

VAL-US-240HLD/40/3+1-FM - Type 1 surge protection device



2910371

<https://www.phoenixcontact.com/us/products/2910371>

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Surge protective device, four channel with remote indicator contact for 240 V AC high-leg DELTA.

Commercial data

| | |
|--------------------------------------|--------------------|
| Item number | 2910371 |
| Packing unit | 1 pc |
| Sales key | CL17 |
| Product key | CL132U |
| Catalog page | Page 99 (C-4-2019) |
| 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 |

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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

| | |
|--------------------------------|----------------------------------------------|
| IEC test classification | II |
| | T2 |
| EN type | T2 |
| IEC power supply system | TN-S |
| | TT |
| Type | DIN rail module, two-section, divisible |
| Product type | Surge protection for NEMA power supply units |
| Product family | VALVETRAB US |
| 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 |

RCD switch

| | |
|-------------------------------------------------|----------------------|
| Rated residual operating current $I_{\Delta n}$ | $\leq 5 \mu\text{A}$ |
|-------------------------------------------------|----------------------|

Connection data

| | |
|----------------------------------|-----------------------------------------------------|
| Connection method | Screw connection |
| Screw thread | M5 |
| Tightening torque | 3 Nm (1.5 mm ² ... 16 mm ²) |
| | 4.5 Nm (25 mm ² ... 35 mm ²) |
| Stripping length | 16 mm |
| Conductor cross section flexible | 1.5 mm ² ... 25 mm ² |
| Conductor cross section rigid | 1.5 mm ² ... 35 mm ² |

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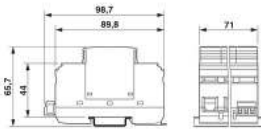
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| | |
|----------------------------------|--------------------------------------------|
| Conductor cross section AWG | 15 ... 2 |
| Connection method | Fork-type cable lug |
| Conductor cross section flexible | 1.5 mm ² ... 16 mm ² |

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 ² ... 1.5 mm ² |
| Conductor cross section rigid | 0.14 mm ² ... 1.5 mm ² |
| 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

| | |
|----------------------------------------|---------------|
| 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 PBT |

Protective circuit

| | |
|---------------------------------------------------|--------------------------|
| Mode of protection | L-N |
| | N-PE |
| Direction of action | 3L-N & N-GND |
| Nominal voltage U_N | 120/240 V AC (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-N) |
| Maximum continuous operating voltage U_C (N-PE) | 305 V AC |
| Standby power consumption P_C | ≤ 120 mVA (HL-N) |
| | ≤ 400 mVA (L-N) |
| Nominal discharge current I_n (8/20) μs | 20 kA |

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| | |
|----------------------------------------------------|--------------------------------------------------------|
| Maximum discharge current I_{max} (8/20) μ 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) | ≤ 0.9 kV 1.3 kA (HL-N) |
| Voltage protection level U_p (L-PE) | ≤ 1.6 kV |
| Voltage protection level U_p (N-PE) | ≤ 1.5 kV |
| Residual voltage U_{res} (L-N) | ≤ 0.9 kV 2 kV (L-N) (at I_n) |
| | ≤ 0.75 kV 1.7 kV (HL-N) (at 10 kA) |
| | ≤ 0.6 kV 1.5 kA (HL-N) (at 5 kA) |
| | ≤ 0.55 kV 1.3 kV (HL-N) (at 3 kA) |
| Residual voltage U_{res} (L-PE) | ≤ 1.6 kV (at I_n) |
| | ≤ 1.2 kV (at 10 kA) |
| | ≤ 1 kV (at 5 kA) |
| | ≤ 0.9 kV (at 3 kA) |
| Residual voltage U_{res} (N-PE) | ≤ 0.4 kV (at I_n) |
| | ≤ 0.25 kV (at 10 kA) |
| | ≤ 0.15 kV (at 5 kA) |
| | ≤ 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) | ≤ 25 ns |
| Response time t_A (L-PE) | ≤ 100 ns |
| Response time t_A (N-PE) | ≤ 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 | ≤ 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) |

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| | |
|-------------------------------------------------|---------------------------------|
| 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 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 _F ·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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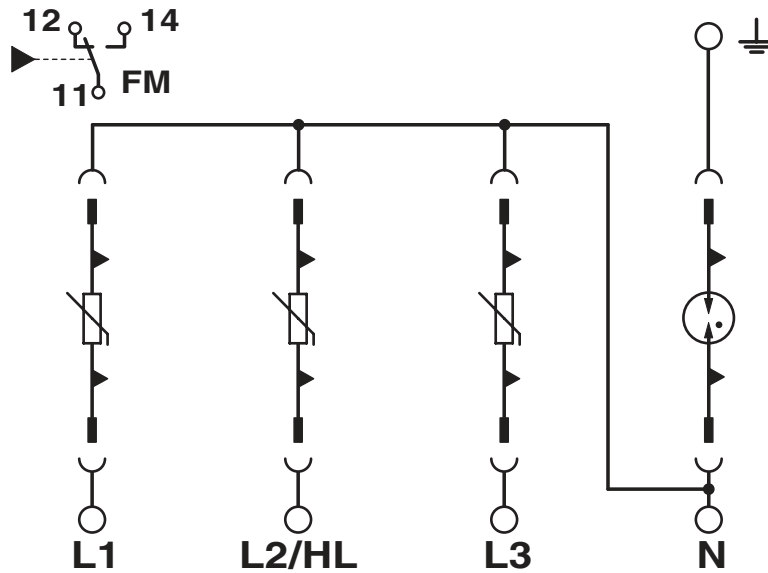


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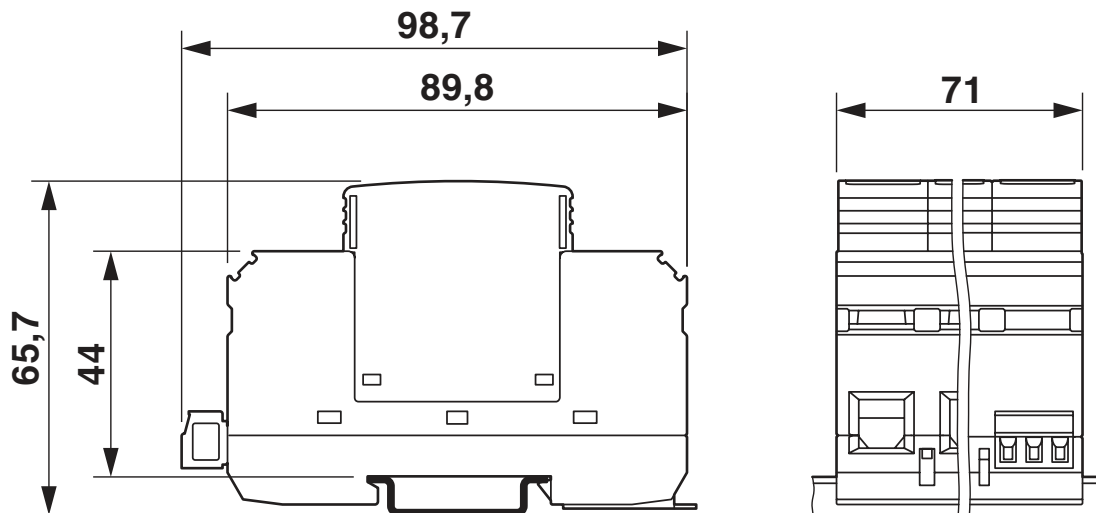
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Drawings

Circuit diagram



Dimensional drawing



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Approvals

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UL Listed

Approval ID: FILE E 330181



cUL Listed

Approval ID: FILE E 330181

cULus Listed

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27130805 |
| ECLASS-13.0 | 27171202 |

ETIM

| | |
|----------|----------|
| ETIM 8.0 | EC000941 |
|----------|----------|

UNSPSC

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

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Accessories

MPB F600X16/ 1GS - Wiring bridge

2818355

<https://www.phoenixcontact.com/us/products/2818355>



Wiring bridge flexible, diameter: 16 mm², with a fork-type cable lug on one side, length: 600 mm

MPB F200X16/ 1GS - Wiring bridge

2818339

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Wiring bridge flexible, diameter 16 mm², with a fork-type cable lug on one side, length: 200 mm

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MPB 18/1-10/1.0.0 - Wiring bridge

2830443

<https://www.phoenixcontact.com/us/products/2830443>



Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 10 pitches with contact sequence 1-0-0

MPB 18/4-12 - Wiring bridge

2809296

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Wiring bridge for modules with connecting pitch 17.5 mm, 4-phase, 12-pos.

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MPB 18/4- 8 - Wiring bridge

2809283

<https://www.phoenixcontact.com/us/products/2809283>

Wiring bridge for modules with connecting pitch 17.5 mm, 4-phase, 8-pos.



MPB 18/3- 6 - Wiring bridge

2809241

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Wiring bridge for modules with connecting pitch 17.5 mm, 3-phase, 6-pos.



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MPB 18/1-57 - Wiring bridge

2809238

<https://www.phoenixcontact.com/us/products/2809238>



Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 57-pos.

MPB 18/1-12 - Wiring bridge

2748593

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Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 12-pos.

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MPB 18/1- 9 - Wiring bridge

2748580

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Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 9-pos.

MPB 18/1- 8 - Wiring bridge

2748577

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Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 8-pos.

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MPB 18/1- 6 - Wiring bridge

2748564

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Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 6-pos.

MPB 18/1- 4 - Wiring bridge

2809225

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Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 4-pos.

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MPB 18/1- 3 - Wiring bridge

2809212

<https://www.phoenixcontact.com/us/products/2809212>

Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 3-pos.



MPB 18/1- 2 - Wiring bridge

2809209

<https://www.phoenixcontact.com/us/products/2809209>

Wiring bridge for modules with connecting pitch 17.5 mm, 1-phase, 2-pos.



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ZBN 18,LGS:ERDE - Marker for terminal blocks

2749589

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Marker for terminal blocks, Strip, white, labeled, horizontal: Grounding symbol, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

ZBN 18,LGS:L1-N,ERDE - Marker for terminal blocks

2749576

<https://www.phoenixcontact.com/us/products/2749576>



Marker for terminal blocks, Strip, white, labeled, horizontal: L1, L2, L3, N, GND, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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ZBN 18:UNBEDRUCKT - Zack marker strip

2809128

<https://www.phoenixcontact.com/us/products/2809128>



Zack marker strip, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snapped, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/us/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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DK-BIC-35 - Feed-through terminal block

2749880

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Feed-through terminal block for VAL and FLT applications



VAL-US-240D/40-P - Type 1 surge protection plug

2910337

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UL Recognized type 1 SPD and IEC type 2 surge protection plug with a varistor and thermal disconnect for use with VAL-US base elements, mechanical and visual fault warning



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VAL-US-120/40-P - Type 1 surge protection plug

2910335

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UL Recognized type 1 SPD and IEC type 2 surge protection plug with a varistor and thermal disconnect for use with VAL-US base elements, mechanical and visual fault warning

GDT-US-NG/40-P - Type 1 surge protection plug

2910342

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UL Recognized type 1 SPD and IEC type 2 surge protection plug with a gas discharge tube and thermal disconnect for use with VAL-US base elements, mechanical and visual fault warning

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