

## Type 2 surge arrester - VAL-MS 320/3+1 - 2859178

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Surge voltage arrester combination 4-channel (in the 3+1 circuit), for mounting on NS 35/7.5, voltage 230 V AC

### Product Features

- With or without floating remote indication contact
- Optical, mechanical status indication for the individual arresters
- Mechanical coding of all slots
- Disconnect device on each individual plug
- Type 2 consistent plug-in surge arresters
- Multi-channel type 2 arresters



### Key Commercial Data

|                                      |          |
|--------------------------------------|----------|
| Packing unit                         | 1 pc     |
| Weight per Piece (excluding packing) | 400.0 g  |
| Custom tariff number                 | 85363030 |
| Country of origin                    | Germany  |

### Technical data

#### Dimensions

|                  |        |
|------------------|--------|
| Height           | 90 mm  |
| Width            | 71 mm  |
| Depth            | 58 mm  |
| Horizontal pitch | 4 Div. |

#### Ambient conditions

|                      |   |
|----------------------|---|
| Degree of protection | IP20 (only when all terminal points are used) |
|----------------------|---|

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## Technical data

### Ambient conditions

|   |  |
|---|--|
| 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 sinus / 11 ms / 3x ±X, ±Y, ±Z) |
| Vibration (operation)                   | 5g (10 ... 500 Hz / 2.5 h / X, Y, Z)     |

### General

|  |   |
|--|---|
| Standards/specifications               | IEC 61643-11 2011                       |
|  | EN 61643-11 2012                        |
| IEC test classification                | II                                      |
|  | T2                                      |
| EN type                                | T2                                      |
| IEC power supply system                | TN-S                                    |
|  | TT                                      |
| Number of ports                        | One                                     |
| SPD design                             | Combination type                        |
| Mode of protection                     | L-N                                     |
|  | L-PE                                    |
|  | N-PE                                    |
| Mounting type                          | DIN rail: 35 mm                         |
| Color                                  | jet black RAL 9005                      |
| Housing material                       | PA 6.6                                  |
|  | PBT                                     |
| Degree of pollution                    | 2                                       |
| Flammability rating according to UL 94 | V-0                                     |
| Type                                   | DIN rail module, two-section, divisible |
| Number of positions                    | 4                                       |
| Surge protection fault message         | optical                                 |

### Protective circuit

|   |                     |
|---|---------------------|
| 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 voltage $U_C$ (N-PE)           | 260 V AC            |
| Rated load current $I_L$                          | 80 A                |

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#### Protective circuit

|   |  |
|---|--|
| Residual current $I_{PE}$                                       | $\leq 5 \mu A$                         |
| Standby power consumption $P_C$                                 | $\leq 450 \text{ mVA}$                 |
| Nominal discharge current $I_n$ (8/20) $\mu s$                  | 20 kA                                  |
| Maximum discharge current $I_{max}$ (8/20) $\mu s$              | 40 kA                                  |
| Follow current interrupt rating $I_{fi}$ (N-PE)                 | 100 A (260 V)                          |
| Short-circuit current rating $I_{SCCR}$                         | 25 kA                                  |
| Voltage protection level $U_p$ (L-N)                            | $\leq 1.6 \text{ kV}$                  |
| 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)                                | $\leq 1.6 \text{ kV}$ (at $I_n$ )      |
|   | $\leq 1.5 \text{ kV}$ (at 10 kA)       |
|   | $\leq 1.3 \text{ kV}$ (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)        |
| Front of wave sparkover voltage at 6 kV (1.2/50) $\mu s$ (N-PE) | $\leq 1.5 \text{ kV}$                  |
| TOV behavior at $U_T$ (L-N)                                     | 415 V AC (5 s / withstand mode)        |
|   | 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)                                       | $\leq 25 \text{ ns}$                   |
| Response time $t_A$ (N-PE)                                      | $\leq 100 \text{ ns}$                  |
| Max. backup fuse with branch wiring                             | 125 A (gG)                             |
| Max. backup fuse with V-type through wiring                     | 80 A (gG)                              |

#### Connection data

|                                  |  |
|----------------------------------|--|
| Connection method                | Screw connection                           |
| Conductor cross section flexible | 1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup> |
| Conductor cross section solid    | 1.5 mm <sup>2</sup> ... 35 mm <sup>2</sup> |
| Conductor cross section AWG      | 15 ... 2                                   |
| Screw thread                     | M5   |
| Tightening torque                | 4.5 Nm                                     |

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## Technical data

### Connection data

|                  |       |
|------------------|-------|
| Stripping length | 16 mm |
|------------------|-------|

### UL specifications

|   |              |
|---|--------------|
| SPD Type  | 4CA          |
| 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     |
| Nom. voltage                                    | 240/415 V AC |
| Mode of protection                              | L-L          |
|   | L-N          |
|   | L-G          |
|   | N-G          |
| Power distribution system                       | 3Y           |
| 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       |
| 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        |

### UL connection data

|                             |                         |
|-----------------------------|-------------------------|
| Conductor cross section AWG | 10 ... 2                |
| Tightening torque           | 30 lb <sub>f</sub> -in. |

## Classifications

### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27140201 |
| eCl@ss 4.1 | 27130801 |
| eCl@ss 5.0 | 27130801 |
| eCl@ss 5.1 | 27130801 |
| eCl@ss 6.0 | 27130805 |
| eCl@ss 7.0 | 27130805 |
| eCl@ss 8.0 | 27130805 |

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### Classifications

eCl@ss

|            |          |
|------------|----------|
| eCl@ss 9.0 | 27130805 |
|------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC000941 |
| ETIM 3.0 | EC000941 |
| ETIM 4.0 | EC000941 |
| ETIM 5.0 | EC000941 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30212010 |
| UNSPSC 7.0901 | 39121610 |
| UNSPSC 11     | 39121610 |
| UNSPSC 12.01  | 39121610 |
| UNSPSC 13.2   | 39121620 |

### Approvals

#### Approvals

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Approvals

UL Recognized / KEMA-KEUR / ÖVE / cUL Recognized / GL / CCA / IECCEB Scheme / EAC / CSA / cULus Recognized

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Ex Approvals


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Approvals submitted

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#### Approval details


|   |
|---|
| UL Recognized  |
|---|

|   |
|---|
| KEMA-KEUR  |
|---|

## Type 2 surge arrester - VAL-MS 320/3+1 - 2859178


### Approvals

ÖVE 

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GL

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EAC

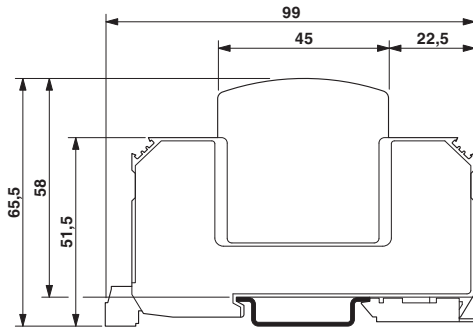
CSA

cULus Recognized 

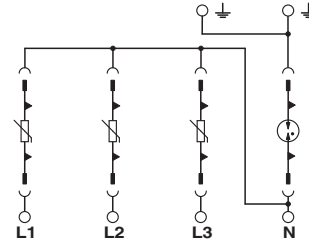
### Drawings

## Type 2 surge arrester - VAL-MS 320/3+1 - 2859178

Dimensional drawing



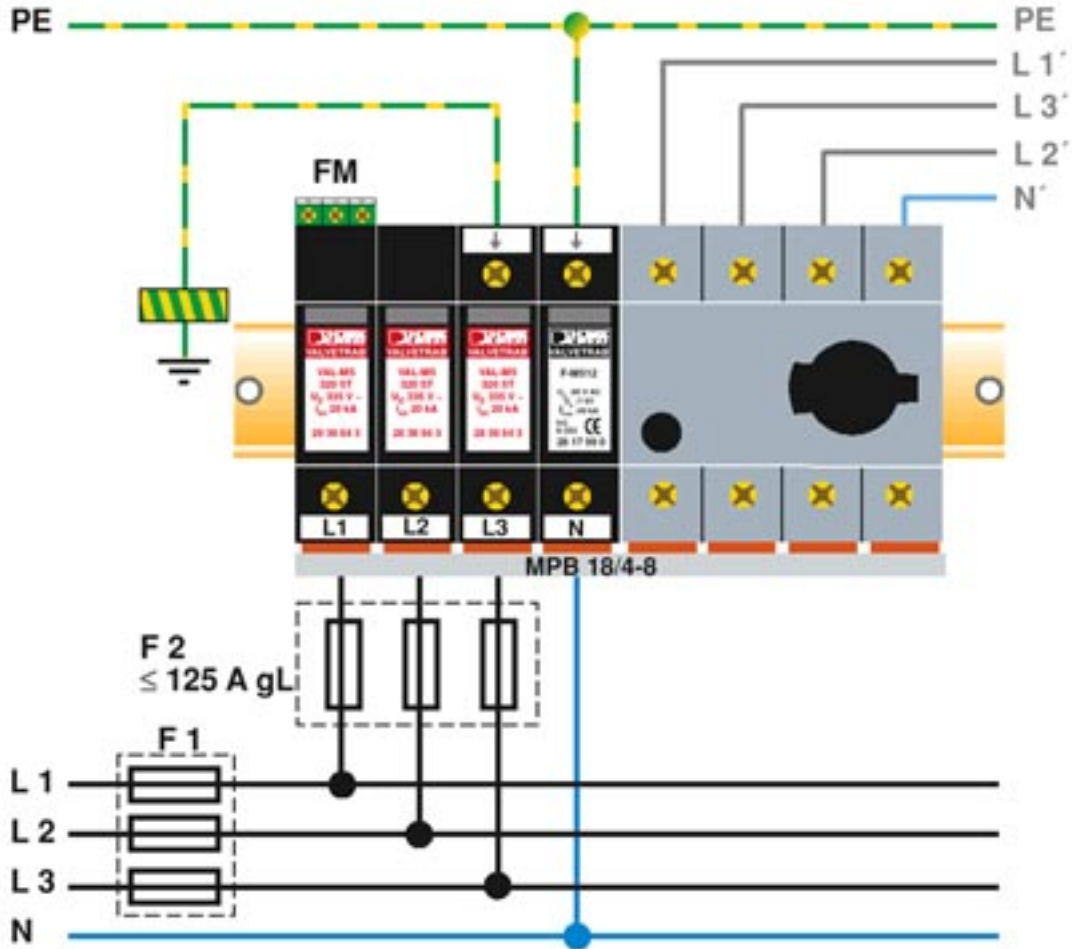
Circuit diagram



The illustration shows the dimensional drawing for a version with remote indicator contact

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Application drawing



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