

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Surge protection in the IP67 screw-on module for measuring sensors, direct mounting with M20 x 1.5 outer thread, cable gland for the signal line, two-stage protective circuit. HART-compatible. Can be used in safety-related circuits up to SIL 3.

Your advantages

- Easiest field mounting with standardized thread
- Versatile in use with universal protective circuit
- Use under extreme ambient conditions with robust design

Commercial data

Item number	2880668
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to order (non-returnable)
Sales key	CL02
Product key	CL2231
GTIN	4046356049009
Weight per piece (including packing)	418.1 g
Weight per piece (excluding packing)	352.52 g
Customs tariff number	85363010
Country of origin	DE

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Technical data

Notes

Notes on operation	When the bridge is disconnected, the shield connection is indirectly connected to the housing or reference potential.
--------------------	---

Product properties

Product type	Surge protection for MCR technology
Product family	SURGETRAB
IEC test classification	C1
	C2
	C3
	D1
Type	Screw-in module
Number of positions	3
Surge protection fault message	none
Wire pairs per module	1

Insulation characteristics

Overvoltage category	III
Pollution degree	2

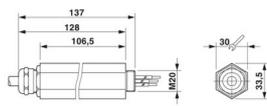
Electrical properties

Nominal voltage U_N	24 V DC
-----------------------	---------

Connection data

Connection method	Screw connection
Screw thread	M3
Tightening torque	0.6 Nm
Conductor cross-section flexible	0.14 mm ² ... 1.5 mm ²
Conductor cross-section rigid	0.14 mm ² ... 1.5 mm ²
Conductor cross-section AWG	26 ... 16

Dimensions

Dimensional drawing	
Width	33.5 mm
Height	33.5 mm
Depth	137 mm

Material specifications

Color	Steel/stainless steel color
-------	-----------------------------

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Housing material	Zinc die-cast, surface bronzed and nickel-plated
------------------	--

Mechanical properties

Mechanical data

Open side panel	No
-----------------	----

Protective circuit

Direction of action	Line-Line & Line-Earth Ground
Maximum continuous operating voltage U_C	28 V AC
Rated current	450 mA (55 °C)
Operating effective current I_C at U_C	$\leq 10 \mu\text{A}$
Protective conductor current I_{PE}	$\leq 2 \mu\text{A}$
Nominal discharge current I_n (8/20) μs (line-line)	10 kA
Nominal discharge current I_n (8/20) μs (line-ground)	10 kA (per path)
Nominal discharge current I_n (8/20) μs (shield-ground)	10 kA (optional)
Pulse discharge current I_{imp} (10/350) μs	1 kA
Total discharge current I_{Total} (8/20) μs	20 kA
Total discharge current I_{Total} (10/350) μs	2 kA
Max. discharge current I_{max} (8/20) μs maximum (line-line)	10 kA
Max. discharge current I_{max} (8/20) μs maximum (line-earth)	10 kA (per path)
Discharge surge current I_{max} (8/20) μs maximum (shield-ground)	10 kA
Nominal pulse current I_{an} (10/1000) μs (line-line)	23 A
Nominal pulse current I_{an} (10/1000) μs (line-earth)	100 A
Nominal pulse current I_{an} (10/1000) μs (shield-ground)	100 A
Output voltage limitation at 1 kV/ μs (line-line) spike	$\leq 55 \text{ V}$
Output voltage limitation at 1 kV/ μs (line-earth) spike	$\leq 450 \text{ V}$ (Direct grounding)
Output voltage limitation at 1 kV/ μs (shield-ground) spike	$\leq 600 \text{ V}$ (optional)
Output voltage limitation at 1 kV/ μs (line-line) static	$\leq 55 \text{ V}$
Output voltage limitation at 1 kV/ μs (line-earth) static	$\leq 450 \text{ V}$ (Direct grounding)
Residual voltage at I_n (conductor-conductor)	$\leq 55 \text{ V}$
Residual voltage with I_{an} (10/1000) μs (line-line)	$\leq 65 \text{ V}$
Voltage protection level U_p (line-line)	$\leq 80 \text{ V}$ (C2 - 10 kV / 5 kA)
Voltage protection level U_p (line-earth)	$\leq 450 \text{ V}$ (C2 - 10 kV / 5 kA)
Voltage protection level U_p (shield-ground)	$\leq 600 \text{ V}$ (C2 - 10 kV / 5 kA)
Voltage protection level U_p static (line-line)	$\leq 50 \text{ V}$ (C2 - 10 kV / 5 kA)
Response time t_A (line-line)	$\leq 1 \text{ ns}$
Response time t_A (line-earth)	$\leq 100 \text{ ns}$
Response time t_A (shield-ground)	$\leq 100 \text{ ns}$
Input attenuation aE, sym.	typ. 0.5 dB ($\leq 1.5 \text{ MHz} / 50 \Omega$) typ. 0.2 dB ($\leq 300 \text{ kHz} / 150 \Omega$)
Cut-off frequency f_g (3 dB), sym. in 50 Ω system	typ. 6 MHz
Cut-off frequency f_g (3 dB), sym. in 150 Ω system	typ. 2 MHz
Resistance per path	2.2 $\Omega \pm 10 \%$
Surge protection fault message	none

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Max. required back-up fuse	500 mA (T)
Impulse durability (line-line)	C2 - 10 kV / 5 kA
	D1 - 1 kA
Impulse durability (line-earth)	C2 - 10 kV / 5 kA
	D1 - 1 kA
Impulse durability (shield-ground)	C2 - 10 kV/5 kA
	D1 - 1 kA

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP67
Ambient temperature (operation)	-40 °C ... 85 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m (amsl)

Standards and regulations

Air clearances and creepage distances

Standards/regulations	IEC 60664-1 / VDE 0110-1
Standards/specifications	IEC 61643-21
Note	2002

Mounting

Mounting type	direct screw connection
---------------	-------------------------

S-PT-1X2-24DC - Surge protection device

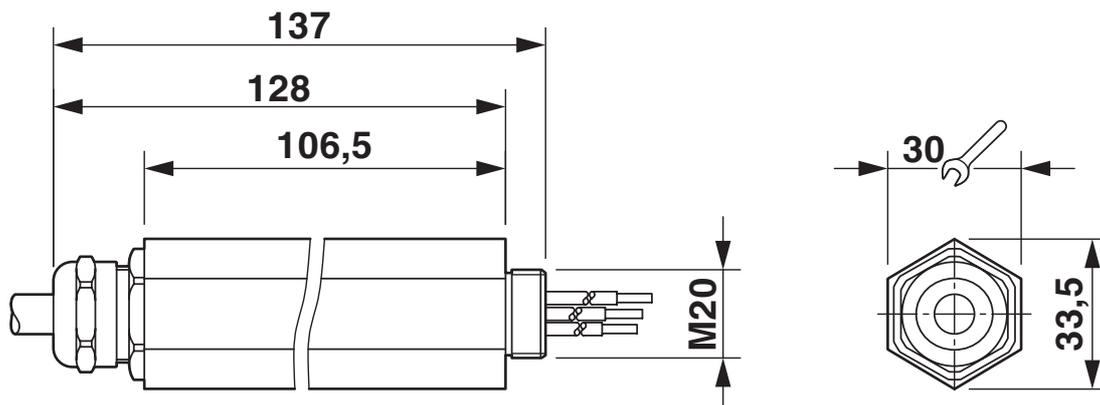


2880668

<https://www.phoenixcontact.com/us/products/2880668>

Drawings

Dimensional drawing



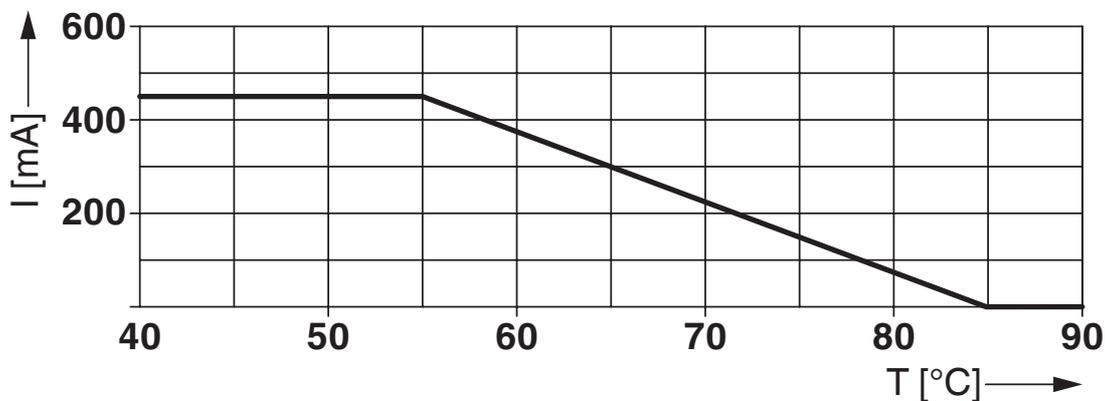
Schematic diagram

S-PT-1X2-24DC*									
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
	4.50·10 ⁻⁶	8.00·10 ⁻¹⁰ 1/h	0.0 %	0.1 %	2.25·10 ⁻⁷	4.00·10 ⁻¹¹ 1/h	5 %	0.0 %	0.0 %
					4.50·10 ⁻⁷	8.00·10 ⁻¹¹ 1/h	10 %	0.0 %	0.1 %

Calculation based on exida report, Phoenix Contact 23/05-128 R029 V1R0
 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

Diagram



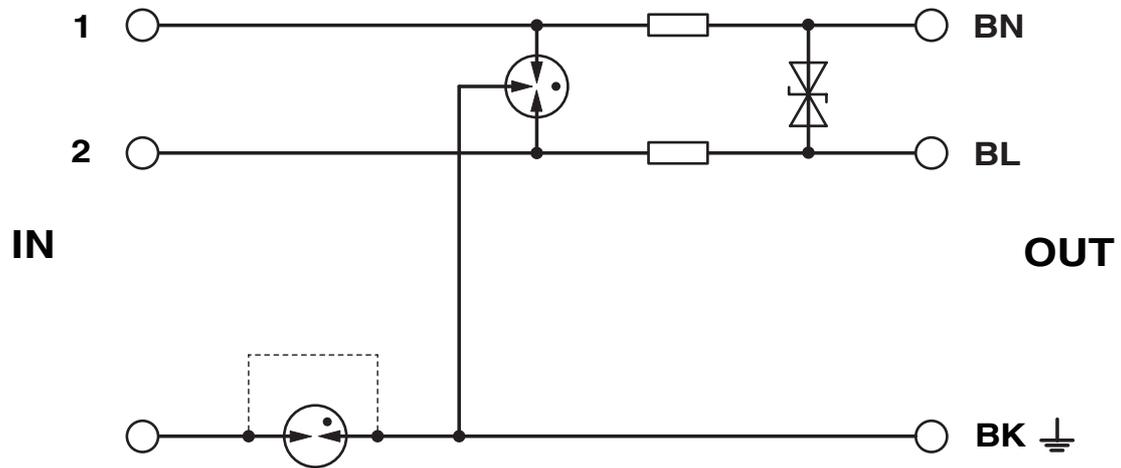
S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Circuit diagram



S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2880668>

Functional Safety

Approval ID: 23-05-128 R029 V1R0

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Classifications

ECLASS

ECLASS-13.0	27171501
ECLASS-15.0	27171501

ETIM

ETIM 9.0	EC000943
----------	----------

UNSPSC

UNSPSC 21.0	39121600
-------------	----------

S-PT-1X2-24DC - Surge protection device



2880668

<https://www.phoenixcontact.com/us/products/2880668>

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 7(a)

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	4d77b868-fb3a-4416-952c-40f64197bc26

Phoenix Contact 2025 © - all rights reserved

<https://www.phoenixcontact.com>

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com