

S-PT-1X2-24DC-3/4" - Surge protection device



2882598

<https://www.phoenixcontact.com/us/products/2882598>

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Surge protection in the IP67 screw-on module for measuring sensors, direct mounting with 3/4" NPT 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 | 2882598 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | CL02 |
| Product key | CL2231 |
| GTIN | 4046356098182 |
| Weight per piece (including packing) | 439.5 g |
| Weight per piece (excluding packing) | 400.91 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

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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 | 148 mm |

Material specifications

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

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| | |
|------------------|--|
| | black (RAL 9005) |
| 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 |
| Nominal voltage U_N | 24 V DC |
| Maximum continuous operating voltage U_C | 40 V DC |
| | 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 |

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| | |
|---|-----------------------|
| 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 |
| 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 |
|---------------|-------------------------|

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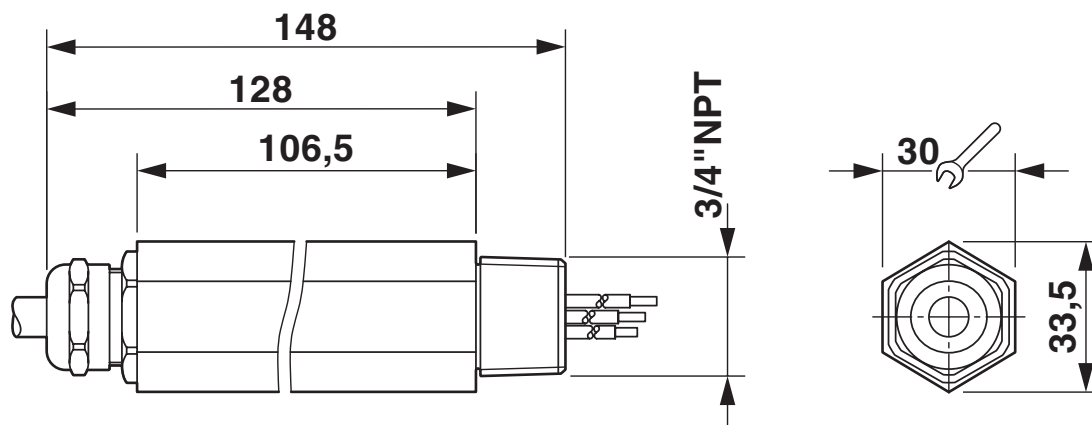


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Drawings

Dimensional drawing



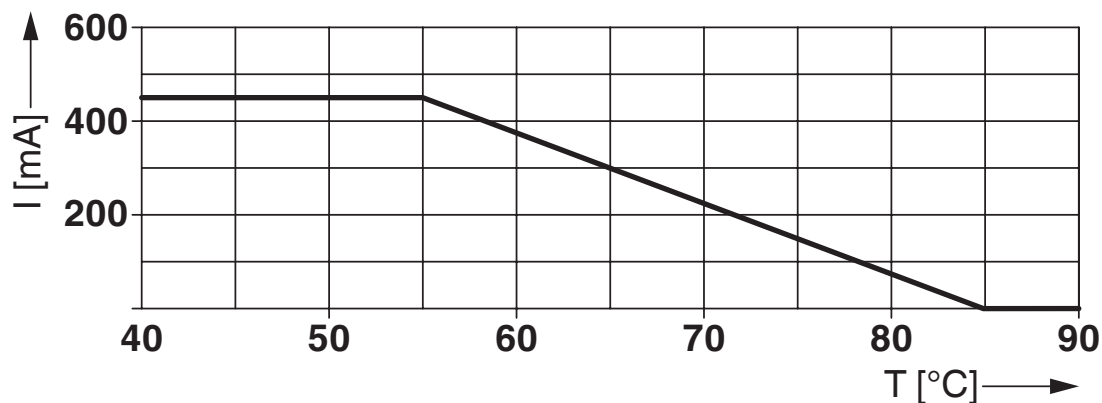
Schematic diagram

| 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



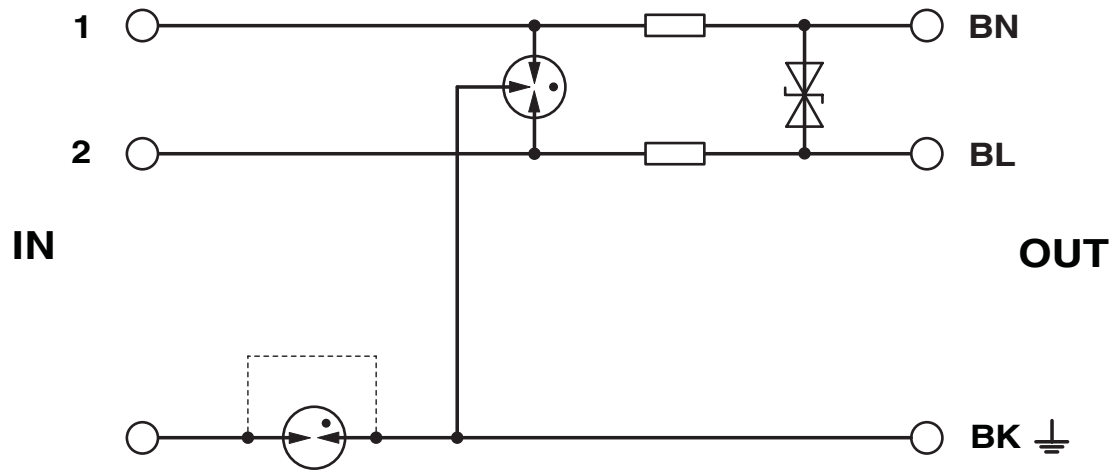
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Circuit diagram



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Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2882598>

Functional Safety

Approval ID: 23-05-128 R029 V1R0

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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 |
| Exemption | 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 | ba4ec2c8-34c0-4e56-b243-fc0eb3462128 |

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