

# VAL-US-120/40/1+1-FM - Surge protection device



2910349

<https://www.phoenixcontact.com/us/products/2910349>

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Surge protective device, UL Listed type 1 and IEC type 2, two channel with remote indicator contact for 120 V AC, 2-wire plus ground.

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2910349       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL17          |
| Product key                          | CL132U        |
| GTIN                                 | 4055626444901 |
| Weight per piece (including packing) | 225.2 g       |
| Weight per piece (excluding packing) | 225.2 g       |
| Customs tariff number                | 85363030      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                                |  |
|--------------------------------|--|
| Product type                   | Surge protection for NEMA power supply units |
| Product family                 | VALVETRAB US                                 |
| IEC test classification        | II<br>T2                                     |
| EN type                        | T2   |
| IEC power supply system        | TN-S<br>TT                                   |
| Type                           | DIN rail module, two-section, divisible      |
| Number of positions            | 2  |
| Surge protection fault message | Optical, remote indicator contact            |
| Number of ports                | One  |

### Insulation characteristics

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

### Electrical properties

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

### Indicator/remote signaling

|                    |                                |
|--------------------|--------------------------------|
| Connection name    | Remote fault indicator contact |
| Switching function | Changeover contact             |
| Operating voltage  | 5 V AC ... 250 V AC<br>30 V DC |
| Operating current  | 5 mA AC ... 1.5 A AC<br>1 A DC |

### Connection data

|                                  |   |
|----------------------------------|---|
| Connection method                | Screw connection  |
| Screw thread                     | M5  |
| Tightening torque                | 4.5 Nm (1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> )<br>4.5 Nm (25 mm <sup>2</sup> ... 35 mm <sup>2</sup> ) |
| Stripping length                 | 16 mm   |
| Conductor cross-section flexible | 1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup>  |
| Conductor cross-section rigid    | 1.5 mm <sup>2</sup> ... 35 mm <sup>2</sup>  |
| Conductor cross-section AWG      | 15 ... 2  |

### Remote fault indicator contact

|                   |                  |
|-------------------|------------------|
| Connection method | Screw connection |
| Screw thread      | M2               |
| Tightening torque | 0.25 Nm          |
| Stripping length  | 7 mm             |

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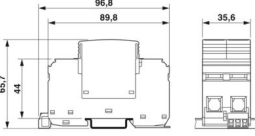


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|                                  |  |
|----------------------------------|--|
| Conductor cross-section flexible | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section rigid    | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section AWG      | 28 ... 16                                    |

## Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Width               | 35.6 mm  |
| Height              | 96.8 mm  |
| Depth               | 65.7 mm (incl. DIN rail 7.5 mm)  |
| Horizontal pitch    | 2 Div.   |

## Material specifications

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

## Mechanical properties

### Mechanical data

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

## Protective circuit

|  |                      |
|--|----------------------|
| Mode of protection                                       | L-N                  |
|  | L-PE                 |
|  | N-PE                 |
| Direction of action                                      | 1L-N & N-GND         |
| Nominal voltage $U_N$                                    | 120 V AC (TN-S)      |
|  | 120 V AC (TT)        |
| Nominal frequency $f_N$                                  | 50 Hz (60 Hz)        |
| Maximum continuous operating voltage $U_C$ (L-N)         | 175 V AC             |
| Maximum continuous operating voltage $U_C$ (N-PE)        | 264 V AC             |
| Rated load current $I_L$                                 | 80 A                 |
| Protective conductor current $I_{PE}$                    | $\leq 5 \mu\text{A}$ |
| Nominal discharge current $I_n$ (8/20) $\mu\text{s}$     | 20 kA                |
| Maximum discharge current $I_{max}$ (8/20) $\mu\text{s}$ | 40 kA                |
| Follow current interrupt rating $I_{fi}$ (N-PE)          | 100 A                |
| Short-circuit current rating $I_{SCCR}$                  | 25 kA                |

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|   |  |
|---|--|
| Voltage protection level $U_p$ (L-N)        | $\leq 0.9$ kV                          |
| Voltage protection level $U_p$ (L-PE)       | $\leq 1.6$ kV                          |
| Voltage protection level $U_p$ (N-PE)       | $\leq 1.5$ kV                          |
| Residual voltage $U_{res}$ (L-N)            | $\leq 0.9$ kV (at $I_n$ )              |
|   | $\leq 0.75$ kV (at 10 kA)              |
|   | $\leq 0.6$ kV (at 5 kA)                |
|   | $\leq 0.55$ kV (at 3 kA)               |
| Residual voltage $U_{res}$ (L-PE)           | $\leq 1.6$ kV (at $I_n$ )              |
|   | $\leq 1.2$ kV (at 10 kA)               |
|   | $\leq 1$ kV (at 5 kA)                  |
|   | $\leq 0.9$ kV (at 3 kA)                |
| Residual voltage $U_{res}$ (N-PE)           | $\leq 0.4$ kV (at $I_n$ )              |
|   | $\leq 0.25$ kV (at 10 kA)              |
|   | $\leq 0.15$ kV (at 5 kA)               |
|   | $\leq 0.1$ kV (at 3 kA)                |
| TOV behavior at $U_T$ (L-N)                 | 208 V AC (5 s / withstand mode)        |
|   | 240 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)                   | $\leq 25$ ns                           |
| Response time $t_A$ (L-PE)                  | $\leq 100$ ns                          |
| Response time $t_A$ (N-PE)                  | $\leq 100$ ns                          |
| Max. backup fuse with V-type through wiring | 80 A (gG)                              |
| Max. backup fuse with branch wiring         | 125 A (gG)                             |

## Environmental and real-life conditions

### 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                                | $\leq 2000$ m (amsl)                                      |
| Permissible humidity (operation)        | 5 % ... 95 %  |
| Shock (operation)                       | 25g (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       | 175 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-N)             | 700 V    |
| Voltage protection rating VPR (L-G)             | 1800 V   |

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|                                     |                         |
|-------------------------------------|-------------------------|
| Voltage protection rating VPR (N-G) | 1200 V                  |
| UL type                             | type 1                  |
| Nominal discharge current $I_n$     | 20 kA                   |
| Maximum Surge Current per Phase     | 40 kA                   |
| Mode of protection                  | L-N<br>L-G<br>N-G       |
| Nominal voltage                     | 120 V AC (Single Phase) |
| Power distribution system           | Single phase            |
| Nominal frequency                   | 50/60 Hz                |
| SPD Type                            | 1                       |

## UL indicator/remote signaling

|                      |          |
|----------------------|----------|
| Operating voltage    | 125 V AC |
| AC operating current | 1 A AC   |

## UL connection data

|                             |                         |
|-----------------------------|-------------------------|
| Tightening torque           | 30 lb <sub>F</sub> -in. |
| Conductor cross-section AWG | 14 ... 2                |

## Standards and regulations

### Air clearances and creepage distances

|                          |                          |
|--------------------------|--------------------------|
| Standards/regulations    | EN 60664-1 / EN 61643-11 |
| Standards/specifications | IEC 61643-11             |
| Note                     | 2011                     |
| Standards/specifications | EN 61643-11              |
| Note                     | 2012                     |

## Mounting

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

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## Drawings

Dimensional drawing



Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2910349>



**UL Listed**

Approval ID: FILE E 330181



**cUL Listed**

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

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## 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% |
|-------------------------------------|----------------------------|

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