

## Type 2 surge protection device - 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 GRM |
| 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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#### 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                                    |
| Vibration (operation)                   | 5g                                     |

#### General

|   |   |
|---|---|
| Standards/specifications                | IEC 61643-11 2011                       |
|   | EN 61643-11 2012                        |
| IEC test classification                 | II                                      |
|   | T2                                      |
| EN type                                 | T2                                      |
| Number of ports                         | One                                     |
| SPD design                              | Combination type                        |
| Mode of protection                      | L-N                                     |
|   | L-PE                                    |
|   | N-PE                                    |
| Mounting type                           | DIN rail: 35 mm                         |
| Color                                   | black                                   |
| Housing material                        | PA 6.6                                  |
|   | PBT                                     |
| Pollution degree                        | 2                                       |
| Inflammability class 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 voltage $U_C$ (N-PE)          | 260 V AC            |
| Rated load current $I_L$                         | 80 A                |
| Residual current $I_{PE}$                        | ≤ 5 μA              |
| Standby power consumption $P_C$                  | ≤ 450 mVA           |
| Nominal discharge current $I_n$ (8/20) μs (L-N)  | 20 kA               |

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#### Protective circuit

|   |  |
|---|--|
| Nominal discharge current $I_n$ (8/20) $\mu$ s (L-PE)           | 20 kA                                  |
| Nominal discharge current $I_n$ (8/20) $\mu$ s (N-PE)           | 20 kA                                  |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s (L-N)        | 40 kA                                  |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s (L-PE)       | 40 kA                                  |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s (N-PE)       | 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)                            | $\leq 1.6$ kV                          |
| Voltage protection level $U_p$ (L-PE)                           | $\leq 1.9$ kV                          |
| Voltage protection level $U_p$ (N-PE)                           | $\leq 1.5$ kV                          |
| Residual voltage $U_{res}$ (L-N)                                | $\leq 1.6$ kV (at $I_n$ )              |
|   | $\leq 1.5$ kV (at 10 kA)               |
|   | $\leq 1.3$ kV (at 5 kA)                |
|   | $\leq 1.1$ kV (at 3 kA)                |
| Residual voltage $U_{res}$ (L-PE)                               | $\leq 1.9$ kV (at $I_n$ )              |
|   | $\leq 1.5$ kV (at 10 kA)               |
|   | $\leq 1.3$ kV (at 5 kA)                |
|   | $\leq 1.2$ kV (at 3 kA)                |
| Residual voltage $U_{res}$ (N-PE)                               | $\leq 0.4$ kV (at $I_n$ )              |
|   | $\leq 0.25$ kV (at 10 kA)              |
|   | $\leq 0.15$ kV (at 5 kA)               |
|   | $\leq 0.1$ kV (at 3 kA)                |
| Front of wave sparkover voltage at 6 kV (1.2/50) $\mu$ s (N-PE) | $\leq 1.5$ 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)                                       | $\leq 25$ ns                           |
| Response time $t_A$ (N-PE)                                      | $\leq 100$ ns                          |
| Max. backup fuse with branch wiring                             | 125 A AC (gG)                          |
| Max. backup fuse with V-type through wiring                     | 80 A AC (gG)                           |

#### Connection data

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section stranded min. | 1.5 mm <sup>2</sup> |
| Conductor cross section stranded max. | 25 mm <sup>2</sup>  |
| Conductor cross section solid min.    | 1.5 mm <sup>2</sup> |
| Conductor cross section solid max.    | 35 mm <sup>2</sup>  |

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### Technical data

#### Connection data

|                             |                              |
|-----------------------------|------------------------------|
| AWG conductor cross section | 15 ... 2                     |
|                             | 10 ... 2 (UL)                |
| Screw thread                | M5                           |
| Tightening torque           | 4.5 Nm                       |
|                             | 30 lb <sub>F</sub> -in. (UL) |
| Stripping length            | 16 mm                        |

#### UL specifications

|   |                                    |
|---|------------------------------------|
| UL class  | Type 4 SPD for Type 2 applications |
| Maximum continuous operating voltage MCOV (L-N) | 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                           |
| Voltage protection rating VPR (L-L)             | 2 kV                               |
| Voltage protection rating VPR (L-N)             | 1.2 kV                             |
| Voltage protection rating VPR (L-G)             | 1.8 kV                             |
| Voltage protection rating VPR (N-G)             | 1.2 kV                             |
| 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                              |

### 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

### 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 / GOST / GL / CCA / IECCEB Scheme / KEMA-KEUR / CSA / cULus Recognized

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#### Ex Approvals

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#### Approvals submitted

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## Approval details

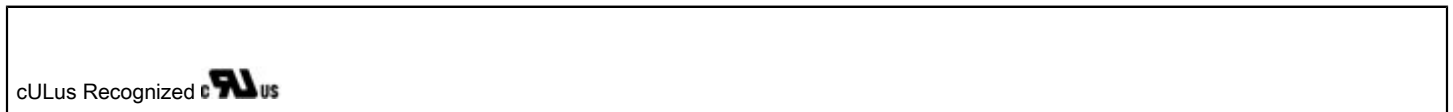
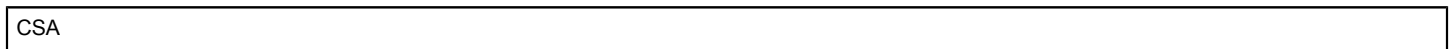
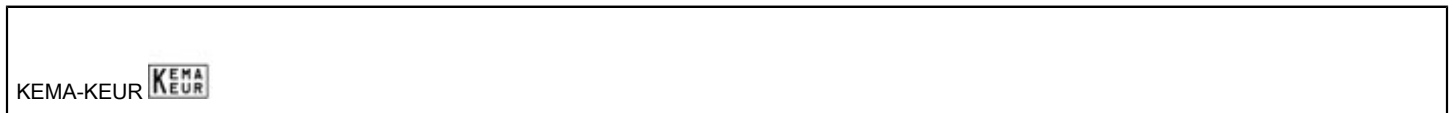
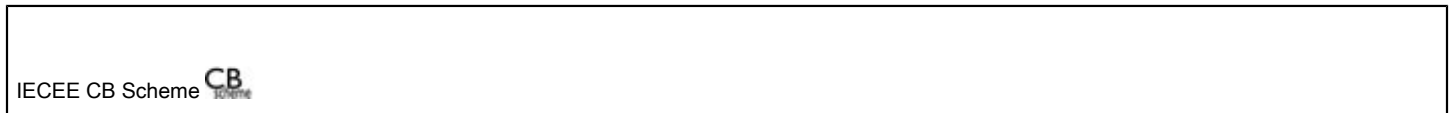
UL Recognized

KEMA-KEUR

ÖVE

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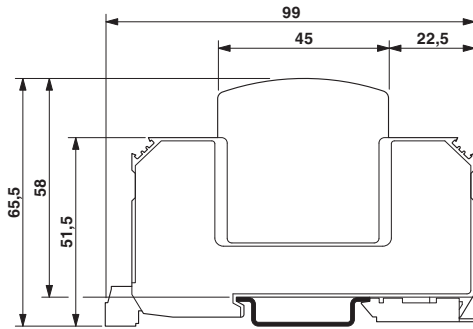
### Approvals



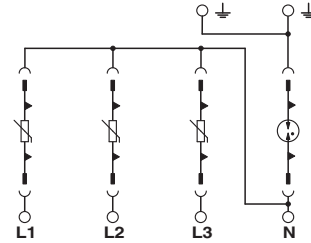
### Drawings

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

Dimensioned drawing



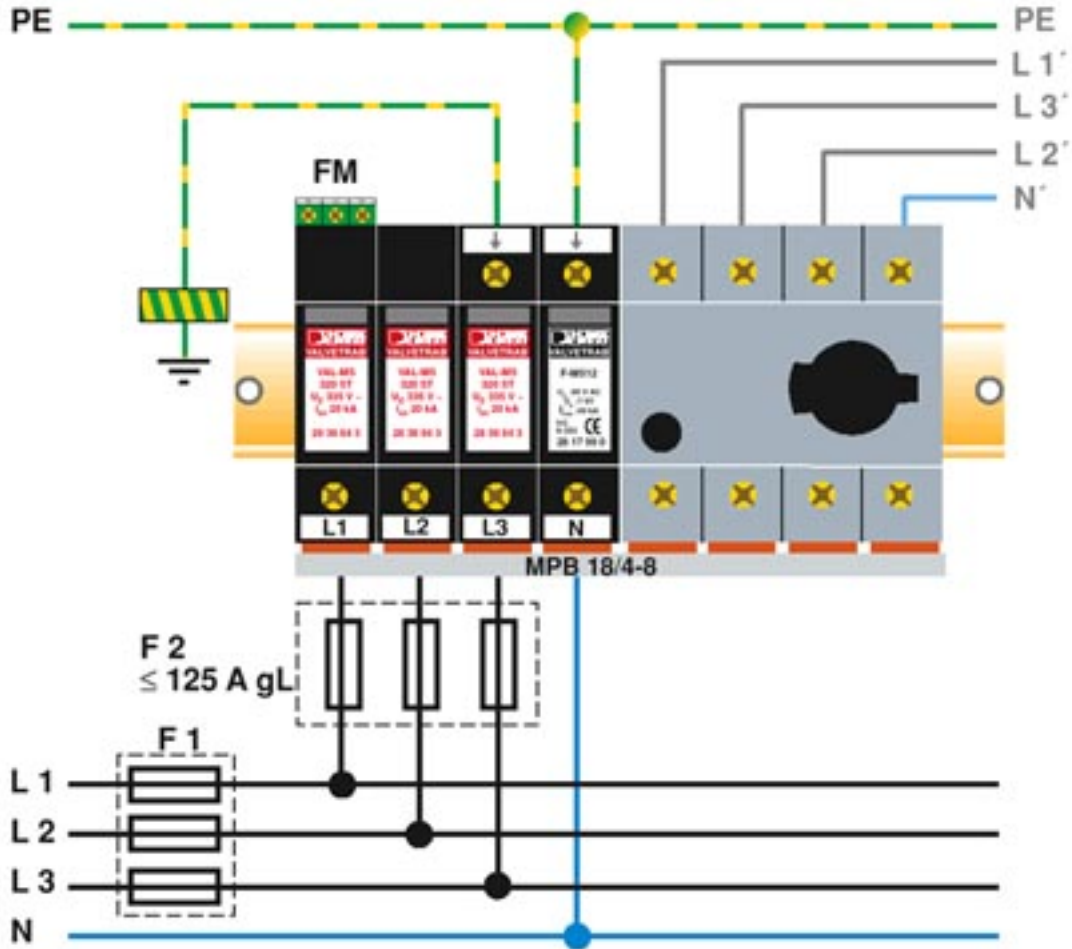
Circuit diagram



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)