

# VAL-US-240HLD/40/3+1-FM - Surge protection device



2910371

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Surge protective device, UL Listed type 1 and IEC type 2, four channel with remote indicator contact for 240 V AC high-leg DELTA.

## Your advantages

- Base element with floating remote indication contact
- Optical, mechanical status indication for the individual arresters
- Consists of base element and plug
- Mechanical coding of all slots
- Thermal disconnect device for each individual plug
- Pluggable

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2910371       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CL132U        |
| Product key                          | CL132U        |
| GTIN                                 | 4055626445106 |
| Weight per piece (including packing) | 401,8 g       |
| Weight per piece (excluding packing) | 401,8 g       |
| Customs tariff number                | 85363030      |
| Country of origin                    | DE            |

## Technical data

### Notes

#### General

|      |                                                                                                     |
|------|-----------------------------------------------------------------------------------------------------|
| Note | Nominal voltage $U_N = 120 \text{ V AC (L-N)}$ and $208 \text{ V AC (HL-N)}/240 \text{ V AC (L-L)}$ |
|------|-----------------------------------------------------------------------------------------------------|

### Product properties

|                                          |                                         |
|------------------------------------------|-----------------------------------------|
| Product family                           | VALVETRAB US                            |
| IEC test classification                  | II                                      |
|                                          | T2                                      |
| EN type                                  | T2                                      |
| IEC power supply system                  | TN-S                                    |
|                                          | TT                                      |
| Type                                     | DIN rail module, two-section, divisible |
| Distance between live and grounded parts | 5 mm                                    |
| Number of positions                      | 4                                       |
| Surge protection fault message           | Optical, remote indicator contact       |

#### 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            |
|                    | 30 V DC                        |
| Operating current  | 5 mA AC ... 750 mA AC          |
|                    | 1 A DC                         |

### Connection data

|                                  |                                                     |
|----------------------------------|-----------------------------------------------------|
| Connection method                | Screw connection                                    |
| Screw thread                     | M5                                                  |
| Tightening torque                | 3 Nm (1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> )  |
|                                  | 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                                            |
| Connection method                | Fork-type cable lug                                 |

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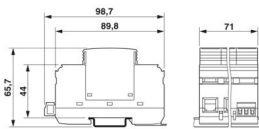
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|                                  |                                            |
|----------------------------------|--------------------------------------------|
| Conductor cross-section flexible | 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
|----------------------------------|--------------------------------------------|

## Remote fault indicator contact

|                                  |                                              |
|----------------------------------|----------------------------------------------|
| 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 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               | 71 mm                                                                              |
| Height              | 98.7 mm                                                                            |
| Depth               | 65.7 mm (incl. DIN rail 7.5 mm)                                                    |
| Horizontal pitch    | 4 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 (& HL-N)<br>N-PE                |
| Direction of action                               | 3L-N & N-GND                        |
| Nominal voltage $U_N$                             | 120/240 V AC (High-leg Delta, TN-S) |
| Nominal frequency $f_N$                           | 50 Hz (60 Hz)                       |
| Maximum continuous operating voltage $U_C$ (L-N)  | 175 V AC (275 V AC (HL-N))          |
| Maximum continuous operating voltage $U_C$ (L-PE) | 175 V AC (275 V AC (HL-PE))         |
| Maximum continuous operating voltage $U_C$ (N-PE) | 305 V AC                            |

|                                                    |                                                          |
|----------------------------------------------------|----------------------------------------------------------|
| Standby power consumption $P_C$                    | $\leq 120$ mVA (HL-N)                                    |
|                                                    | $\leq 400$ mVA (L-N)                                     |
| Nominal discharge current $I_n$ (8/20) $\mu$ s     | 20 kA                                                    |
| Maximum discharge current $I_{max}$ (8/20) $\mu$ s | 40 kA                                                    |
| Follow current interrupt rating $I_{fi}$ (N-PE)    | 100 A (305 V AC)                                         |
| Short-circuit current rating $I_{SCCR}$            | 25 kA                                                    |
| Voltage protection level $U_p$ (L-N)               | $\leq 0.9$ kV                                            |
| Voltage protection level $U_p$ (N-PE)              | $\leq 1.5$ kV                                            |
| Residual voltage $U_{res}$ (L-N)                   | $\leq 0.9$ kV / 2 kV (L-N) (at $I_n$ )                   |
|                                                    | $\leq 0.75$ kV / 1.7 kV (HL-N) (at 10 kA)                |
|                                                    | $\leq 0.6$ kV / 1.5 kA (HL-N) (at 5 kA)                  |
|                                                    | $\leq 0.55$ kV / 1.3 kV (HL-N) (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 (335 V AC (HL-N)) (5 s / withstand mode)        |
|                                                    | 240 V AC (440 V AC (HL-N)) (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 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 (L-L)  | 350 V AC                |
| Maximum Continuous Operating Voltage (MCOV HL-L) | 450 V AC                |
| Maximum continuous operating voltage MCOV (L-N)  | 175 V AC                |
| Maximum Continuous Operating Voltage (MCOV HL-N) | 275 V AC                |
| Maximum continuous operating voltage MCOV (L-G)  | 175 V AC (275 V (HL-G)) |
| Maximum continuous operating voltage MCOV (N-G)  | 305 V AC                |
| Short-circuit current rating (SCCR)              | 200 kA                  |

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|                                      |                               |
|--------------------------------------|-------------------------------|
| Voltage protection rating VPR (L-L)  | 1200 V                        |
| Voltage protection rating (VPR HL-L) | 1500 V                        |
| Voltage protection rating VPR (L-N)  | 700 V                         |
| Voltage protection rating (VPR HL-N) | 1000 V                        |
| Voltage protection rating VPR (L-G)  | 1200 V (1200 V (HL-G))        |
| 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 (HL-N)                    |
|                                      | N-G                           |
|                                      | L-G (HL-G)                    |
| Nominal voltage                      | 120/240 V AC (High-Leg Delta) |
| Power distribution system            | Delta                         |
| 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

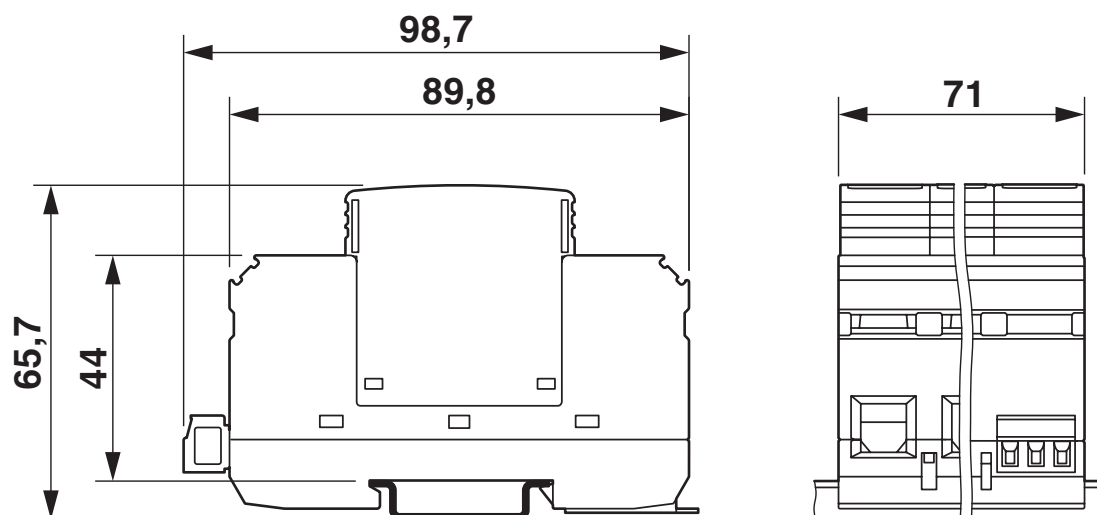
|                          |                          |
|--------------------------|--------------------------|
| Standards/regulations    | EN 60664-1 / EN 61643-11 |
| Standards/specifications | IEC 61643-11             |
| Note                     | 2011                     |
| Standards/specifications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

## Mounting

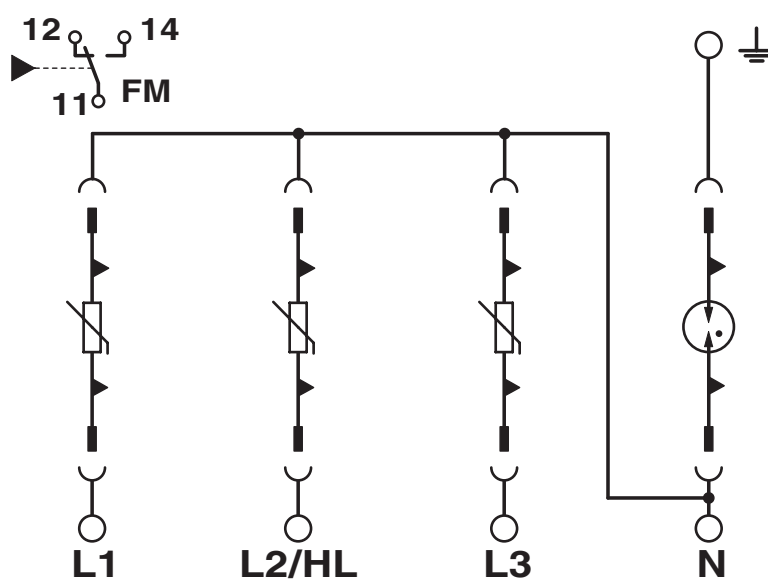
|               |                 |
|---------------|-----------------|
| Mounting type | DIN rail: 35 mm |
|---------------|-----------------|

## Drawings

Dimensional drawing



Circuit diagram



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## Approvals

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**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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