

VAL-MB-T1/T2 1500DC-PV/2+V-FM - Lightning/surge arrester type 1/2



2905640

<https://www.phoenixcontact.com/us/products/2905640>

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Lightning current arrester/surge protective device for 2-pos. isolated and grounded 1,500 V DC PV systems, for DIN rail mounting, with remote indication contact, temperature-monitored protective elements, status message on the module.

Your advantages

- Space-saving installation, thanks to the compact design
- Double terminal block for safe and easy equipotential bonding connection
- Screw shafts with raised domes to ensure safe working
- Main connections with extended insertion funnels for increased resistance to creepage
- Visual display for checking the status directly on the device
- Plug-in signal connection for remote status signaling

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2905640 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL01 |
| Product key | CL1231 |
| GTIN | 4046356984423 |
| Weight per piece (including packing) | 531.1 g |
| Weight per piece (excluding packing) | 531.1 g |
| Customs tariff number | 85354000 |
| Country of origin | IN |

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Technical data

Notes

General

| | |
|------|---|
| Note | The product is also suitable for use in photovoltaic systems with max. short-circuit current $I_{SCPV} = 15 \text{ kA}$ (in accordance with EN 50539-11: 2013). |
|------|---|

Product properties

| | |
|--|-----------------------------------|
| Product type | PV arrester |
| Product family | VALVETRAB MB |
| IEC test classification | PV I / II PV T1 / T2 |
| EN type | T1 / T2 |
| IEC power supply system | DC |
| Type | DIN rail module, one-piece |
| Number of positions | 2 |
| 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, remote indicator contact |
| Number of ports | One |

Insulation characteristics

| | |
|------------------|---|
| Pollution degree | 2 |
|------------------|---|

Electrical properties

Indicator/remote signaling

| | |
|--------------------|--|
| Connection name | Remote fault indicator contact |
| Switching function | Changeover contact |
| Operating voltage | 5 V AC ... 250 V AC 5 V DC ... 30 V DC |
| Operating current | 5 mA AC ... 1.5 A AC 5 mA DC ... 1 A DC |

Connection data

| | |
|-------------------|------------------|
| Connection method | Screw connection |
| Screw thread | M5 |
| Tightening torque | 3 Nm |
| Stripping length | 16 mm |

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| | |
|----------------------------------|--|
| Conductor cross-section flexible | 2.5 mm ² ... 35 mm ² |
| Conductor cross-section AWG | 14 ... 2 |

Remote fault indicator contact

| | |
|----------------------------------|--|
| Connection method | Screw connection |
| Screw thread | M2 |
| Tightening torque | 0.25 Nm |
| Stripping length | 7 mm |
| 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 | 28 ... 16 |

Dimensions

| | |
|---------------------|---------------------------------|
| Dimensional drawing | |
| Width | 71.2 mm |
| Height | 120 mm |
| Depth | 65.5 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 4 Div. |

Material specifications

| | |
|--|-----------------|
| Color | gray (RAL 7042) |
| | gray (RAL 7042) |
| Flammability rating according to UL 94 | V-0 |
| Insulating material | PA 6.6 |
| | PBT |
| Housing material | PA 6.6 |

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 | 50 A |
| Protective conductor current I_{PE} | $\leq 100 \mu\text{A DC}$ |
| | $\leq 540 \mu\text{A AC}$ |
| Standby power consumption P_C | $\leq 150 \text{ mVA}$ |

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| | |
|--|----------------------------|
| Nominal discharge current I_n (8/20) μ s | 20 kA |
| Maximum discharge current I_{max} (8/20) μ s | 40 kA |
| Impulse discharge current (10/350) μ s, charge | 3.125 As |
| Impulse discharge current (10/350) μ s, specific energy | 9.77 kJ/ Ω |
| Impulse discharge current (10/350) μ s, peak value I_{imp} | 6.25 kA |
| Total discharge current I_{Total} (8/20) μ s | 40 kA |
| Total discharge current I_{Total} (10/350) μ s | 12.5 kA |
| Voltage protection level U_p | ≤ 4.5 kV |
| Residual voltage U_{res} | ≤ 4.5 kV (at I_n) |
| | ≤ 3.3 kV (at 3 kA) |
| | ≤ 3.6 kV (at 6.25 kA) |
| | ≤ 3.8 kV (at 10 kA) |
| | ≤ 4.2 kV (at 15 kA) |
| | ≤ 5.4 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} | 1500 V DC |
| Short-circuit current rating I_{SCPV} | 2000 A |
| Open-circuit voltage U_{OCSTC} | ≤ 1250 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 | 3.125 As |
| Impulse discharge current (10/350) μ s, specific energy | 9.77 kJ/ Ω |
| Impulse discharge current (10/350) μ s, peak value I_{imp} | 6.25 kA |
| Total discharge current I_{Total} (8/20) μ s | 40 kA |
| Total discharge current I_{Total} (10/350) μ s | 12.5 kA |
| Insulation resistance R_{iso} | > 5 G Ω (at 500 V DC) |
| Nominal discharge current I_n (8/20) μ s | 20 kA |
| Rated load current I_L | 50 A |
| Continuous operating current I_{CPV} | < 100 μ A |
| Maximum continuous operating voltage U_{CPV} | 1500 V DC |
| Short-circuit current rating I_{SCPV} | 2000 A |
| Residual voltage U_{res} | ≤ 4.5 kV (at I_n) |
| | ≤ 3.3 kV (at 3 kA) |
| | ≤ 3.6 kV (at 6.25 kA) |
| | ≤ 3.8 kV (at 10 kA) |
| | ≤ 4.2 kV (at 15 kA) |
| | ≤ 5.4 kV (at 40 kA) |

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| | |
|---------------------------------------|---------------------------|
| Protective conductor current I_{PE} | $\leq 100 \mu\text{A DC}$ |
| | $\leq 540 \mu\text{A AC}$ |
| Voltage protection level U_p | $\leq 4.5 \text{ kV}$ |
| Standby power consumption P_C | $\leq 150 \text{ mVA}$ |

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 |
| Altitude | $\leq 6000 \text{ m (amsl)}$ |
| Permissible humidity (operation) | 5 % ... 95 % |
| Shock (operation) | 50g (Half-sine / 11 ms / 3x $\pm X$, $\pm Y$, $\pm Z$) |
| Vibration (operation) | 5g (5 - 500 Hz/2.5 h/X, Y, Z) |

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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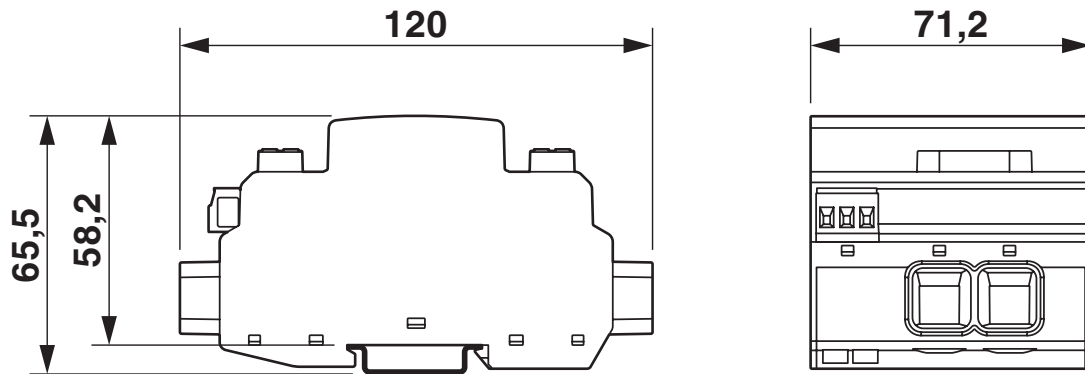


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Drawings

Dimensional drawing



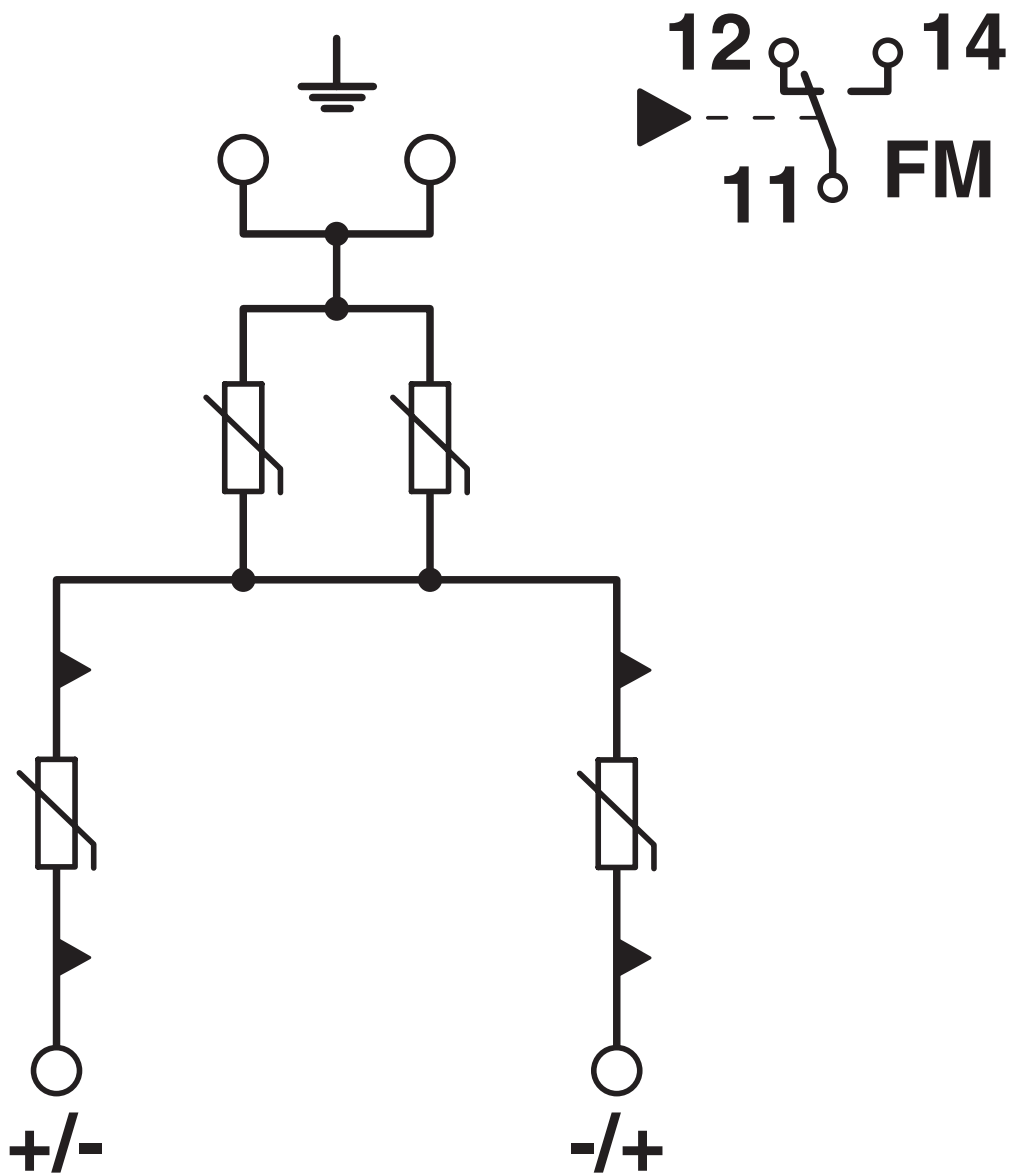
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Circuit diagram



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Approvals

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IECEE CB Scheme

Approval ID: NL-81007

CCA

Approval ID: NTR-NL 7938



KEMA-KEUR

Approval ID: 71-127691

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27171401 |
| ECLASS-15.0 | 27171401 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC000381 |
|-----------|----------|

UNSPSC

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

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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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