

VAL-MS 320/3+1 - Type 2 surge arrester



2859178

<https://www.phoenixcontact.com/in/products/2859178>

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Surge protective device, 4-channel (in 3+1 circuit), for installation on NS 35/7,5 voltage:
230 V AC

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
- Wide range of applications due to various nominal voltages
- High degree of modularity provides individual solutions for every application

Commercial Data

| | |
|--------------------------------------|--------------------|
| Item number | 2859178 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | CL1 |
| Product Key | CL1321 |
| Catalog Page | Page 60 (C-4-2019) |
| GTIN | 4017918911225 |
| Weight per Piece (including packing) | 400.3 g |
| Weight per Piece (excluding packing) | 386.115 g |
| Customs tariff number | 85363030 |
| Country of origin | IN |

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Technical Data

Product properties

| | |
|--------------------------------|---|
| IEC test classification | II |
| | T2 |
| EN type | T2 |
| IEC power supply system | TN-S |
| | TT |
| Type | DIN rail module, two-section, divisible |
| Product type | Surge arrester |
| Product family | VALVETRAB MS |
| Number of positions | 4 |
| Surge protection fault message | optical |

Insulation characteristics

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

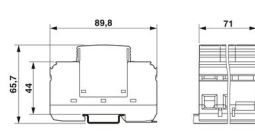
Electrical properties

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

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

| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 71 mm |
| Height | 89.8 mm |
| Depth | 65.7 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 4 Div. |

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Material specifications

| | |
|--|--------------------|
| Color | jet 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 |

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 |
| Maximum continuous operating voltage U_C (N-PE) | 260 V AC |
| Rated load current I_L | 80 A |
| Residual current I_{PE} | $\leq 5 \mu\text{A}$ |
| Standby power consumption P_C | $\leq 450 \text{ mVA}$ |
| Nominal discharge current I_n (8/20) μs | 20 kA |
| Maximum discharge current I_{max} (8/20) μs | 40 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) | $\leq 1.5 \text{ kV}$ |
| Voltage protection level U_p (L-PE) | $\leq 1.9 \text{ kV}$ |
| Voltage protection level U_p (N-PE) | $\leq 1.5 \text{ kV}$ |
| Residual voltage U_{res} (L-N) | $\leq 1.5 \text{ kV}$ (at I_n) |
| | $\leq 1.3 \text{ kV}$ (at 10 kA) |
| | $\leq 1.2 \text{ kV}$ (at 5 kA) |
| | $\leq 1.1 \text{ kV}$ (at 3 kA) |
| Residual voltage U_{res} (L-PE) | $\leq 1.9 \text{ kV}$ (at I_n) |
| | $\leq 1.5 \text{ kV}$ (at 10 kA) |
| | $\leq 1.3 \text{ kV}$ (at 5 kA) |
| | $\leq 1.2 \text{ kV}$ (at 3 kA) |
| Residual voltage U_{res} (N-PE) | $\leq 0.4 \text{ kV}$ (at I_n) |
| | $\leq 0.25 \text{ kV}$ (at 10 kA) |
| | $\leq 0.15 \text{ kV}$ (at 5 kA) |
| | $\leq 0.1 \text{ kV}$ (at 3 kA) |
| TOV behavior at U_T (L-N) | 415 V AC (5 s / withstand mode) |

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| | |
|---|--|
| | 440 V AC (120 min / safe failure mode) |
| TOV behavior at U_T (N-PE) | 1200 V AC (200 ms / withstand mode) |
| 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) |
| Max. backup fuse with branch wiring | 125 A (gG) |

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 (above mean sea level)) |
| Permissible humidity (operation) | 5 % ... 95 % |
| Shock (operation) | 25g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z) |
| Vibration (operation) | 5g (10 ... 500 Hz / 2.5 h / X, Y, Z) |

Approvals

UL specifications

| | |
|---|--------------------------|
| Maximum continuous operating voltage MCOV (L-L) | 640 V AC |
| Maximum continuous operating voltage MCOV (L-N) | 320 V AC |
| Maximum continuous operating voltage MCOV (L-G) | 320 V AC |
| Maximum continuous operating voltage MCOV (N-G) | 260 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) | 2900 V |
| Measured limiting voltage MLV (L-N) | 2030 V |
| Measured limiting voltage MLV (L-G) | 2720 V |
| Measured limiting voltage MLV (N-G) | 1370 V |
| SPD Type | 4CA |

UL connection data

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

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Standards and regulations

| | |
|--------------------------|--------------|
| Standards/specifications | IEC 61643-11 |
| Standards/specifications | EN 61643-11 |

Mounting

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

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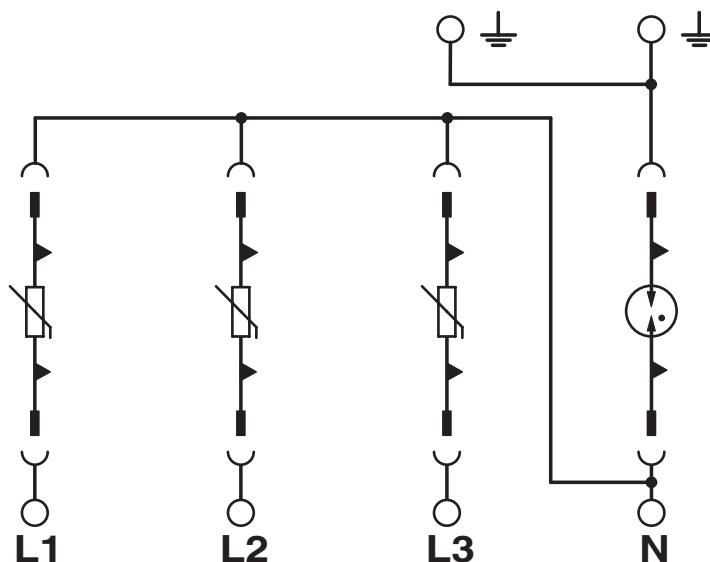


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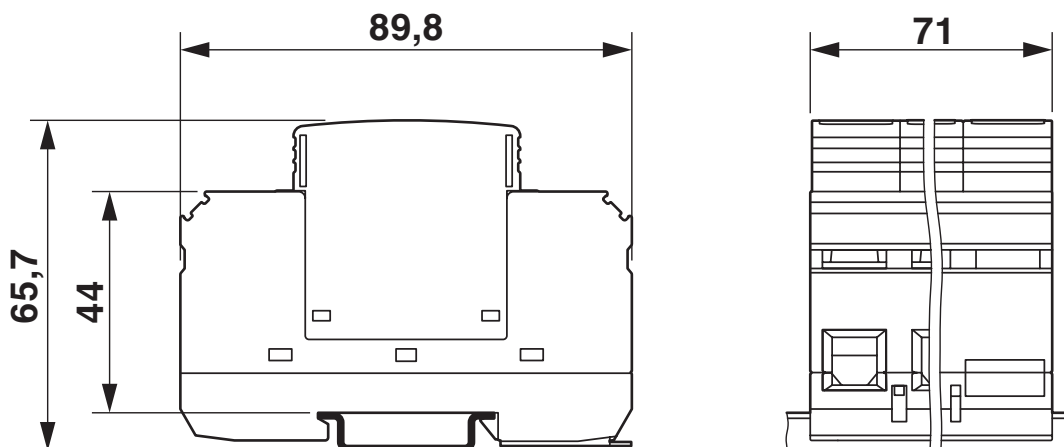
<https://www.phoenixcontact.com/in/products/2859178>

Drawings

Circuit diagram



Dimensional drawing

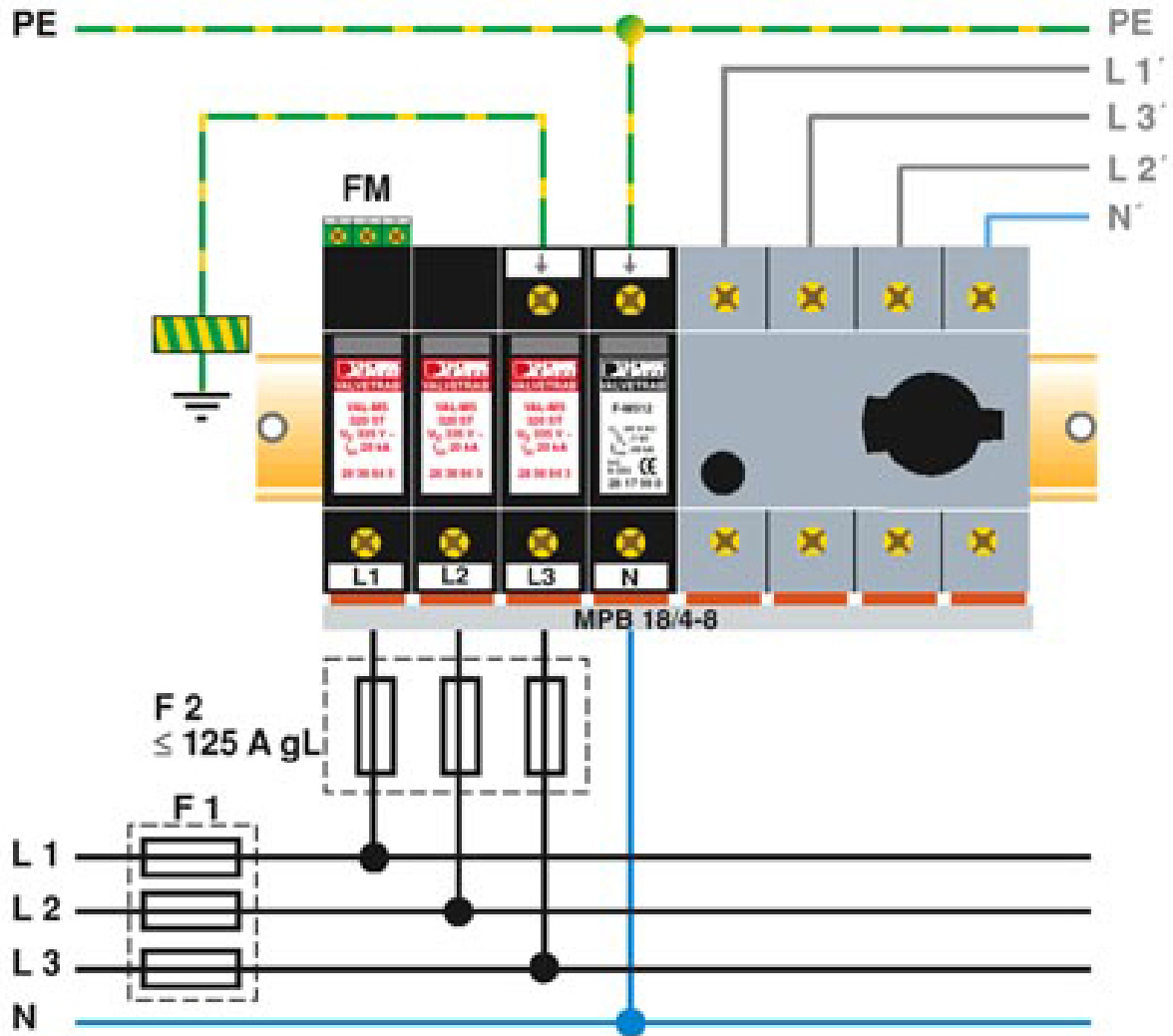


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Application drawing



The figure shows the version VAL-MS 320/3+1/FM (with remote indicator contact)

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Approvals



cUL Recognized

Approval ID: FILE E 330181



UL Recognized

Approval ID: FILE E 330181



IECEE CB Scheme

Approval ID: AT 2905/M1



EAC

Approval ID: RU C-DE.*09.B.00169



KEMA-KEUR

Approval ID: 71-113273 REV.1



DNV GL

Approval ID: TAE000041M



CSA

Approval ID: 13631



ÖVE

Approval ID: 18583-001-16

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27130805 |
| ECLASS-13.0 | 27171202 |

ETIM

| | |
|----------|----------|
| ETIM 8.0 | EC000941 |
|----------|----------|

UNSPSC

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

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Environmental Product Compliance

| | |
|------------|---|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
| | No hazardous substances above threshold values |

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Accessories

ZBN 18:UNBEDRUCKT - Zack marker strip

2809128

<https://www.phoenixcontact.com/in/products/2809128>



Zack marker strip, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

ZBN 18,LGS:ERDE - Marker for terminal blocks

2749589

<https://www.phoenixcontact.com/in/products/2749589>



Marker for terminal blocks, Strip, white, labeled, horizontal: Grounding symbol, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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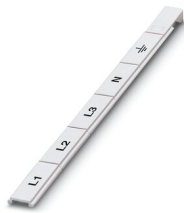
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ZBN 18,LGS:L1-N,ERDE - Marker for terminal blocks

2749576

<https://www.phoenixcontact.com/in/products/2749576>



Marker for terminal blocks, Strip, white, labeled, horizontal: L1, L2, L3, N, GND, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/in/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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MPB 18/4- 8 - Wiring bridge

2809283

<https://www.phoenixcontact.com/in/products/2809283>



Wiring bridge for modules with connecting pitch 17.5 mm, 4-phase, 8-pos.

VAL-MS 320 ST - Type 2 surge protection plug

2838843

<https://www.phoenixcontact.com/in/products/2838843>



Surge protection connector type 2 with high-capacity varistor for VAL-MS base element, thermal monitoring, visual fault warning. Design: 320 V AC

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F-MS 12 ST - Type 2 surge protection plug

2817990

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Surge protection plug type 2, with N-PE total current spark gap for base element.

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