# STEP3-PS/1AC/24DC/1.3/PT - Power supply

1088494

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Primary-switched power supply unit STEP POWER, Push-in connection, DIN rail or direct mounting, input: 1-phase, output: 24 V DC / 1.3 A

## Product description

STEP POWER power supplies for distribution boards. The STEP POWER power supplies with Push-in connection technology are the professional solution for intelligent building automation. The compact devices are economical, space-saving, and flexible in application.

## Your advantages

- Energy savings with the highest level of efficiency in no-load and part-load operation (Efficiency Level VI)
- Space savings in the control cabinet due to the narrow design combined with increased performance (up to 100%)
- Approval for household purposes (EN 60335) allows use in domestic applications
- Quick and easy startup with tool-free Push-in connection technology at a 45° angle with double terminal points
- Flexible mounting: Snap onto a DIN rail or screw onto a level surface

## Commercial data

| | |
|---|---|
| Item number | 1088494 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM09 |
| Product key | CMPH13 |
| GTIN | 4055626890609 |
| Weight per piece (including packing) | 174 g |
| Weight per piece (excluding packing) | 170 g |
| Customs tariff number | 85044095 |
| Country of origin | VN |

# Technical data

## Input data

AC operation

| | |
|---|---|
| Supply system configuration | Star network (TN, TT, IT (PE)) |
| Input voltage range | 100 V AC ... 240 V AC -15 % ... +10 % |
| Typical national grid voltage | 120 V AC |
| | 230 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | typ. 22 A |
| Inrush current integral ($I^2t$) | typ. 0.27 $A^2s$ |
| Frequency range ($f_N$) | 50 Hz ... 60 Hz ±10 % |
| Mains buffering time | typ. 20 ms (120 V AC) |
| | typ. 100 ms (230 V AC) |
| Current consumption | 0.59 A (100 V AC) |
| | 0.33 A (240 V AC) |
| Protective circuit | Transient surge protection; Varistor |
| Switch-on time | typ. 2 s |
| Device mains fuse | 2 A internal (device protection), slow-blow |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |
| Discharge current to PE | < 0.25 mA |

DC operation

| | |
|---|---|
| Input voltage range | 110 V DC ... 250 V DC -20 % ... +40 % |
| Voltage type of supply voltage | DC |
| Current consumption | 0.31 A (110 V DC) |
| | 0.13 A (250 V DC) |

## Output data

| | |
|---|---|
| Efficiency | > 87.5 % (120 V AC) |
| | > 88.5 % (230 V AC) |
| Efficiency Level | VI |
| Nominal output voltage | 24 V DC |
| Nominal output current ($I_N$) | 1.3 A |
| Short-circuit-proof | yes |
| No-load proof | yes |
| Derating | > 50 °C ... 70 °C (2 % / K) |
| Crest factor | typ. 3.45 |
| | typ. 4.32 |
| Output power ($P_N$) | 30 W |
| Connection in parallel | yes, for increasing power and redundancy with diode |
| Connection in series | yes, for increased output voltage |
| Feedback voltage resistance | ≤ 35 V DC |

| | |
|---|---|
| Protection against overvoltage at the output (OVP) | < 35 V DC |
| Residual ripple | typ. 100 $mV_{PP}$ |
| Control deviation | < 0.5 % (Static load change 10 % ... 90 %) |
| | < 3 % (Dynamic load change 10 % ... 90 %, (10 Hz)) |
| | < 0.1 % (change in input voltage ±10 %) |
| Rise time | typ. 100 ms ($U_{Out}$ = 10 % ... 90 %) |
| Minimum no-load power dissipation | < 0.1 W (120 V AC) |
| Maximum no-load power dissipation | < 0.1 W (230 V AC) |
| Minimum nominal load power dissipation | < 4.4 W (120 V AC) |
| Power loss nominal load max. | < 3.9 W (230 V AC) |
| Integrated fuse protection | no |
| Fuse protection (secondary side) | electronic |

## Connection data

### Input

| | |
|---|---|
| Position | 1.x |

### Connection technology

| | |
|---|---|
| Position marking | 1.1, 1.2 (L), 1.3, 1.4 (N) |

### Conductor connection

| | |
|---|---|
| Connection method | Push-in connection |
| rigid | 0.2 mm² ... 2.5 mm² |
| | 1 mm² (recommended) |
| flexible | 0.2 mm² ... 2.5 mm² |
| | 1 mm² (recommended) |
| flexible with ferrule without plastic sleeve | 0.5 mm² ... 1.5 mm² |
| | 1 mm² (recommended) |
| flexible with ferrule with plastic sleeve | 0.2 mm² ... 1 mm² |
| | 1 mm² (recommended) |
| AWG | 17 |
| | 24 ... 14 (Cu) |
| Stripping length | 10 mm (rigid/flexible) |
| | 10 mm (Ferrule) |

### Output

| | |
|---|---|
| Position | 2.x |

### Connection technology

| | |
|---|---|
| Position marking | 2.1, 2.2 (+), 2.3, 2.4 (-) |

### Conductor connection

| | |
|---|---|
| Connection method | Push-in connection |
| rigid | 0.2 mm² ... 2.5 mm² |
| | 1 mm² (recommended) |
| flexible | 0.2 mm² ... 2.5 mm² |

| | |
|---|---|
| | 1 mm² (recommended) |
| flexible with ferrule without plastic sleeve | 0.5 mm² ... 1.5 mm² |
| | 1 mm² (recommended) |
| flexible with ferrule with plastic sleeve | 0.2 mm² ... 1 mm² |
| | 1 mm² (recommended) |
| AWG | 17 |
| | 24 ... 14 (Cu) |
| Stripping length | 10 mm (rigid/flexible) |
| | 10 mm (Ferrule) |

## Signaling

LED signaling

| | |
|---|---|
| Types of signaling | LED |
| Signal threshold | > 0,9 x $U_N$ ($U_N$ = 24 V DC) (LED lights up green) |
| | < 0,9 x $U_N$ ($U_N$ = 24 V DC) (LED off) |

## Electrical properties

| | |
|---|---|
| Number of phases | 1 |
| Insulation voltage input/output | 4 kV AC (type test) |
| | 3.75 kV AC (routine test) |

## Product properties

| | |
|---|---|
| Product type | Power supply |
| Product family | STEP POWER |
| MTBF (IEC 61709, SN 29500) | > 3100000 h (25 °C) |
| | > 1600000 h (40 °C) |
| | > 1000000 h (50 °C) |
| Environmental protection directive | RoHS Directive 2011/65/EU |
| | WEEE |
| | Reach |

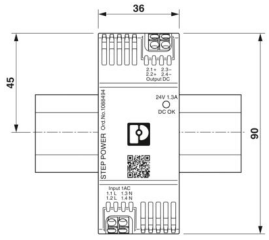
Insulation characteristics

| | |
|---|---|
| Protection class | II (in closed control cabinet) |
| Overvoltage category (EN 61010-1) | II (≤ 4000 m) |
| Overvoltage category (EN 62477-1) | III (≤ 2000 m) |
| Degree of pollution | 2 |

## Dimensions

Item dimensions

| | |
|---|---|
| Width | 36 mm |
| Height | 90 mm |
| Depth | 61 mm |
| Depth (Device depth (DIN rail mounting)) | 55 mm (Device depth (DIN rail mounting)) |

| | |
|---|---|
| Dimensional drawing |   |
| Horizontal pitch | 2 Div. (DIN 43880) |

Installation dimensions

| | |
|---|---|
| Installation distance right/left | 0 mm / 0 mm |
| Installation distance top/bottom | 30 mm / 30 mm |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail or direct mounting |
| Assembly note | alignable: 0 mm horizontally, 30 mm vertically |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |
| With protective coating | no |

## Material specifications

| | |
|---|---|
| Flammability rating according to UL 94 | V0 (Housing, terminal blocks, base latches) |
| Housing material | Plastic |
| Housing material | PC |
| Foot latch material | Polyamid |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -10 °C ... 70 °C (Derating: > 50 °C; 2 %/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Ambient temperature (start-up type tested) | -25 °C |
| Maximum altitude | ≤ 4000 m (> 2000 m, Derating: 10 %/1000 m) |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing) |
| Shock (operation) | 18 ms, 30g, per spatial direction (IEC 60068-2-27) |
| Vibration (operation) | < 15 Hz, amplitude ±2.5 mm (IEC 60068-2-6) |
| | 15 Hz ... 150 Hz, 2.3g, 90 min. |
| Temp code | T4 (-10 ... +70 °C; > 50 °C, Derating: 2 %/K) |

## Standards and regulations

Safety extra-low voltage

| | |
|---|---|
| Standard designation | Safety extra-low voltage |
| Standards/specifications | IEC 61010-1 (SELV) |

Protective extra-low voltage

| | |
|---|---|
| Standard designation | Protective extra-low voltage |
| Standards/specifications | IEC 61010-2-201 (PELV) |

Safe isolation

| | |
|---|---|
| Standard designation | Safe isolation |
| Standards/specifications | IEC 61558-2-16 |

Low-voltage power supplies, DC output

| | |
|---|---|
| Standard designation | Low-voltage power supplies, DC output |
| Standards/specifications | EN 61204-3 |

Safety requirements for electrical equipment for measurement, control, and laboratory use

| | |
|---|---|
| Standard designation | Safety requirements for electrical equipment for measurement, control, and laboratory use |
| Standards/specifications | IEC 61010-1 |

Household and similar electrical appliances - Safety

| | |
|---|---|
| Standard designation | Safety of electrical devices for household use and similar purposes |
| Standards/specifications | DIN EN 60335-1 |

Electric vehicle conductive charging system - Part 21-2: EMC requirements for off board electric vehicle charging systems

| | |
|---|---|
| Standard designation | Electric vehicle conductive charging system - Part 21-2: EMC requirements for off board electric vehicle charging systems |
| Standards/specifications | IEC 61851-21-2 |
| Note | Class B |

## Approvals

UL

| | |
|---|---|
| Identification | UL 1310 Class 2 Power Units |

UL

| | |
|---|---|
| Identification | UL/C-UL Listed UL 61010-1 |

UL

| | |
|---|---|
| Identification | UL/C-UL Listed UL 61010-2-201 |

UL

| | |
|---|---|
| Identification | UL/C-UL Listed ANSI/UL 121201 Class I, Division 2, Groups A, B, C, D (Hazardous Location) |

## EMC data

| | |
|---|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| Interference emission | Interference emission in accordance with EN 61000-6-3 (residential and commercial) and EN 61000-6-4 (industrial) |
| Noise immunity | EN 61000-6-2:2005 |

Conducted noise emission

| | |
|---|---|
| Standards/regulations | EN 55016 |
| | EN 61000-6-3 (Class B) |

Noise emission

| | |
|---|---|
| Standards/regulations | EN 55016 |
| | EN 61000-6-3 (Class B) |

Harmonic currents

| | |
|---|---|
| Standards/regulations | EN 61000-3-2 |
| | EN 61000-3-2 (Class A) |

Flicker

| | |
|---|---|
| Standards/regulations | EN 61000-3-3 |
| Frequency range | 0 kHz ... 2 kHz |

Electrostatic discharge

| | |
|---|---|
| Standards/regulations | EN 61000-4-2 |

Electrostatic discharge

| | |
|---|---|
| Contact discharge | 6 kV (Test Level 3) |
| Discharge in air | 8 kV (Test Level 3) |
| Comments | Criterion A |

Electromagnetic HF field

| | |
|---|---|
| Standards/regulations | EN 61000-4-3 |

Electromagnetic HF field

| | |
|---|---|
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 10 V/m (Test Level 3) |
| Frequency range | 1 GHz ... 6 GHz |
| Test field strength | 10 V/m (Test Level 3) |
| Comments | Criterion A |

Fast transients (burst)

| | |
|---|---|
| Standards/regulations | EN 61000-4-4 |

Fast transients (burst)

| | |
|---|---|
| Input | asymmetrical 4 kV (Test Level 4) |
| Output | asymmetrical 2 kV (Test Level 3) |
| Comments | Criterion A |

Surge voltage load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |

Surge voltage load (surge)

| | |
|---|---|
| Input | symmetrical 2 kV (Test Level 4) |
| | asymmetrical 4 kV (Test Level 4) |
| Output | symmetrical 1 kV (Test Level 3) |
| | asymmetrical 2 kV (Test Level 3) |

| | |
|---|---|
| Comments | Criterion A |

Conducted interference

| | |
|---|---|
| Standards/regulations | EN 61000-4-6 |

Conducted interference

| | |
|---|---|
| Input/Output | asymmetrical |
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V (Test Level 3) |

Voltage dips

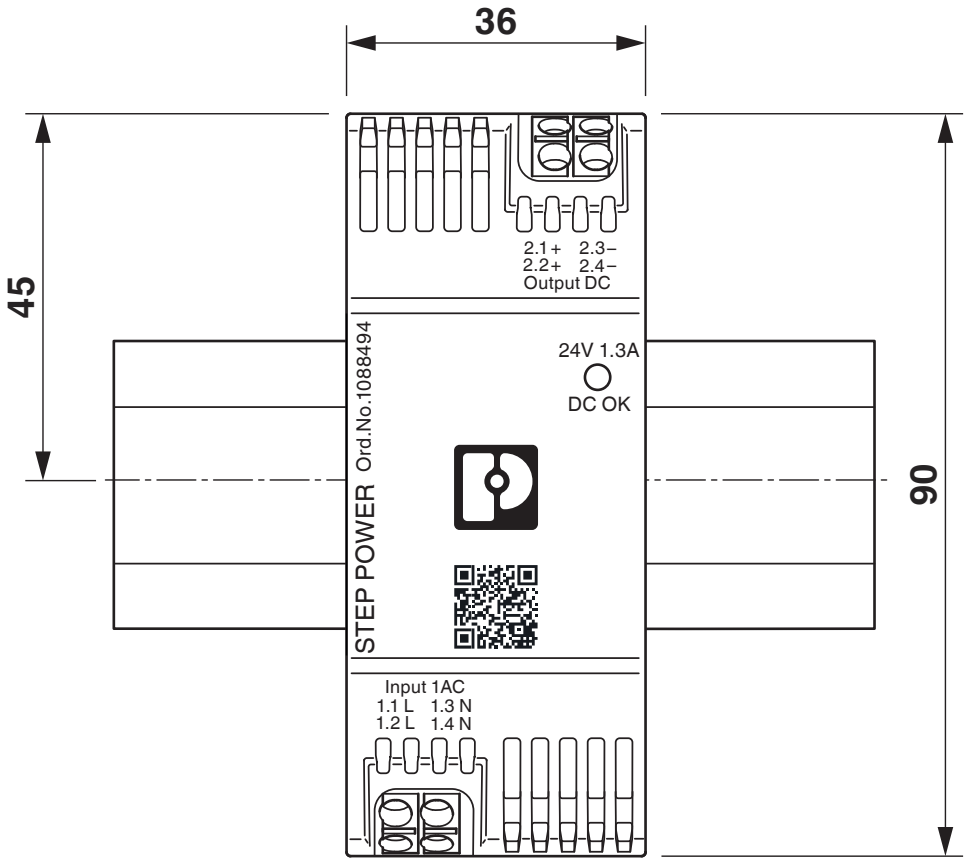
| | |
|---|---|
| Standards/regulations | EN 61000-4-11 |
| Voltage | 230 V AC |
| Frequency | 50 Hz |
| Voltage dip | 70 % |
| Number of periods | 25 periods |
| Additional text | Class 3 |
| Comments | Criterion A |
| Voltage dip | 40 % |
| Number of periods | 10 periods |
| Additional text | Class 3 |
| Comments | Criterion A |
| Voltage dip | 0 % |
| Number of periods | 1 period |
| Additional text | Class 3 |
| Comments | Criterion A |

Criteria

| | |
|---|---|
| Criterion A | Normal operating behavior within the specified limits. |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |
| Criterion C | Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements. |

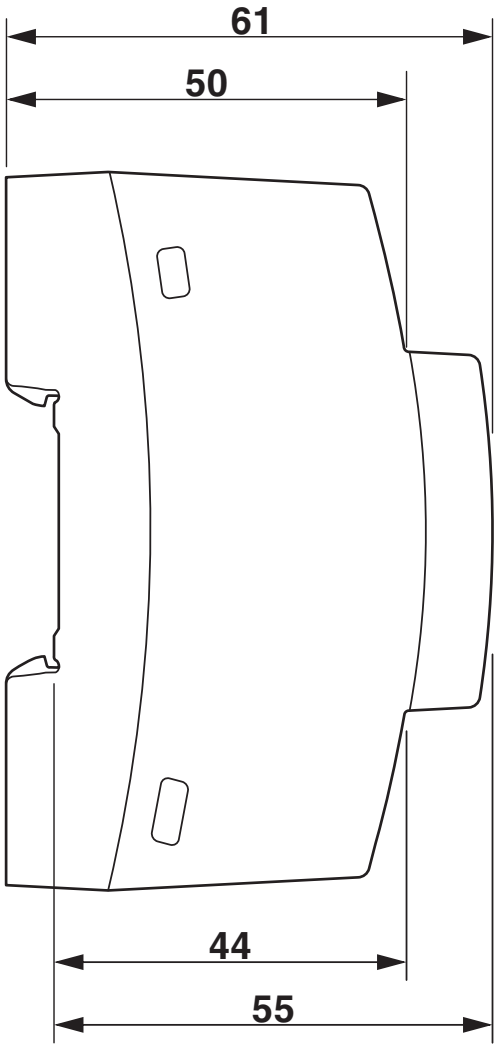
## Drawings

Dimensional drawing



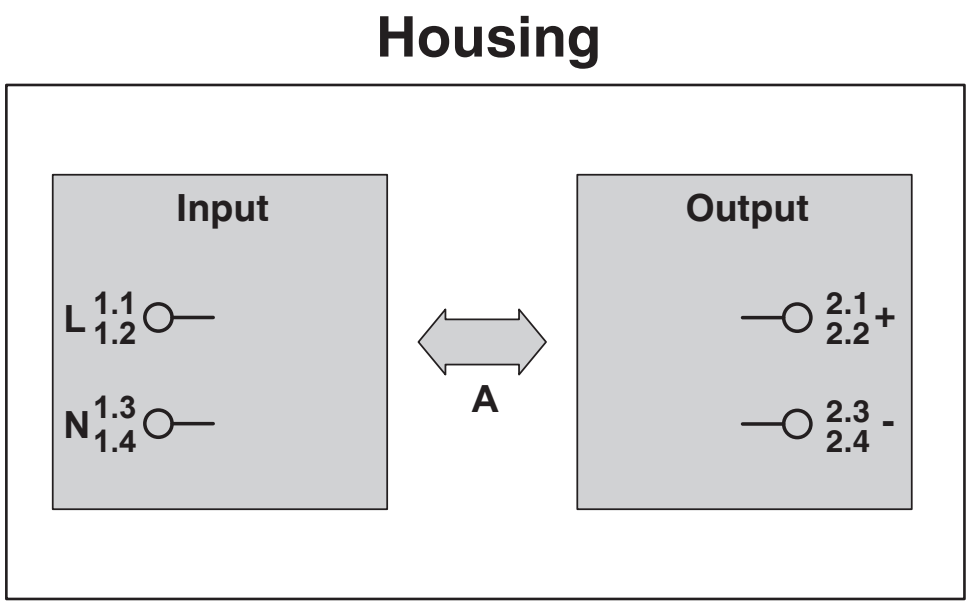

Device dimensions (dimensions in mm)

Dimensional drawing



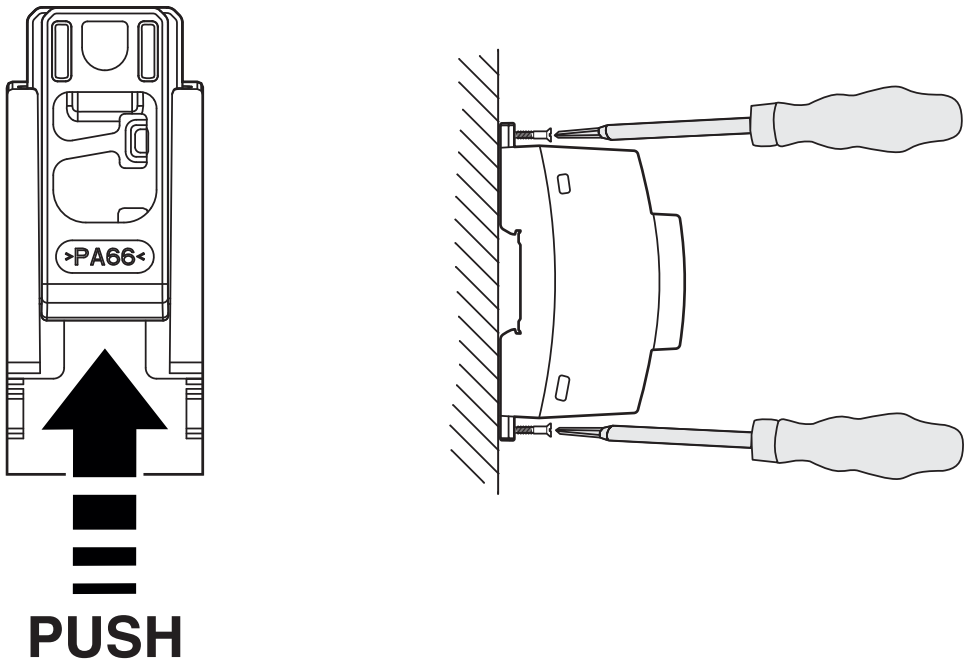

Device dimensions (dimensions in mm)

Schematic diagram



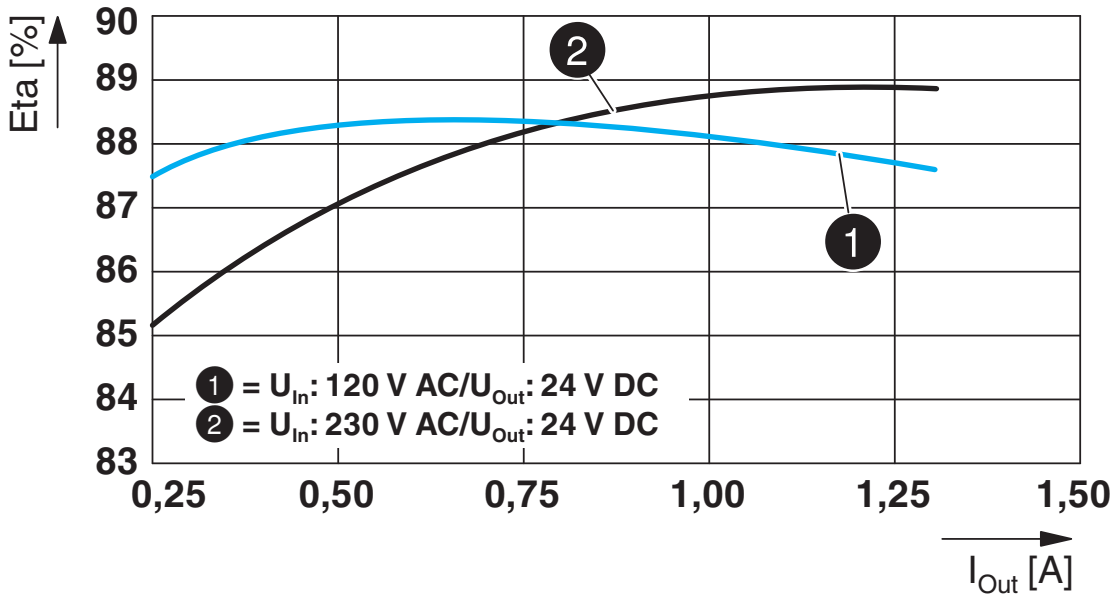

Test sections, insulation voltage

Schematic diagram



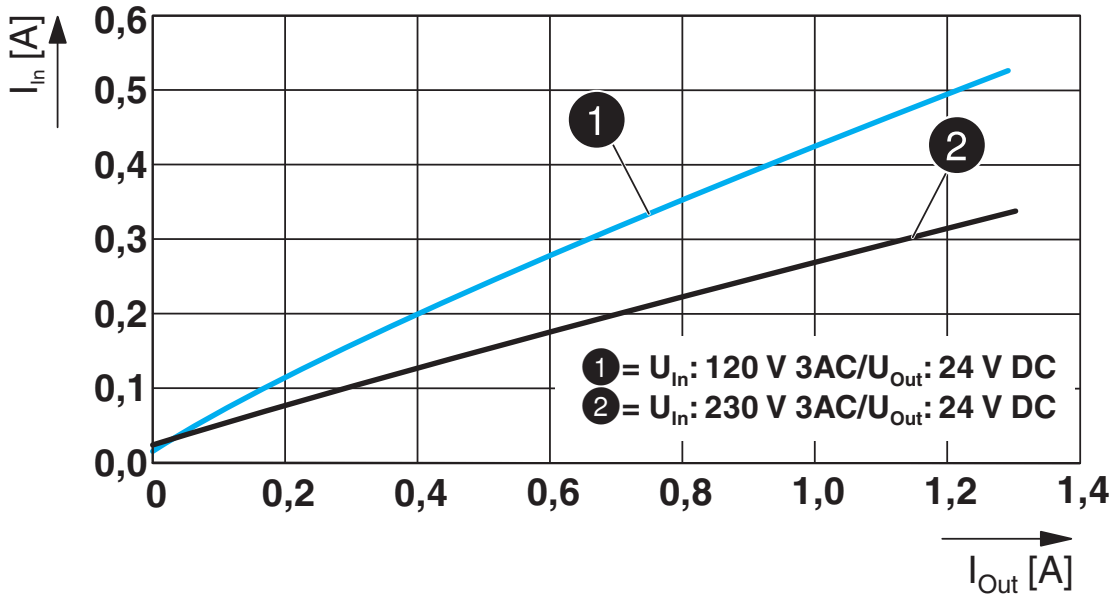

Mounting option

Diagram



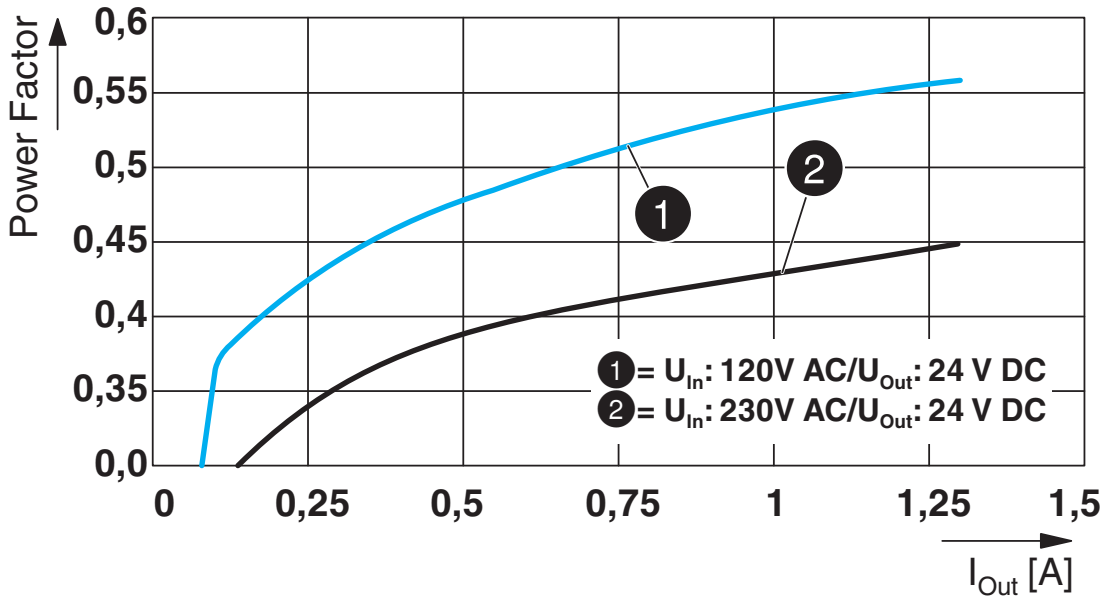

Efficiency

Diagram



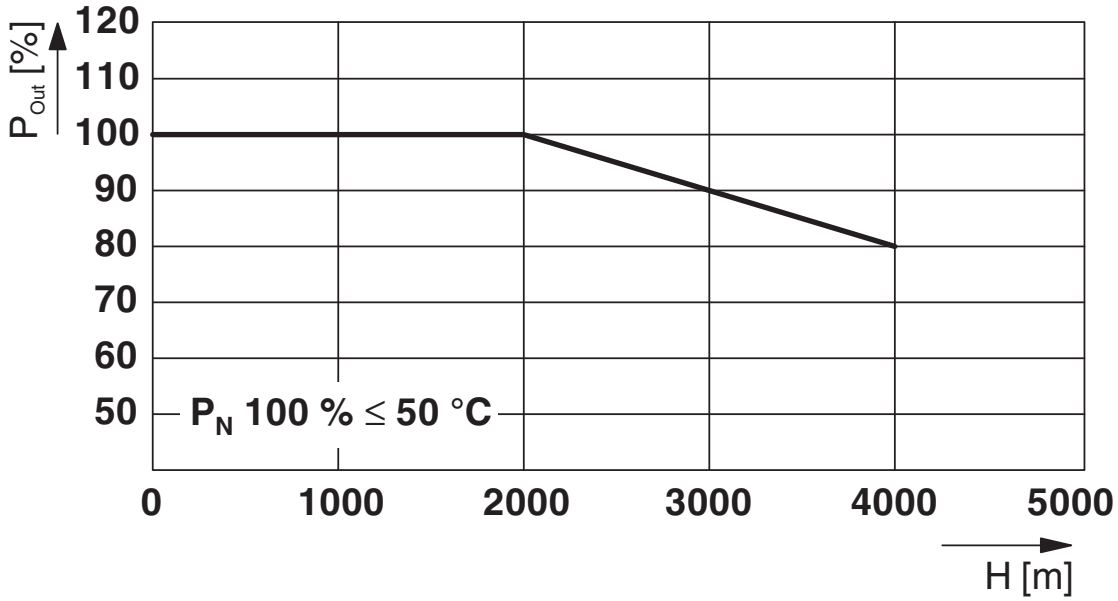

Input current/output current

Diagram



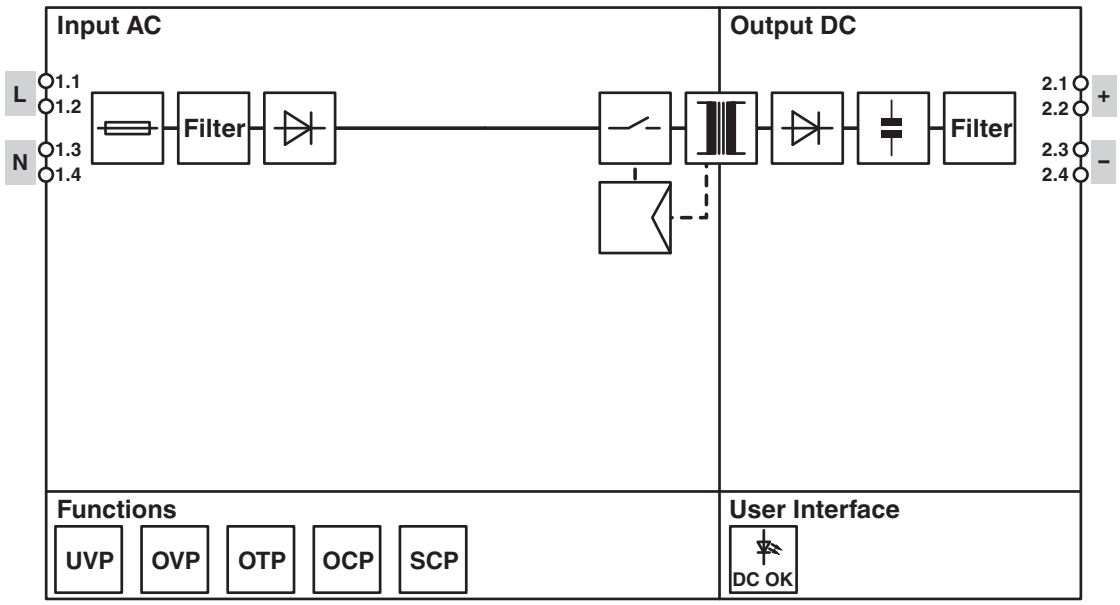

Power factor

Diagram




Output power/installation altitude

Block diagram




Block diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1088494

**cULus Listed**
Approval ID: FILE E 123528

**EAC**
Approval ID: RU S-DE.BL08.W.00764

**EAC**
Approval ID: RU S-DE.BL08.W.00764

**BIS Licence Document**
Approval ID: R-41259195

**cULus Listed**
Approval ID: FILE E 199827

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27040701 |
| ECLASS-15.0 | 27040701 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC002540 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121000 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 7(c)-I |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-25 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|---|---|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| SCIP | eab21025-5bc8-4042-a9c9-cbba4e26e873 |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 5.048 kg CO2e |

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