# VAL-US-SPP-120/50/3+1-R - Surge protection device

1790750

https://www.phoenixcontact.com/us/products/1790750

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Surge protective device, UL Listed type 1 and IEC type 2, for 3-phase power supply systems with neutral conductor for 208Y/120 V AC, replaceable surge protection plugs with local status indicator (green/red), with plug-in remote signaling.

## Your advantages

- Universal surge protective device (SPD) with UL Listed type 1 and IEC type 2: suitable for all common supply system configurations and supply voltages in North America
- Minimal maintenance with replaceable surge protection plugs
- Clear status indication with local optical green/red display and plug-in remote signaling for quick and easy installation
- Simple planning with comprehensive digital data
- Miswiring and touch protection for safe installation

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 1790750 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL17 |
| Product key | CL138U |
| GTIN | 4067923409798 |
| Weight per piece (including packing) | 458.3 g |
| Weight per piece (excluding packing) | 444.3 g |
| Customs tariff number | 85363030 |
| Country of origin | DE |

# Technical data

## Product properties

| | |
|---|---|
| Product type | Surge protection for NEMA power supply units |
| Product family | VAL-SPP |
| IEC test classification | II |
| | T2 |
| EN type | T2 |
| IEC power supply system | TN-S |
| | TT |
| Type | DIN rail module, two-section, divisible |
| Number of positions | 4 |
| End-of-life mode | OCM |
| Surge protection fault message | Optical, remote indicator contact |
| Number of ports | One |

### Insulation characteristics

| | |
|---|---|
| Overvoltage category | III |
| Pollution degree | 3 |

## Electrical properties

| | |
|---|---|
| Nominal frequency $f_N$ | 50 Hz (60 Hz) |

### Indicator/remote signaling

| | |
|---|---|
| Connection name | Remote fault indicator contact |
| Switching function | Changeover contact |
| Max. required back-up fuse | 1 A (gG) |
| AC operating voltage | 5 V AC ... 250 V AC |
| AC operating current | 5 mA AC ... 1 A AC |
| DC operating voltage | 30 V DC |
| DC operating current | 1 A DC |
| DC operating voltage | 125 V DC |
| DC operating current | 200 mA DC |
| Insulation type | The product has double/reinforced insulation between the main and auxiliary circuit. |

## Connection data

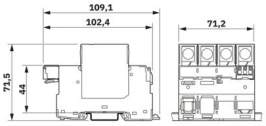
| | |
|---|---|
| Connection method | Screw connection |
| Screw thread | M5 |
| Tightening torque | 3 Nm ... 3.5 Nm |
| Stripping length | 18 mm |
| Conductor cross-section flexible | 1.5 mm² ... 35 mm² (without ferrule) |
| | 2x 1.5 mm² ... 16 mm² (2 conductors with the same cross-section) |
| Conductor cross-section rigid | 1.5 mm² ... 50 mm² |

| | |
|---|---|
| | 2x 1.5 mm² ... 16 mm² (2 conductors with the same cross-section) |
| Conductor cross-section AWG | 15 ... 2 |
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 1.5 mm² ... 16 mm² |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 1.5 mm² ... 35 mm² |
| | 2x 1.5 mm² ... 10 mm² (2 conductors with the same cross-section) |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 1.5 mm² ... 25 mm² |
| | 2x 1.5 mm² ... 16 mm² (2 conductors with the same cross-section) |
| Connection method | Fork-type cable lug |
| Conductor cross-section flexible | 1.5 mm² ... 25 mm² |

Remote fault indicator contact

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 8 mm |
| Conductor cross-section flexible | 0.25 mm² ... 1.5 mm² |
| Conductor cross-section rigid | 0.25 mm² ... 1.5 mm² |
| Conductor cross-section AWG | 24 ... 16 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 1.5 mm² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm² ... 0.75 mm² |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 71.2 mm |
| Height | 109.1 mm |
| Depth | 71.5 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 4 HP |

## Material specifications

| | |
|---|---|
| Color | gray (RAL 7042) |
| | light gray (RAL 7035) |
| Flammability rating according to UL 94 | V-0 |
| CTI value of material | 600 |
| Insulating material | PA 6.6-FR 20 % GF |
| | PBT |
| Material group | I |
| Housing material | PA 6.6-FR 20 % GF |
| | PBT |

## Mechanical properties

Mechanical data

| | |
|---|---|
| Open side panel | No |

## Protective circuit

| | |
|---|---|
| Mode of protection | L-N |
| | L-PE |
| | N-PE |
| Nominal voltage $U_N$ | 120/208 V AC ±10 % (TN-S) |
| | 120/208 V AC ±10 % (TT) |
| Nominal frequency $f_N$ | 50 Hz (60 Hz) |
| Maximum continuous operating voltage $U_C$ (L-N) | 175 V AC |
| Maximum continuous operating voltage $U_C$ (L-PE) | 175 V AC |
| Maximum continuous operating voltage $U_C$ (N-PE) | 305 V AC |
| Rated load current $I_L$ | 80 A (25 mm²) |
| Protective conductor current $I_{PE}$ | ≤ 5 µA |
| Standby power consumption $P_C$ | ≤ 210 mVA |
| Operating effective current $I_C$ at $U_N$ | ≤ 1.2 mA |
| Nominal discharge current $I_n$ (8/20) µs | 20 kA |
| Follow current interrupt rating $I_{fi}$ (N-PE) | 100 A |
| Short-circuit current rating $I_{SCCR}$ | 50 kA |
| Voltage protection level $U_p$ (L-N) | ≤ 1 kV |
| Voltage protection level $U_p$ (L-PE) | ≤ 1.5 kV |
| Voltage protection level $U_p$ (N-PE) | ≤ 1.5 kV |
| Residual voltage $U_{res}$ (L-N) | ≤ 1.5 kV (at $I_n$) |
| Residual voltage $U_{res}$ (L-PE) | ≤ 1.5 kV (at $I_n$) |
| Residual voltage $U_{res}$ (N-PE) | ≤ 0.5 kV (at $I_n$) |
| TOV behavior at $U_T$ (L-N) | 175 V AC (5 s / withstand mode) |
| | 230 V AC (120 min / safe failure mode) |
| TOV behavior at $U_T$ (L-PE) | 1332 V AC (200 ms/withstand 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 | 315 A (gG) |

Additional technical data

| | |
|---|---|
| Short-circuit current rating $I_{SCCR}$ | 100 kA |
| TOV behavior at $U_T$ (L-PE) | 710 V AC (30 A / 1 s / withstand mode) |
| TOV behavior at $U_T$ (N-PE) | 600 V AC (30 A / 1 s / withstand mode) |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20C (Installed) |
| Ambient temperature (operation) | -40 °C ... 85 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Ambient temperature (assembly) | -5 °C ... 50 °C |
| Altitude | ≤ 2000 m (amsl) |
| 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) |

## Approvals

UL specifications

| | |
|---|---|
| Maximum continuous operating voltage MCOV (L-L) | 350 V AC |
| Maximum continuous operating voltage MCOV (L-N) | 175 V AC |
| Maximum continuous operating voltage MCOV (L-G) | 175 V AC |
| Maximum continuous operating voltage MCOV (N-G) | 305 V AC |
| Short-circuit current rating (SCCR) | 200 kA |
| Voltage protection rating VPR (L-L) | 1200 V |
| Voltage protection rating VPR (L-N) | 700 V |
| Voltage protection rating VPR (L-G) | 900 V |
| Voltage protection rating VPR (N-G) | 900 V |
| Nominal discharge current $I_n$ | 20 kA |
| Maximum Surge Current per Phase | 1x 50 kA (IEEE C62.73) |
| Mode of protection | L-L |
| | L-N |
| | L-G |
| | N-G |
| Nominal voltage | 120/208 V AC (Wye) |
| Power distribution system | Wye |
| Nominal frequency | 50/60 Hz |
| SPD Type | 1 |

UL indicator/remote signaling

| | |
|---|---|
| Operating voltage | 250 V AC |
| DC operating voltage | 30 V DC |
| AC operating current | 5 mA AC ... 1 A AC |
| DC operating current | 1 A DC |

UL connection data

| | |
|---|---|
| Tightening torque | 30 $lb_f$-in. |
| Conductor cross-section AWG | 14 ... 2 |

## Standards and regulations

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

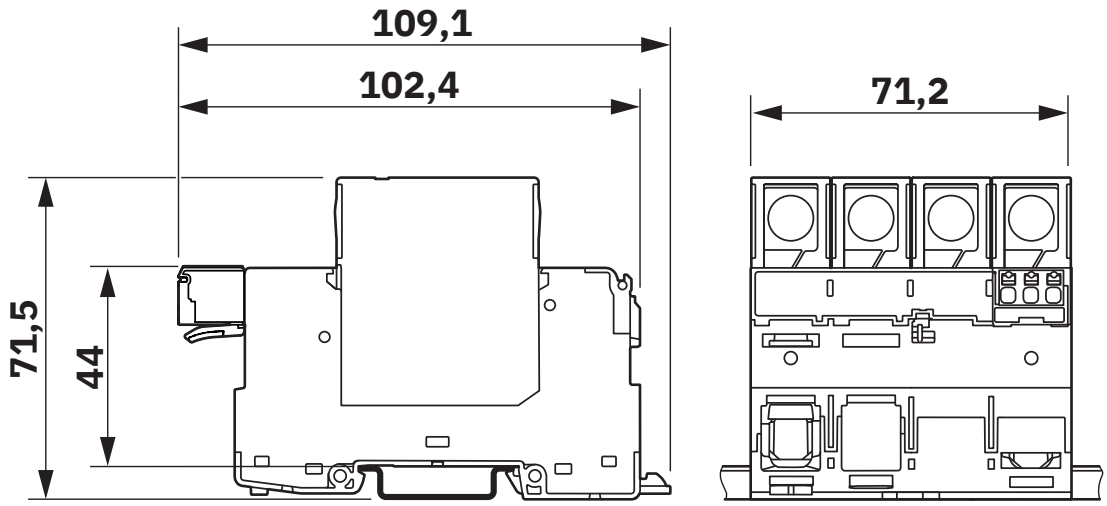
| | |
|---|---|
| Note | 2011 |
| Standards/specifications | EN 61643-11 |
| Note | 2012 + A11:2018 |

## Mounting

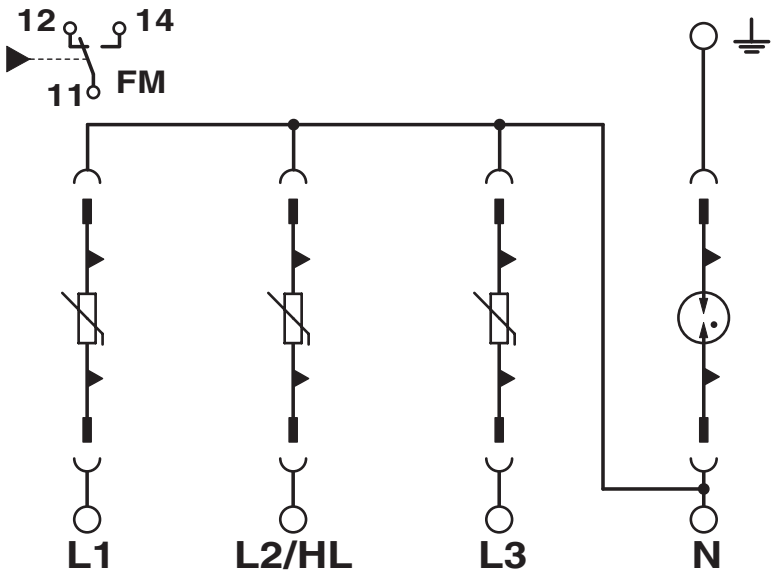
| | |
|---|---|
| Mounting type | DIN rail: 35 mm |

## Drawings

Dimensional drawing




Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1790750

**cULus Listed**
Approval ID: E330181-20251028

## Classifications

### ECLASS

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

### ETIM

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

## 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.) | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride(CAS: 552-30-7) |

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