2013

Mounting

Mounting type	DIN rail: TH 35 - 7.5 mm

Drawings

Diagram

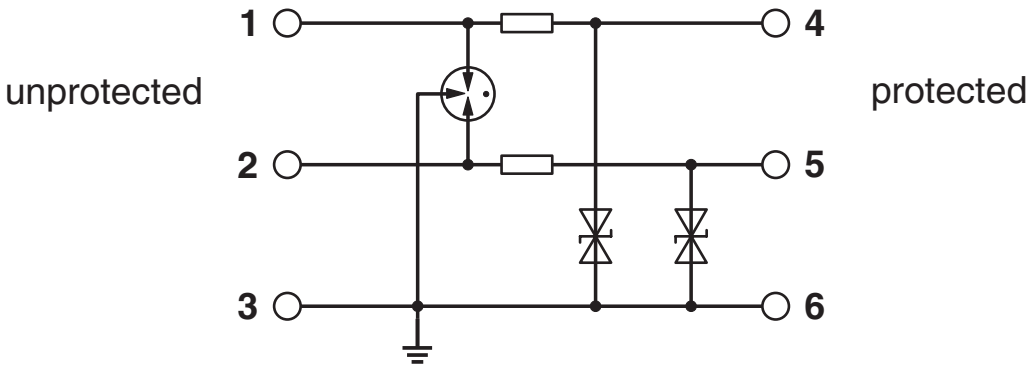


Schematic diagram

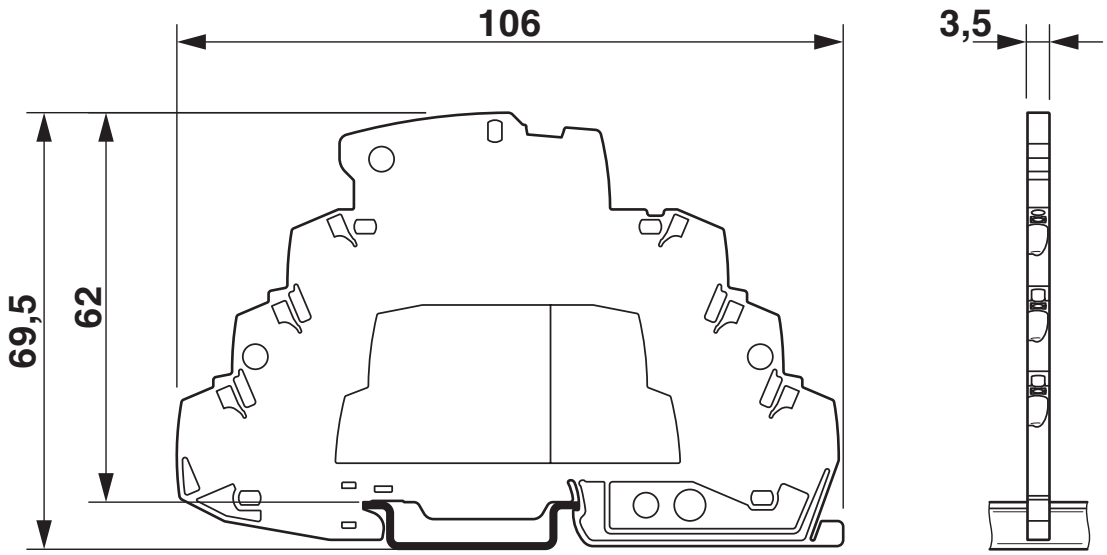
TTC-3-2x1-...									
Category	1oo1 architecture, HFT=0				1oo2 architecture, HFT=1				
	PFD_{AVG}	PFH	Used budget of SIL 2 SIF		PFD_{AVG}	PFH	CCF	Used budget of SIL 3 SIF	
			PFD_{AVG}	PFH				PFD_{AVG}	PFH
	$3.82_{x10^{-5}}$	$6.80_{x10^{-9}}$ 1/h	0.4 %	0.7 %	$1.91_{x10^{-6}}$	$3.40_{x10^{-10}}$ 1/h	5 %	0.2 %	0.3 %
					$3.82_{x10^{-6}}$	$6.80_{x10^{-10}}$ 1/h	10 %	0.4 %	0.7 %
	Calculation based on exida report, Phoenix Contact 16/06-072 R023 V3R1 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

Circuit diagram



Dimensional drawing



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2907326

CSA
Approval ID: 70136717

DNV GL
Approval ID: TAE000027G

UL Listed
Approval ID: FILE E 138168

CSAus
Approval ID: 70136717

Functional Safety
Approval ID: 16-06-072 R023 V3R1

cCSAus

Classifications

ECLASS

ECLASS-11.0	27130807
ECLASS-13.0	27171501

ETIM

ETIM 9.0	EC000943

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	aceb1338-524f-4f13-809c-6b7154e574be

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