# Type 2 surge arrester - VAL-MS 230/1+1-FM - 2804432

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Surge arrester for 3-conductor power supply systems (L1, N, PE), consisting of a base element with remote indication contact and protective connectors, for mounting on NS 35.

## Your advantages

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

## Key Commercial Data

| | |
|---|---|
| Packing unit | 1 pc |
| GTIN | 4 046356 317818 |
| GTIN | 4046356317818 |

## Technical data

### Dimensions

| | |
|---|---|
| Height | 96.8 mm |
| Width | 35.6 mm |
| Depth | 65.7 mm (incl. DIN rail 7.5 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)) |

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## Technical data

### Ambient conditions

| | |
|---|---|
| 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) |

### General

| | |
|---|---|
| IEC test classification | II |
| | T2 |
| EN type | T2 |
| IEC power supply system | TN-S |
| | TT |
| 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 | 2 |
| Surge protection fault message | Optical, remote indicator contact |

### 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) | 275 V AC |
| Maximum continuous operating voltage $U_C$ (L-PE) | 275 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 $P_C$ | ≤ 120 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) | ≤ 1.35 kV |
| Voltage protection level $U_p$ (L-PE) | ≤ 1.6 kV |
| Voltage protection level $U_p$ (N-PE) | ≤ 1.5 kV |
| Residual voltage $U_{res}$ (L-N) | ≤ 1.35 kV (at $I_n$) |

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## Technical data

### Protective circuit

| | |
|---|---|
| | ≤ 1.1 kV (at 10 kA) |
| | ≤ 1 kV (at 5 kA) |
| | ≤ 0.9 kV (at 3 kA) |
| Residual voltage $U_{res}$ (L-PE) | ≤ 1.6 kV (at $I_n$) |
| | ≤ 1.2 kV (at 10 kA) |
| | ≤ 1 kV (at 5 kA) |
| | ≤ 0.9 kV (at 3 kA) |
| Residual voltage $U_{res}$ (N-PE) | ≤ 0.4 kV (at $I_n$) |
| | ≤ 0.25 kV (at 10 kA) |
| | ≤ 0.15 kV (at 5 kA) |
| | ≤ 0.1 kV (at 3 kA) |
| TOV behavior at $U_T$ (L-N) | 335 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) | ≤ 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) |

### Indicator/remote signaling

| | |
|---|---|
| Switching function | PDT contact |
| Operating voltage | 5 V AC ... 250 V AC |
| | 30 V DC |
| Operating current | 5 mA AC ... 1.5 A AC |
| | 1 A DC |
| 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 mm² ... 1.5 mm² |
| Conductor cross section solid | 0.14 mm² ... 1.5 mm² |
| Conductor cross section AWG | 28 ... 16 |

### Connection data

| | |
|---|---|
| Connection method | Screw connection |
| Screw thread | M5 |
| Tightening torque | 3 Nm (1,5 mm² ... 16 mm²) |
| | 4.5 Nm (25 mm² ... 35 mm²) |
| Stripping length | 16 mm |
| Conductor cross section flexible | 1.5 mm² ... 25 mm² |

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## Technical data

### Connection data

| | |
|---|---|
| Conductor cross section solid | 1.5 mm² ... 35 mm² |
| Conductor cross section AWG | 15 ... 2 |
| Connection method | Fork-type cable lug |
| Conductor cross section flexible | 1.5 mm² ... 16 mm² |

### UL specifications

| | |
|---|---|
| SPD Type | 4CA |
| Maximum continuous operating voltage MCOV (L-N) | 275 V AC |
| Maximum continuous operating voltage MCOV (L-G) | 275 V AC |
| Maximum continuous operating voltage MCOV (N-G) | 260 V AC |
| Nom. voltage | 230 V AC |
| Mode of protection | L-N |
| | L-G |
| | N-G |
| Power distribution system | 1 |
| Nominal frequency | 50/60 Hz |
| Measured limiting voltage MLV (L-N) | 1910 V |
| Measured limiting voltage MLV (L-G) | 2630 V |
| Measured limiting voltage MLV (N-G) | 1370 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 AC |
| Tightening torque | 4 $lb_f$-in. |
| Conductor cross section AWG | 30 ... 14 |

### UL connection data

| | |
|---|---|
| Conductor cross section AWG | 10 ... 2 |
| Tightening torque | 30 $lb_f$-in. |

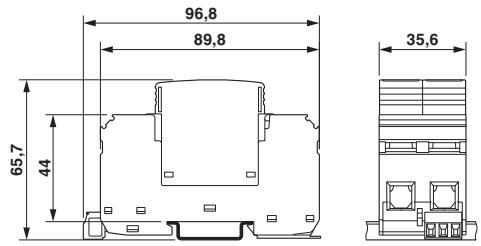
### Standards and Regulations

| | |
|---|---|
| Standards/regulations | IEC 61643-11 2011 |
| | EN 61643-11 2012 |

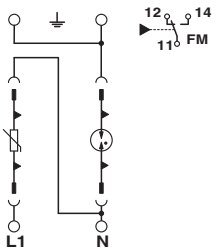
## Drawings

# Type 2 surge arrester - VAL-MS 230/1+1-FM - 2804432

Dimensional drawing




Circuit diagram




## Approvals

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UL Recognized / KEMA-KEUR / cUL Recognized / ÖVE / CCA / IECEE CB Scheme / EAC / EAC / CSA / cULus Recognized

Ex Approvals

### Approval details

| | | |
|---|---|---|
| UL Recognized | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 330181 |
| KEMA-KEUR | http://www.dekra-certification.com | 2170208.01 |
| cUL Recognized | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 330181 |
| ÖVE | https://www.ove.at/en/certification-pz/certification-register/ | 18583-001-13 |
| CCA | | NTR-AT 1947-A |
| IECEE CB Scheme | http://www.iecee.org/ | AT 2905/M1 |

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## Approvals

| | | | |
|---|---|---|---|
| EAC | | | EAC-Zulassung |
| EAC | | | RU C-DE.A*30.B01561 |
| CSA | | http://www.csagroup.org/services-industries/product-listing/ | 13631 |
| cULus Recognized | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | |



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