

# Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 75/12.5/1+1V-FM - 2801149

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Universal varistor-based plug-in lightning/surge arrester for 48 V DC applications with grounded return conductor (positive pole), without risk assessment for Lightning Protection Levels III and IV, with remote indication contact.



## Key Commercial Data

|                                      |          |
|--------------------------------------|----------|
| Packing unit                         | 1 pc     |
| Weight per Piece (excluding packing) | 333.8 g  |
| Custom tariff number                 | 85363030 |
| Country of origin                    | Germany  |

## Technical data

### Dimensions

|                  |         |
|------------------|---------|
| Height           | 99 mm   |
| Width            | 35.6 mm |
| Depth            | 77.5 mm |
| Horizontal pitch | 2 Div.  |

### 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)                       | 30g (half sinus / 11 ms / 3x ±X, ±Y, ±Z)      |
| Vibration (operation)                   | 7.5g (10 ... 500 Hz / 2.5 h / X, Y, Z)        |

### General

|                          |                   |
|--------------------------|-------------------|
| Standards/specifications | IEC 61643-11 2011 |
|--------------------------|-------------------|

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## Technical data

### General

|  |   |
|--|---|
|  | EN 61643-11 2012                        |
| IEC test classification                | I / II                                  |
|  | T1 / T2                                 |
|  | T1                                      |
|  | I                                       |
| EN type                                | T1 / T2                                 |
|  | T1                                      |
| Number of ports                        | One                                     |
| SPD design                             | Voltage-limiting type                   |
| Mode of protection                     | L-N                                     |
|  | N-PE                                    |
|  | (L+) - (L-)                             |
|  | (L+) - 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 |
| Surge protection fault message         | Optical, remote indicator contact       |

### Protective circuit

|   |                         |
|---|-------------------------|
| Nominal voltage $U_N$   | 60 V AC $\pm 10$ % (TN) |
|   | 60 V DC $\pm 10$ %      |
| Nominal frequency $f_N$   | 50 Hz (60 Hz)           |
| Maximum continuous voltage $U_C$                                  | 75 V AC                 |
| Rated load current $I_L$  | 80 A                    |
| Residual current $I_{PE}$   | $\leq 0.6$ mA           |
| Standby power consumption $P_C$                                   | $\leq 90$ mVA           |
| Nominal discharge current $I_n$ (8/20) $\mu$ s                    | 12.5 kA                 |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s                | 50 kA                   |
| Impulse discharge current (10/350)# $\mu$ s, charge               | 6.25 As                 |
| Impulse discharge current (10/350)# $\mu$ s, specific energy      | 39 kJ/ $\Omega$         |
| Impulse discharge current (10/350)# $\mu$ s, peak value $I_{imp}$ | 12.5 kA                 |
| Total discharge current $I_{Total}$ (8/20) $\mu$ s                | 50 kA                   |

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## Technical data

### Protective circuit

|  |                                 |
|--|---------------------------------|
| Total discharge current $I_{Total}$ (10/350) $\mu$ s | 12.5 kA                         |
| Short-circuit current rating $I_{SCCR}$              | 0.5 kA                          |
| Voltage protection level $U_p$                       | $\leq 0.7$ kV                   |
| Residual voltage $U_{res}$                           | $\leq 0.7$ kV (at $I_n$ )       |
|  | $\leq 0.65$ kV (at 10 kA)       |
|  | $\leq 0.6$ kV (at 5 kV)         |
|  | $\leq 0.55$ kV (at 4 kA)        |
|  | $\leq 0.55$ kV (at 3 kA)        |
| TOV behavior at $U_T$                                | 208 V AC (5 s / withstand mode) |
|  | 100 V DC (5 s / withstand mode) |
| Response time $t_A$                                  | $\leq 25$ ns                    |
| Max. backup fuse with branch wiring                  | 160 A (gG)                      |
| Max. backup fuse with V-type through wiring          | 80 A (gG - 16 mm <sup>2</sup> ) |

### Indicator/remote signaling

|                                  |  |
|----------------------------------|--|
| Connection name                  | Remote fault indicator contact               |
| Switching function               | PDT contact                                  |
| Operating voltage                | 5 V AC ... 250 V AC                          |
|                                  | 125 V DC (200 mA DC)                         |
| Operating current                | 5 mA AC ... 1.5 A                            |
|                                  | 1 A (30 V DC)                                |
| Connection method                | Screw connection                             |
| 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 solid    | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 28 ... 16                                    |

### 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                                     |
| Stripping length                 | 16 mm                                      |

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## Technical data

### UL specifications

|   |         |
|---|---------|
| SPD Type  | 4CA     |
| Maximum continuous operating voltage MCOV (L-N) | 75 V DC |
| Maximum continuous operating voltage MCOV (L-G) | 75 V DC |
| Maximum continuous operating voltage MCOV (N-G) | 75 V DC |
| Nominal voltage                                 | 60 V AC |
| Mode of protection                              | L-N     |
|   | L-G     |
|   | N-G     |
| Power distribution system                       | 1       |
| Measured limiting voltage MLV (L-N)             | 2080 V  |
| Measured limiting voltage MLV (L-G)             | 2080 V  |
| Measured limiting voltage MLV (N-G)             | 3010 V  |
| 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 indicator/remote signaling

|                             |                        |
|-----------------------------|------------------------|
| Operating voltage           | 125 V AC               |
| Operating current           | 1 A                    |
| Tightening torque           | 4 lb <sub>F</sub> -in. |
| Conductor cross section AWG | 30 ... 14              |

### 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 | 27130802 |
| eCl@ss 7.0 | 27130802 |
| eCl@ss 8.0 | 27130802 |
| eCl@ss 9.0 | 27130802 |

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## Classifications

### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC000941 |
| ETIM 4.0 | EC000381 |
| ETIM 5.0 | EC000381 |

### 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 / cUL Recognized / cULus Recognized

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#### Ex Approvals

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#### Approvals submitted

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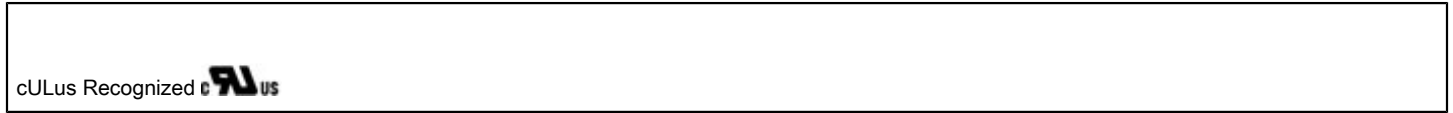
### Approval details

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

|                |
|----------------|
| cUL Recognized |
|----------------|

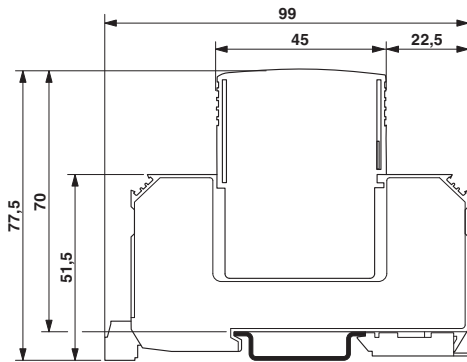
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## Approvals



## Drawings

Dimensional drawing



Circuit diagram

