

VAL-MS-T1/T2 335/12.5/3+1-FM - Lightning/surge arrester type 1/2



2800183

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Universal varistor-based plug-in lightning/surge arrester for 3-phase power supply networks with separate N and PE (5-conductor system: L1, L2, L3, N, PE), for Lightning Protection Levels III and IV, with remote indication contact.

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
- Can be used in lightning protection level III and IV due to discharge capacity of 12.5 kA per position
- Vibration-resistant latching ensures the plug remains firmly in place

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2800183 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL18 |
| Product key | CL1151 |
| GTIN | 4046356518550 |
| Weight per piece (including packing) | 677 g |
| Weight per piece (excluding packing) | 643.8 g |
| Customs tariff number | 85363030 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|--------------------------------|---|
| Product type | Arrester combination |
| Product family | VALVETRAB MS |
| IEC test classification | I / II T1 / T2 |
| EN type | T1 / T2 |
| IEC power supply system | TT TN-S |
| Type | DIN rail module, two-section, divisible |
| Number of positions | 4 |
| Surge protection fault message | Optical, remote indicator contact |
| Number of ports | One |

Insulation characteristics

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

Electrical properties

| | |
|-------------------------|---------------|
| Nominal frequency f_N | 50 Hz (60 Hz) |
|-------------------------|---------------|

Indicator/remote signaling

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

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 |

Remote fault indicator contact

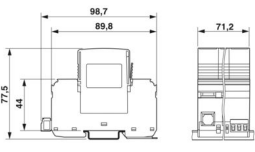
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| | |
|----------------------------------|--|
| Connection method | Plug-in/screw connection via COMBICON |
| Screw thread | M2 |
| Tightening torque | 0.25 Nm |
| Stripping length | 7 mm |
| Conductor cross-section flexible | 0.14 mm ² ... 1.5 mm 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 | 98.7 mm |
| Depth | 77.5 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 4 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/PBT |
| Material group | I |
| Housing material | PA 6.6 PBT |

Mechanical properties

Mechanical data

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

Protective circuit

| | |
|---|---------------------|
| Mode of protection | L-N |
| | L-PE |
| | N-PE |
| Direction of action | 3L-N & N-PE |
| Nominal voltage U_N | 240/415 V AC (TN-S) |
| | 240/415 V AC (TT) |
| Nominal frequency f_N | 50 Hz (60 Hz) |
| Maximum continuous operating voltage U_C (L-N) | 335 V AC |
| Maximum continuous operating voltage U_C (L-PE) | 335 V AC |

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| | |
|--|---|
| Maximum continuous operating voltage U_C (N-PE) | 264 V AC |
| Rated load current I_L | 80 A |
| Protective conductor current I_{PE} | $\leq 5 \mu\text{A}$ |
| Standby power consumption P_C | $\leq 810 \text{ mVA}$ |
| Nominal discharge current I_n (8/20) μs (L-N) | 12.5 kA |
| Nominal discharge current I_n (8/20) μs (L-PE) | 12.5 kA |
| Nominal discharge current I_n (8/20) μs (N-PE) | 50 kA |
| Maximum discharge current I_{max} (8/20) μs | 50 kA |
| Impulse discharge current (10/350) μs (L-N), charge | 6.25 As |
| Impulse discharge current (10/350) μs (L-N), specific energy | 39 kJ/ Ω |
| Impulse discharge current (10/350) μs (L-N), peak current value I_{imp} | 12.5 kA |
| Impulse discharge current (10/350) μs (L-PE), charge | 6.25 As |
| Impulse discharge current (10/350) μs (L-PE), specific energy | 39 kJ/ Ω |
| Impulse discharge current (10/350) μs (L-PE), peak current value I_{imp} | 12.5 kA |
| Impulse discharge current (10/350) μs (N-PE), charge | 25 As |
| Impulse discharge current (10/350) μs (N-PE), specific energy | 625 kJ/ Ω |
| Impulse discharge current (10/350) μs (N-PE), peak current value I_{imp} | 50 kA |
| Total discharge current I_{Total} (8/20) μs | 50 kA |
| Total discharge current I_{Total} (10/350) μs | 50 kA |
| Follow current interrupt rating I_{fi} (N-PE) | 100 A |
| Short-circuit current rating I_{SCCR} | 25 kA |
| Voltage protection level U_p (L-N) | $\leq 1.2 \text{ kV}$ $\leq 1.6 \text{ kV}$ (30 kA - 8/20 μs) |
| Voltage protection level U_p (L-PE) | $\leq 2 \text{ kV}$ |
| Voltage protection level U_p (N-PE) | $\leq 1.7 \text{ kV}$ |
| Residual voltage U_{res} (L-N) | $\leq 1.2 \text{ kV}$ (at I_n) $\leq 1.1 \text{ kV}$ (at 10 kA) $\leq 1 \text{ kV}$ (at 5 kA) $\leq 0.9 \text{ kV}$ (at 3 kA) |
| Residual voltage U_{res} (L-PE) | $\leq 2 \text{ kV}$ (at I_n) $\leq 1.5 \text{ kV}$ (at 10 kA) $\leq 1.2 \text{ kV}$ (at 5 kA) $\leq 1.1 \text{ kV}$ (at 3 kA) |
| Residual voltage U_{res} (N-PE) | $\leq 0.6 \text{ kV}$ (at I_n) $\leq 0.5 \text{ kV}$ (at 10 kA) $\leq 0.5 \text{ kV}$ (at 5 kA) $\leq 0.4 \text{ kV}$ (at 3 kA) |
| TOV behavior at U_T (L-N) | 415 V AC (5 s / withstand mode) 457 V AC (120 min / safe failure mode) |
| TOV behavior at U_T (N-PE) | 1200 V AC (200 ms / withstand mode) |

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| | |
|---|---------------------------------|
| Response time t_A (L-N) | ≤ 25 ns |
| Response time t_A (L-PE) | ≤ 100 ns |
| Response time t_A (N-PE) | ≤ 100 ns |
| Max. backup fuse with V-type through wiring | 80 A (gG - 16 mm ²) |
| Max. backup fuse with branch wiring | 160 A (gG) |

Additional technical data

| | |
|--|-------|
| Maximum discharge current I_{max} (8/20) μ s | 65 kA |
|--|-------|

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 | ≤ 2000 m (amsl) |
| Permissible humidity (operation) | 5 % ... 95 % |
| Shock (operation) | 30g (Half-sine / 11 ms / 3x \pm X, \pm Y, \pm Z) |
| Vibration (operation) | 7.5g (10 ... 500 Hz / 2.5 h / X, Y, Z) |

Approvals

UL specifications

| | |
|---|--------------------------|
| Maximum continuous operating voltage MCOV (L-L) | 670 V AC |
| Maximum continuous operating voltage MCOV (L-N) | 335 V AC |
| Maximum continuous operating voltage MCOV (L-G) | 335 V AC |
| Maximum continuous operating voltage MCOV (N-G) | 264 V AC |
| Nominal discharge current I_n (L-L) | 20 kA |
| Nominal discharge current I_n (L-N) | 20 kA |
| Nominal discharge current I_n (L-G) | 20 kA |
| Nominal discharge current I_n (N-G) | 20 kA |
| Mode of protection | L-L L-N L-G N-G |
| Nominal voltage | 240/415 V AC |
| Power distribution system | Wye |
| Nominal frequency | 50/60 Hz |
| Measured limiting voltage MLV (L-L) | 3570 V |
| Measured limiting voltage MLV (L-N) | 2630 V |
| Measured limiting voltage MLV (L-G) | 3600 V |
| Measured limiting voltage MLV (N-G) | 2600 V |
| SPD Type | 4CA |

UL indicator/remote signaling

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| | |
|----------------------|----------|
| Operating voltage | 125 V AC |
| AC operating current | 1 A AC |

UL connection data

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

Standards and regulations

| | |
|--------------------------|--------------|
| Standards/specifications | IEC 61643-11 |
| Note | 2011 |
| Standards/specifications | EN 61643-11 |
| Note | 2012 |

Mounting

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

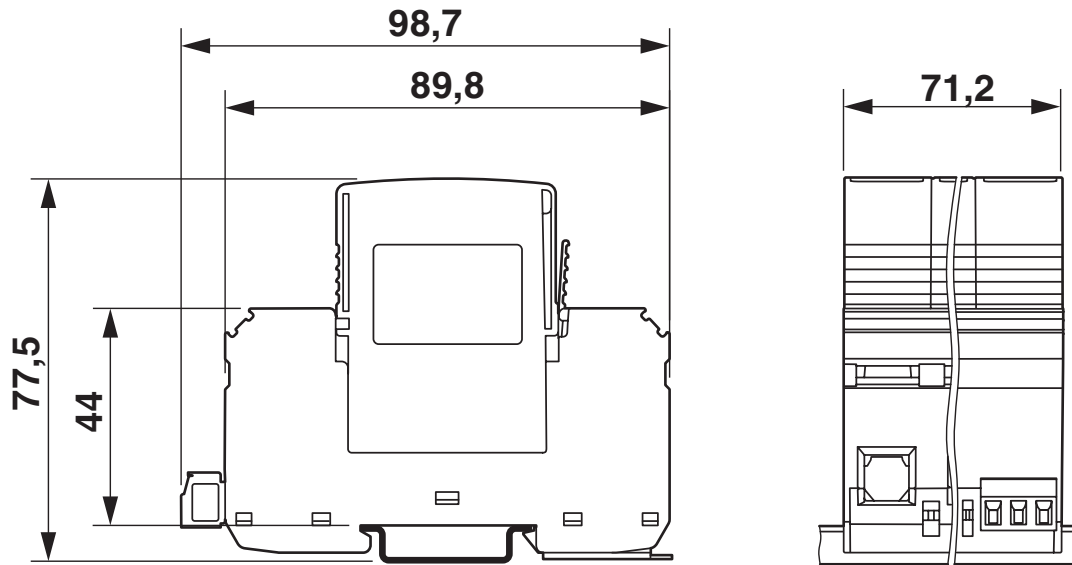
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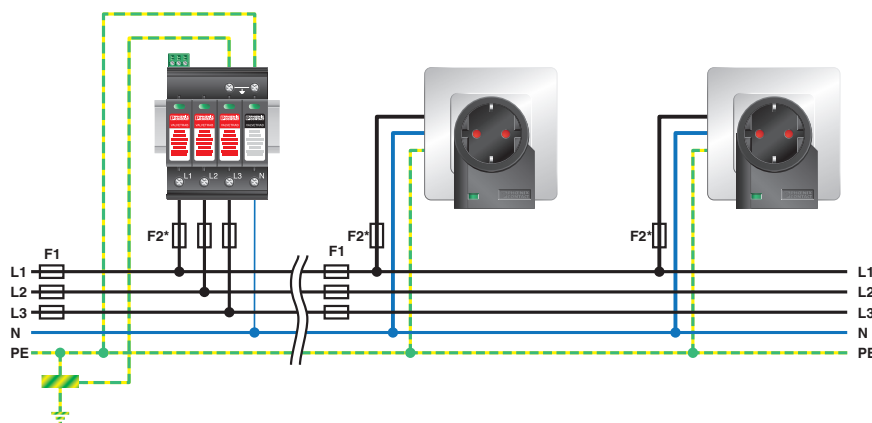
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Drawings

Dimensional drawing



Application drawing



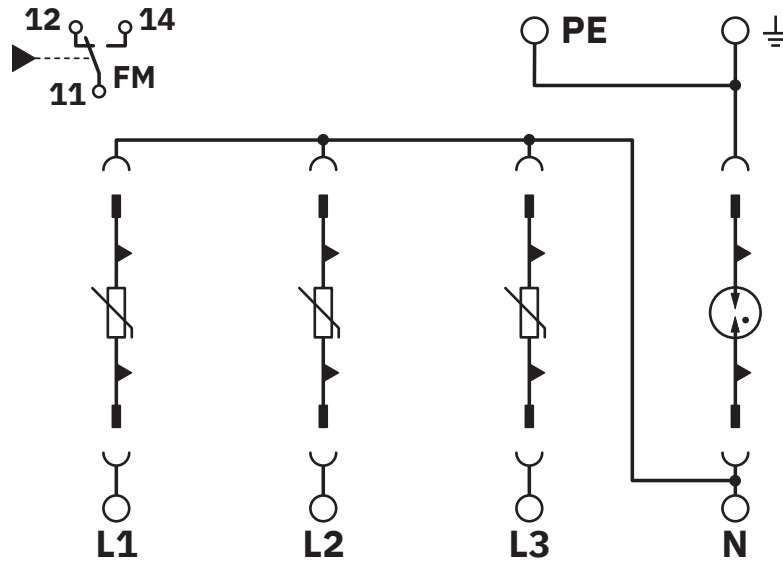
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Circuit diagram



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Approvals

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cUL Recognized
Approval ID: FILE E 330181



UL Recognized
Approval ID: FILE E 330181



IECEE CB Scheme
Approval ID: AT 2584

CCA

Approval ID: NTR-AT 1906



KEMA-KEUR
Approval ID: 2162496-01



DNV GL
Approval ID: TAE00001N9



ÖVE
Approval ID: 18583-009-09

UAE-RoHS

Approval ID: 23-10-88705

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27171201 |
| ECLASS-15.0 | 27171201 |

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% |
|-------------------------------------|----------------------------|

EF3.1 Climate Change

| | |
|---------|----------------|
| CO2e kg | 12.948 kg CO2e |
|---------|----------------|

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