

# VAL-MS 580/3+0-FM - Type 2 surge arrester



2920447

<https://www.phoenixcontact.com/us/products/2920447>

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Surge arrester for 4-conductor power supply systems (L1, L2, L3, PEN), consisting of a base element with remote indication contact and protective connectors, for mounting on NS 35.

## 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                          | 2920447       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL18          |
| Product key                          | CL1321        |
| GTIN                                 | 4046356163569 |
| Weight per piece (including packing) | 388 g         |
| Weight per piece (excluding packing) | 386.1 g       |
| Customs tariff number                | 85363030      |
| Country of origin                    | DE            |

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## Technical data

### Notes

#### General

|      |   |
|------|---|
| Note | For use in all low-voltage systems between L-PEN.<br>Only for use in IT systems between L-PE if the bodies of the equipment in the low-voltage system are connected to the grounding system of the transformer station. (common grounding of the HV transformer station and the bodies of the LV consumer's installation. $R_E = R_A$ according to IEC 60364-4-442/VDE 0100-442 Figure 44D/example a) |
|------|---|

### Product properties

|  |   |
|--|---|
| Product type                             | Surge arrester                          |
| Product family                           | VALVETRAB MS                            |
| IEC test classification                  | II<br>T2                                |
| EN type                                  | T2                                      |
| IEC power supply system                  | TN-C<br>IT                              |
| Type                                     | DIN rail module, two-section, divisible |
| Distance between live and grounded parts | 5 mm                                    |
| Number of positions                      | 3                                       |
| 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<br>30 V DC |
| Operating current  | 5 mA AC ... 1.5 A AC<br>1 A DC |

### Connection data

|                   |   |
|-------------------|---|
| Connection method | Screw connection  |
| Screw thread      | M5  |
| Tightening torque | 3 Nm (1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> )<br>4.5 Nm (25 mm <sup>2</sup> ... 35 mm <sup>2</sup> ) |

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|                                  |  |
|----------------------------------|--|
| Stripping length                 | 16 mm                                      |
| Conductor cross-section flexible | 1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup> |
| Conductor cross-section rigid    | 1.5 mm <sup>2</sup> ... 35 mm <sup>2</sup> |
| Conductor cross-section AWG      | 15 ... 2                                   |
| Connection method                | Fork-type cable lug                        |
| Conductor cross-section flexible | 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |

## Remote fault indicator contact

|                                  |  |
|----------------------------------|--|
| 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 <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section rigid    | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section AWG      | 28 ... 16                                    |

## Dimensions

|                     |                                 |
|---------------------|---------------------------------|
| Dimensional drawing |                                 |
| Width               | 53.4 mm                         |
| Height              | 98.7 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/PBT       |
| Material group                         | I                |
| Housing material                       | PA 6.6<br>PBT    |

## Protective circuit

|  |                                      |
|--|--------------------------------------|
| Mode of protection                         | L-PE<br>L-PEN                        |
| Direction of action                        | 3L-PEN                               |
| Nominal voltage $U_N$                      | 400/690 V AC (TN-C)<br>500 V AC (IT) |
| Nominal frequency $f_N$                    | 50 Hz (60 Hz)                        |
| Maximum continuous operating voltage $U_C$ | 580 V AC                             |

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|  |                                     |
|--|-------------------------------------|
| Rated load current $I_L$                           | 80 A                                |
| Protective conductor current $I_{PE}$              | $\leq 0.75$ mA                      |
| Standby power consumption $P_C$                    | $\leq 450$ mVA                      |
| Nominal discharge current $I_n$ (8/20) $\mu$ s     | 15 kA                               |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s | 30 kA                               |
| Short-circuit current rating $I_{SCCR}$            | 25 kA                               |
| Voltage protection level $U_p$                     | $\leq 2.5$ kV                       |
| Residual voltage $U_{res}$                         | $\leq 2.5$ kV (at $I_n$ )           |
|  | $\leq 2.3$ kV (at 10 kA)            |
|  | $\leq 2.1$ kV (at 5 kA)             |
|  | $\leq 1.9$ kV (at 3 kA)             |
| TOV behavior at $U_T$                              | 690 V AC (5 s / withstand mode)     |
|  | 762 V AC (120 min / withstand mode) |
| Response time $t_A$                                | $\leq 25$ 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                                | $\leq 2000$ m (amsl)                                   |
| Permissible humidity (operation)        | 5 % ... 95 %   |
| Shock (operation)                       | 25g (Half-sine / 11 ms / 3x $\pm$ X, $\pm$ Y, $\pm$ Z) |
| Vibration (operation)                   | 5g (10 ... 500 Hz / 2.5 h / X, Y, Z)                   |

## Approvals

### UL specifications

|   |              |
|---|--------------|
| Maximum continuous operating voltage MCOV (L-L) | 1160 V AC    |
| Maximum continuous operating voltage MCOV (L-G) | 580 V AC     |
| Nominal discharge current $I_n$ (L-L)           | 10 kA        |
| Nominal discharge current $I_n$ (L-G)           | 10 kA        |
| Mode of protection                              | L-L          |
|   | L-G          |
| Nominal voltage                                 | 400/690 V AC |
| Power distribution system                       | Delta        |
| Nominal frequency                               | 50/60 Hz     |
| Measured limiting voltage MLV (L-L)             | 4270 V       |
| Measured limiting voltage MLV (L-G)             | 2310 V       |
| SPD Type  | 4CA          |

### UL indicator/remote signaling

|                   |          |
|-------------------|----------|
| Operating voltage | 125 V AC |
|-------------------|----------|

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|                      |        |
|----------------------|--------|
| AC operating current | 1 A AC |
|----------------------|--------|

## UL connection data

|                             |                         |
|-----------------------------|-------------------------|
| Tightening torque           | 30 lb <sub>F</sub> -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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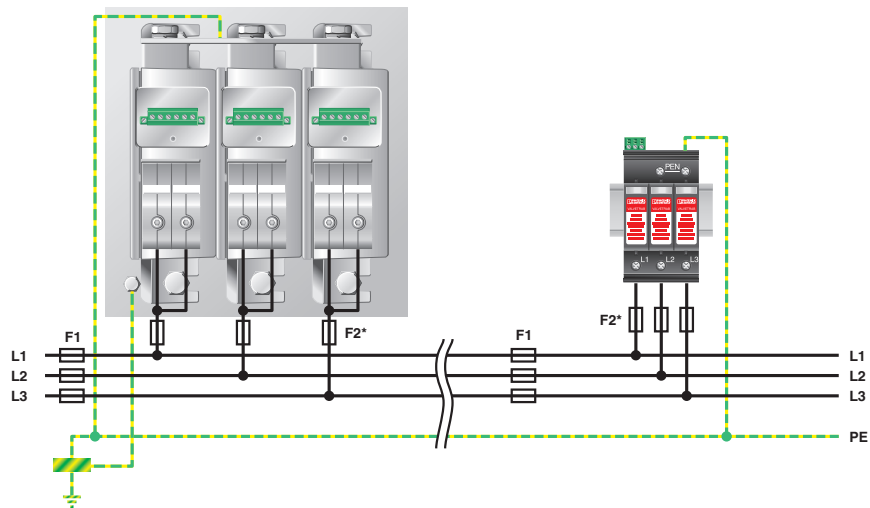
<https://www.phoenixcontact.com/us/products/2920447>

## Drawings

Dimensional drawing



Application drawing



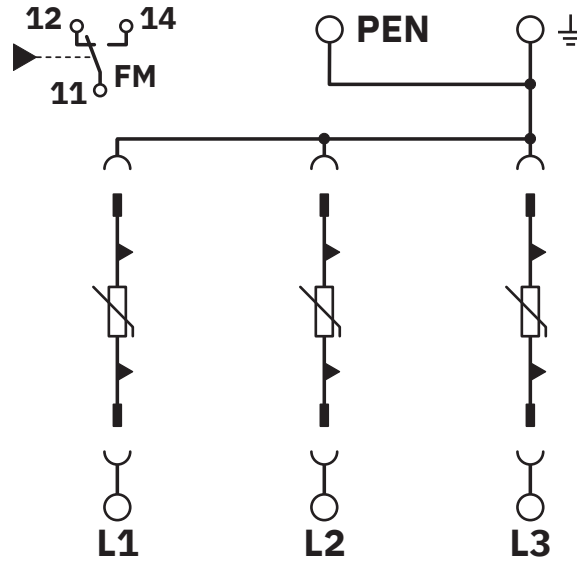
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Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2920447>



**cUL Recognized**  
Approval ID: FILE E 330181



**UL Recognized**  
Approval ID: FILE E 330181



**IECEE CB Scheme**  
Approval ID: AT 2905/M1

**CCA**

Approval ID: NTR-AT 1947-A



**KEMA-KEUR**  
Approval ID: 71-148002



**CSA**  
Approval ID: 13631



**ÖVE**  
Approval ID: 18583-001-17

**UAE-RoHS**

Approval ID: 22-09-51251



**ÖVE**  
Approval ID: 18583-001-18

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27171202 |
| ECLASS-15.0 | 27171202 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC000941 |
|-----------|----------|

### 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 | 8.47 kg CO2e |
|---------|--------------|

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