# VAL-MS 400 ST - Type 2 surge protection plug

2816399

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Surge protection connector type 2 with high-capacity varistor for VAL-MS base element, thermal monitoring, visual fault warning. Design: 400 V AC

## Your advantages

- Quality proven millions of times over in the widest range of applications
- Rapid installation with bridges, thanks to industry-standard overall width of 1 HP
- Easy testing and insulation measurement, thanks to pluggable protection modules
- Wide range of applications due to various nominal voltages
- High degree of modularity provides individual solutions for every application

## Commercial data

| | |
|---|---|
| Item number | 2816399 |
| Packing unit | 10 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL18 |
| Product key | CL1321 |
| GTIN | 4017918131593 |
| Weight per piece (including packing) | 54.73 g |
| Weight per piece (excluding packing) | 51 g |
| Customs tariff number | 85363030 |
| Country of origin | DE |

## Technical data

### Notes

| | |
|---|---|
| Order information: | Use in DC applications on request |

General

| | |
|---|---|
| Note | Usable in all low-voltage systems between L-N or L-PEN.<br>Only usable in IT Systems between L-PE, if the exposed-conductive-parts (bodies) of the equipment of the low-voltage installation is connected to the earthing arrangement of the transformer substation. (interconnected earthing arrangement of the HV-transformer substation with the bodies of the LV-installation. $R_E = R_A$ accordance to IEC 60364-4-442 / VDE 0100-442 Fig. 44D / Example a) |

### Product properties

| | |
|---|---|
| Product type | Replacement plug |
| Product family | VALVETRAB MS |
| IEC test classification | II |
| | T2 |
| EN type | T2 |
| IEC power supply system | TN |
| | TT |
| | IT |
| Type | DIN rail module, two-section, divisible |
| Number of positions | 1 |
| Surge protection fault message | optical |
| Arrester can be tested with CHECKMASTER from software version: | From SW rev. 1.10 |

Insulation characteristics

| | |
|---|---|
| Overvoltage category | III |
| Pollution degree | 2 |

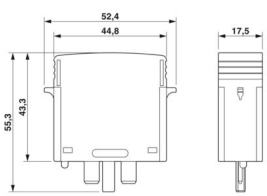
### Electrical properties

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

### Connection data

| | |
|---|---|
| Connection method | pluggable |

### Dimensions

| | |
|---|---|
| Dimensional drawing |  |

| | |
|---|---|
| Width | 17.5 mm |
| Height | 52.4 mm |
| Depth | 55.3 mm |
| Horizontal pitch | 1 HP |

## Material specifications

| | |
|---|---|
| Color | black (RAL 9005) |
| Flammability rating according to UL 94 | V-0 |
| CTI value of material | 600 |
| Insulating material | PA 6.6 |
| Material group | I |
| Housing material | PA 6.6 |

## Protective circuit

| | |
|---|---|
| Mode of protection | L-N |
| | L-PE |
| | L-PEN |
| Direction of action | 1L-N/PE |
| Nominal voltage $U_N$ | 240/415 V AC (TN) |
| | 240/415 V AC (TT) |
| | 230 V AC (IT) |
| Nominal frequency $f_N$ | 50 Hz (60 Hz) |
| Maximum continuous operating voltage $U_C$ | 440 V AC |
| Protective conductor current $I_{PE}$ | ≤ 0.45 mA |
| Standby power consumption $P_C$ | ≤ 200 mVA |
| Nominal discharge current $I_n$ (8/20) µs | 20 kA |
| Maximum discharge current $I_{max}$ (8/20) µs | 40 kA |
| Short-circuit current rating $I_{SCCR}$ | 25 kA |
| Voltage protection level $U_p$ | ≤ 2.2 kV |
| Residual voltage $U_{res}$ | ≤ 2.2 kV (at $I_n$) |
| | ≤ 1.8 kV (at 10 kA) |
| | ≤ 1.5 kV (at 5 kA) |
| | ≤ 1.4 kV (at 3 kA) |
| TOV behavior at $U_T$ | 440 V AC (5 s / withstand mode) |
| | 440 V AC (120 min / withstand mode) |
| Response time $t_A$ | ≤ 25 ns |
| Max. backup fuse with branch wiring | 125 A (gG) |

### Additional technical data

| | |
|---|---|
| TOV behavior at $U_T$ | 581 V AC (5 s / withstand mode) |
| | 762 V AC (5 s / safe failure mode) |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 80 °C |
| Ambient temperature (storage/transport) | -40 °C ... 80 °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-N) | 440 V AC |
| Nominal discharge current $I_n$ (L-N) | 20 kA |
| Mode of protection | L-N |
| Nominal voltage | 400 V AC |
| Power distribution system | Single phase |
| Nominal frequency | 50/60 Hz |
| Measured limiting voltage MLV (L-N) | 2280 V |
| SPD Type | 4CA |

## Standards and regulations

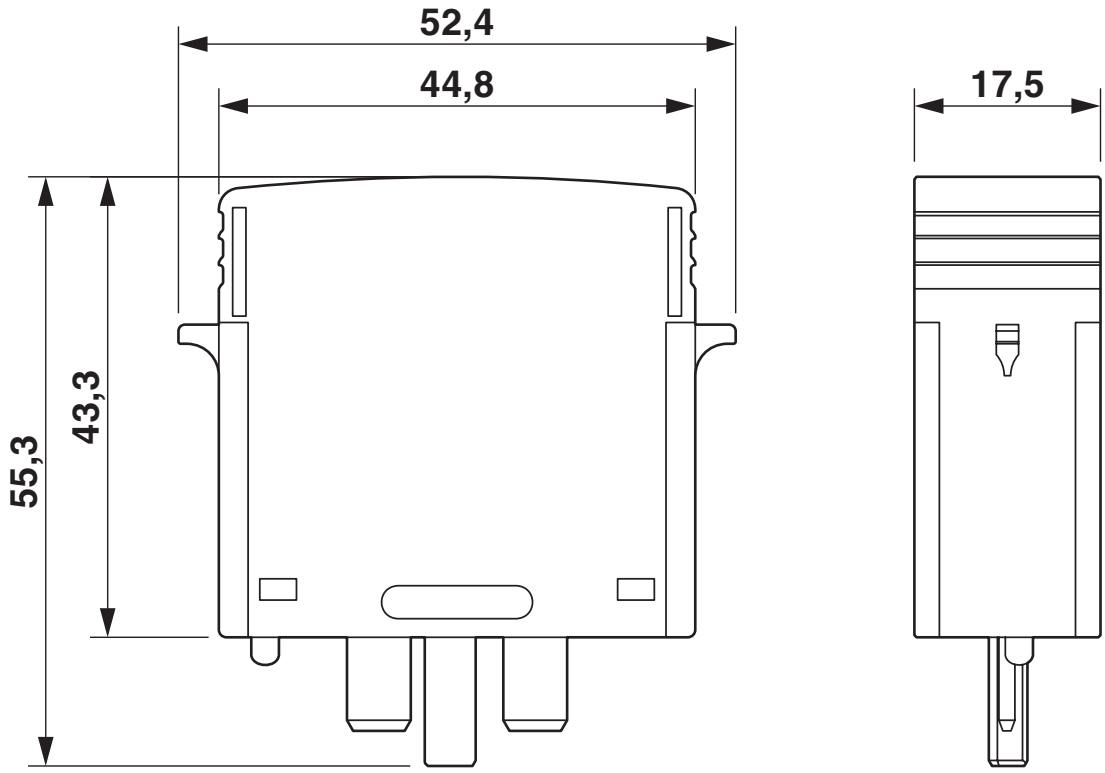
| | |
|---|---|
| Standards/specifications | IEC 61643-11 |
| Note | 2011 |
| Standards/specifications | EN 61643-11 |
| Note | 2012 |

## Mounting

| | |
|---|---|
| Mounting type | on base element |

## Drawings

Dimensional drawing




Circuit diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2816399

**cUL Recognized**
Approval ID: FILE E 330181

**UL Recognized**
Approval ID: FILE E 330181

**IECEE CB Scheme**
Approval ID: AT 2905/M1

**CCA**
Approval ID: NTR-AT 1947-A

**KEMA-KEUR**
Approval ID: 71-148002

**DNV GL**
Approval ID: TAE000041M

**CSA**
Approval ID: 13631

**ÖVE**
Approval ID: 18583-001-17

**UAE-RoHS**
Approval ID: 22-09-51251

**ÖVE**
Approval ID: 18583-001-18

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27171292 |
| ECLASS-15.0 | 27171292 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC002496 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121600 |

## 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.) | No substance above 0.1 wt% |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 0.62 kg CO2e |


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