

VAL-MS-T1/T2 1000DC-PV/2+V/40 - Lightning/surge arrester type 1/2



1099594

<https://www.phoenixcontact.com/us/products/1099594>

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Lightning current arrester / surge protective device for 2-pos. isolated and grounded 1,000 V DC PV voltage systems, for DIN rail mounting, 3-pos. base element, three pluggable temperature-monitored protective elements, status message at each plug.

Your advantages

- Quality proven millions of times over in the widest range of applications
- Rapid installation with bridges, thanks to industry-standard overall width of 1 HP
- Easy testing and insulation measurement, thanks to pluggable protection modules

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1099594 |
| Packing unit | 40 pc |
| Minimum order quantity | 40 pc |
| Product key | CL1152 |
| GTIN | 4055626948980 |
| Weight per piece (including packing) | 397.3 g |
| Weight per piece (excluding packing) | 378.94 g |
| Country of origin | TR |

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Technical data

Notes

General

| | |
|------|---|
| Note | The device is intended for touch proof installation in a housing. Ensure that there is a gap of at least 8 mm between the active and grounded parts in the connection area. |
|------|---|

Product properties

| | |
|--|---|
| Product type | PV arrester |
| Product family | VALVETRAB MS |
| IEC test classification | PV I / II PV T1 / T2 |
| EN type | T1 / T2 |
| IEC power supply system | DC |
| Type | DIN rail module, two-section, divisible |
| Distance between live and grounded parts | 8 mm |
| Environment | Indoor |
| Installation location of the disconnect device | Internal |
| Accessibility | Accessible |
| Connection configuration | Y configuration |
| End-of-life mode | OCFM (Open-Circuit Failure Mode) |
| Surge protection fault message | optical |
| Number of ports | One |

Insulation characteristics

| | |
|----------------------|-----|
| Overvoltage category | III |
| Pollution degree | 2 |

Connection data

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Screw thread | M5 |
| Tightening torque | 3 Nm (1.5 mm ² ... 16 mm ²) 4.5 Nm (25 mm ² ... 35 mm ²) |
| Stripping length | 16 mm |
| Conductor cross-section flexible | 1.5 mm ² ... 25 mm ² |
| Conductor cross-section rigid | 1.5 mm ² ... 35 mm ² |
| Conductor cross-section AWG | 15 ... 2 |
| Connection method | Fork-type cable lug |
| Conductor cross-section flexible | 1.5 mm ² ... 16 mm ² |

Dimensions

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| | |
|---------------------|---------------------------------|
| Dimensional drawing | |
| Width | 53.4 mm |
| Height | 89.8 mm |
| Depth | 65.7 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 3 Div. |

Material specifications

| | |
|--|---------------------|
| Color | black (RAL 9005) |
| Flammability rating according to UL 94 | V-0 |
| CTI value of material | 600 |
| Insulating material | PA 6.6-FR PBT-FR |
| Material group | I |
| Housing material | PA 6.6-FR PBT-FR |

Mechanical properties

Mechanical data

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

Protective circuit

| | |
|---|---|
| Mode of protection | (L+) - (L-) (L+) - PE (L-) - PE |
| Direction of action | (L+)-PE & (L-)-PE & (L+)-(L-) |
| Rated load current I_L | 80 A |
| Protective conductor current I_{PE} | $\leq 20 \mu\text{A DC}$ $\leq 350 \mu\text{A AC}$ |
| Standby power consumption P_C | $\leq 25 \text{ mVA}$ |
| Nominal discharge current I_n (8/20) μs | 15 kA |
| Maximum discharge current I_{max} (8/20) μs | 40 kA |
| Impulse discharge current (10/350) μs , charge | 2.5 As |
| Impulse discharge current (10/350) μs , specific energy | 6.25 kJ/ Ω |
| Impulse discharge current (10/350) μs , peak value I_{imp} | 5 kA |
| Total discharge current I_{Total} (8/20) μs | 40 kA |
| Total discharge current I_{Total} (10/350) μs | 5 kA |
| Voltage protection level U_p | $\leq 3.5 \text{ kV}$ |
| Residual voltage U_{res} | $\leq 3.5 \text{ kV (at } I_n)$ $\leq 2.9 \text{ kV (at } 5 \text{ kA)}$ |

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| | |
|---------------------|---------------------|
| | ≤ 3.2 kV (at 10 kA) |
| | ≤ 3.7 kV (at 20 kA) |
| | ≤ 4.1 kV (at 30 kA) |
| | ≤ 4.6 kV (at 40 kA) |
| Response time t_A | ≤ 25 ns |

PV protective circuit

| | |
|--------------------------|----------------------------------|
| Connection configuration | Y configuration |
| End-of-life mode | OCFM (Open-Circuit Failure Mode) |

Protective circuit DC voltage side (DC)

| | |
|--|------------------------------|
| Maximum continuous operating voltage U_{CPV} | 1170 V DC |
| Short-circuit current rating I_{SCPV} | 2000 A |
| Open-circuit voltage U_{OCSTC} | ≤ 975 V DC |
| Maximum discharge current I_{max} (8/20) μ s | 40 kA |
| Response time t_A | ≤ 25 ns |
| Impulse discharge current (10/350) μ s, charge | 2.5 As |
| Impulse discharge current (10/350) μ s, specific energy | 6.25 kJ/ Ω |
| Impulse discharge current (10/350) μ s, peak value I_{imp} | 5 kA |
| Total discharge current I_{Total} (8/20) μ s | 40 kA |
| Total discharge current I_{Total} (10/350) μ s | 5 kA |
| Insulation resistance R_{iso} | > 5 G Ω (at 500 V DC) |
| Nominal discharge current I_n (8/20) μ s | 15 kA |
| Rated load current I_L | 80 A |
| Continuous operating current I_{CPV} | < 20 μ A |
| Maximum continuous operating voltage U_{CPV} | 1170 V DC |
| Short-circuit current rating I_{SCPV} | 2000 A |
| Residual voltage U_{res} | ≤ 3.5 kV (at I_n) |
| | ≤ 2.9 kV (at 5 kA) |
| | ≤ 3.2 kV (at 10 kA) |
| | ≤ 3.7 kV (at 20 kA) |
| | ≤ 4.1 kV (at 30 kA) |
| | ≤ 4.6 kV (at 40 kA) |
| Protective conductor current I_{PE} | ≤ 20 μ A DC |
| | ≤ 350 μ A AC |
| Voltage protection level U_p | ≤ 3.5 kV |
| Standby power consumption P_C | ≤ 25 mVA |

Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 (only when all terminal points are used) |
| Ambient temperature (operation) | -40 °C ... 80 °C |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |

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| | |
|----------------------------------|---|
| Altitude | ≤ 2000 m (amsl) |
| Permissible humidity (operation) | 5 % ... 95 % |
| Shock (operation) | 60g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z) |
| Vibration (operation) | 7.5g (5-500 Hz/2.5 h/XYZ) |

Approvals

UL specifications

| | |
|---|-------------------------------------|
| Maximum continuous operating voltage MCOV | 1170 V DC |
| Short-circuit current rating (SCCR) | 50 kA |
| Voltage protection rating VPR | 3 kV |
| Nominal discharge current I_n | 10 kA |
| Mode of protection | (L+) - (L-) (L+) - G (L-) - G |
| Nominal voltage | 1170 V DC |
| Power distribution system | DC PV |
| SPD Type | 1CA |

UL connection data

| | |
|-----------------------------|-------------------------|
| Tightening torque | 30 lb _F -in. |
| Conductor cross-section AWG | 14 ... 2 |

Standards and regulations

| | |
|--------------------------|--------------|
| Standards/specifications | EN 61643-31 |
| Note | 2019 |
| Standards/specifications | IEC 61643-31 |
| Note | 2018 |

Mounting

| | |
|---------------|-----------------|
| Mounting type | DIN rail: 35 mm |
|---------------|-----------------|

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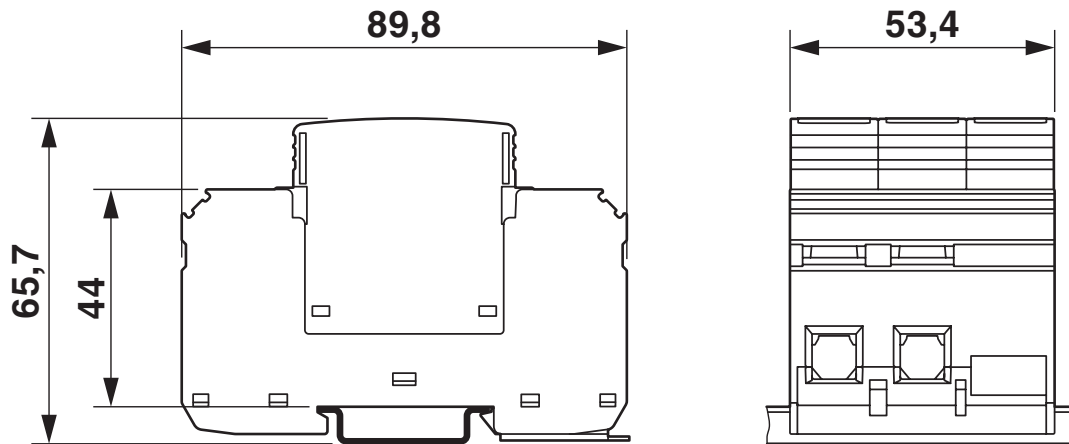


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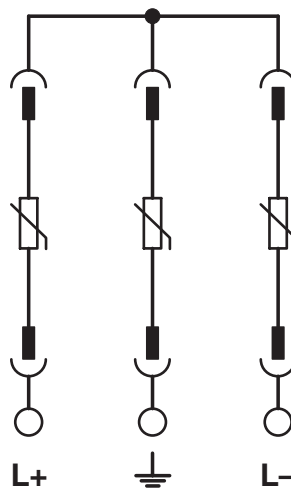
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Drawings

Dimensional drawing



Circuit diagram



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Classifications

ECLASS

ECLASS-13.0

27171401

ETIM

ETIM 9.0

EC000381

UNSPSC

UNSPSC 21.0

39121620

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Environmental product compliance

EU RoHS

| | |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

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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