

# VAL-CP-1S-350/O - Type 2 surge arrester



2881036

<https://www.phoenixcontact.com/us/products/2881036>

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Plug-in type 2 arrester (surge arrester) for single-phase power supply networks with separate N and PE (3-conductor system: L1, N, PE).

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 2881036                        |
| Packing unit                         | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | CL01                           |
| Product key                          | CL1311                         |
| GTIN                                 | 4046356049252                  |
| Weight per piece (including packing) | 210.7 g                        |
| Weight per piece (excluding packing) | 210.7 g                        |
| Customs tariff number                | 85363030                       |
| Country of origin                    | DE                             |

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## Technical data

### Notes

|                    |                                                                              |
|--------------------|------------------------------------------------------------------------------|
| Notes on operation | Does not apply to VAL-CP.../O. These versions do not have remote indication. |
|--------------------|------------------------------------------------------------------------------|

### Product properties

|                                |                                         |
|--------------------------------|-----------------------------------------|
| Product type                   | Surge arrester                          |
| 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            | 2                                       |
| Surge protection fault message | optical                                 |

### Insulation characteristics

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

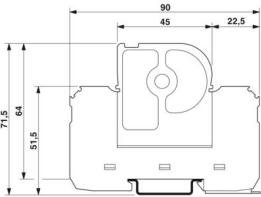
### Electrical properties

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

### Connection data

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| Connection method                | Screw connection                           |
| Screw thread                     | M5                                         |
| Tightening torque                | 4.5 Nm                                     |
| Stripping length                 | 16 mm                                      |
| Conductor cross-section flexible | 2.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Conductor cross-section rigid    | 2.5 mm <sup>2</sup> ... 25 mm <sup>2</sup> |
| Conductor cross-section AWG      | 12 ... 4                                   |

### Dimensions

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing |  |
| Width               | 25.3 mm                                                                              |
| Height              | 90 mm                                                                                |
| Depth               | 71.5 mm                                                                              |
| Horizontal pitch    | 1.4 Div.                                                                             |

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## Material specifications

|                                        |        |
|----------------------------------------|--------|
| Flammability rating according to UL 94 | V-0    |
| CTI value of material                  | 600    |
| Insulating material                    | PBT-FR |
| Material group                         | I      |
| Housing material                       | PBT-FR |

## Protective circuit

|                                                      |                                                            |
|------------------------------------------------------|------------------------------------------------------------|
| Mode of protection                                   | L-N                                                        |
|                                                      | L-PE                                                       |
|                                                      | N-PE                                                       |
| Direction of action                                  | 1L-N & N-PE                                                |
| Nominal voltage $U_N$                                | 240 V AC (TN-S)                                            |
|                                                      | 240 V AC (TT)                                              |
| Nominal frequency $f_N$                              | 50 Hz (60 Hz)                                              |
| Maximum continuous operating voltage $U_C$ (L-N)     | 350 V AC                                                   |
| Maximum continuous operating voltage $U_C$ (L-PE)    | 350 V AC                                                   |
| Maximum continuous operating voltage $U_C$ (N-PE)    | 264 V AC                                                   |
| Rated load current $I_L$                             | 40 A (Biconnect M4 fork-type cable lug 6 mm <sup>2</sup> ) |
|                                                      | 63 A (TWIN ferrule 2 x 10 mm <sup>2</sup> )                |
| Protective conductor current $I_{PE}$                | ≤ 1 μA                                                     |
| Nominal discharge current $I_n$ (8/20) μs (L-N)      | 20 kA                                                      |
| Nominal discharge current $I_n$ (8/20) μs (N-PE)     | 20 kA                                                      |
| Maximum discharge current $I_{max}$ (8/20) μs (L-N)  | 40 kA                                                      |
| Maximum discharge current $I_{max}$ (8/20) μs (N-PE) | 40 kA                                                      |
| Follow current interrupt rating $I_{fi}$ (N-PE)      | 100 A (264 V AC)                                           |
| Short-circuit current rating $I_{SCCR}$              | 25 kA                                                      |
| Voltage protection level $U_p$ (L-N)                 | ≤ 1.5 kV                                                   |
| Voltage protection level $U_p$ (L-PE)                | ≤ 1.9 kV                                                   |
| Voltage protection level $U_p$ (N-PE)                | ≤ 1.5 kV                                                   |
| Residual voltage $U_{res}$ (L-N)                     | ≤ 1.5 kV (at $I_n$ )                                       |
|                                                      | ≤ 1.3 kV (at 10 kA)                                        |
|                                                      | ≤ 1.2 kV (at 5 kA)                                         |
|                                                      | ≤ 1.1 kV (at 4 kA)                                         |
|                                                      | ≤ 1 kV (at 2 kA)                                           |
| Residual voltage $U_{res}$ (N-PE)                    | ≤ 0.5 kV (at $I_n$ )                                       |
|                                                      | ≤ 0.5 kV (at 10 kA)                                        |
|                                                      | ≤ 0.5 kV (at 5 kA)                                         |
|                                                      | ≤ 0.5 kV (at 4 kA)                                         |
|                                                      | ≤ 0.5 kV (at 2 kA)                                         |
| 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)                        |

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|                                             |                                                                                                                    |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Response time $t_A$ (L-N)                   | $\leq 25$ ns                                                                                                       |
| Response time $t_A$ (N-PE)                  | $\leq 100$ ns                                                                                                      |
| Max. backup fuse with V-type through wiring | 40 A (gG / Biconnect M4 fork-type cable lug, 6 mm <sup>2</sup> )<br>63 A (gG / TWIN ferrule 2x 10mm <sup>2</sup> ) |
| Max. backup fuse with branch wiring         | 315 A (gG)                                                                                                         |

## 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                                | $\leq 2000$ m (amsl)                                      |
| Permissible humidity (operation)        | 5 % ... 95 %                                              |
| Shock (operation)                       | 30g (Half-sine / 11 ms / 3x $\pm X$ , $\pm Y$ , $\pm Z$ ) |
| Vibration (operation)                   | 5g (10 ... 500 Hz / 2.5 h / X, Y, Z)                      |

## Approvals

### UL specifications

|                                                 |                   |
|-------------------------------------------------|-------------------|
| Maximum continuous operating voltage MCOV (L-N) | 350 V AC          |
| Maximum continuous operating voltage MCOV (L-G) | 350 V AC          |
| Maximum continuous operating voltage MCOV (N-G) | 264 V AC          |
| 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             |
| Mode of protection                              | L-N<br>L-G<br>N-G |
| Nominal voltage                                 | 240 V AC          |
| Power distribution system                       | Single phase      |
| Nominal frequency                               | 50/60 Hz          |
| Measured limiting voltage MLV (L-N)             | 2000 V            |
| Measured limiting voltage MLV (L-G)             | 2080 V            |
| Measured limiting voltage MLV (N-G)             | 950 V             |
| Follow current (L-G)                            | 200 A (264 V AC)  |
| SPD Type                                        | 4CA               |

### UL connection data

|                             |                                                     |
|-----------------------------|-----------------------------------------------------|
| Tightening torque           | 40 lb <sub>f</sub> -in. ... 50 lb <sub>f</sub> -in. |
| Conductor cross-section AWG | 14 ... 2 (solid)<br>14 ... 4 (flexible)             |

## Standards and regulations

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

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

## Mounting

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

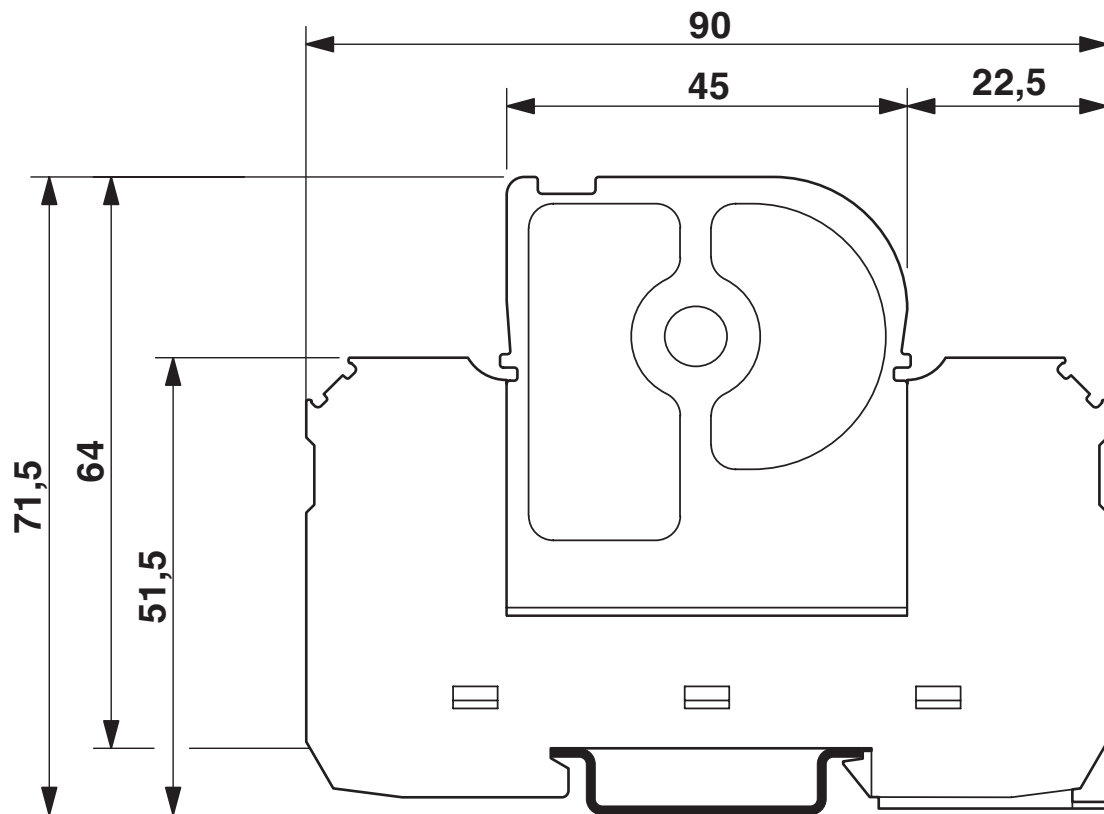
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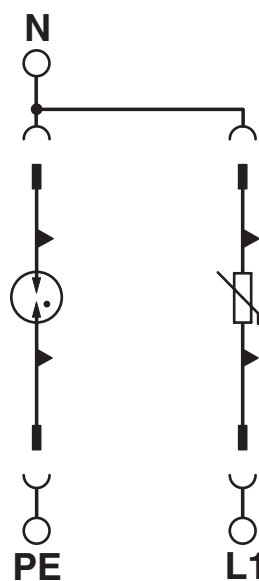
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## Drawings

Dimensional drawing



Circuit diagram



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## Environmental product compliance

EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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