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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 / 0.63 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                          | 1088495       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CM09          |
| Product key                          | CMPH13        |
| GTIN                                 | 4055626889436 |
| Weight per piece (including packing) | 91 g          |
| Weight per piece (excluding packing) | 70 g          |

# STEP3-PS/1AC/24DC/0.63/PT - Power supply



1088495

<https://www.phoenixcontact.com/us/products/1088495>

|                       |          |
|-----------------------|----------|
| 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<br>230 V AC                           |
| Voltage type of supply voltage           | AC                                             |
| Inrush current                           | typ. 30 A (25 °C)                              |
| Inrush current integral ( $I^2t$ )       | typ. 0.14 A <sup>2</sup> s                     |
| Frequency range ( $f_N$ )                | 50 Hz ... 60 Hz $\pm 10$ %                     |
| Mains buffering time                     | typ. 20 ms (120 V AC)<br>typ. 90 ms (230 V AC) |
| Current consumption                      | 0.29 A (100 V AC)<br>0.16 A (240 V AC)         |
| Switch-on time                           | typ. 2 s                                       |
| Device mains fuse                        | 1.25 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            | 0.16 A (110 V DC)<br>0.07 A (250 V DC) |

### Output data

|                                                    |                                                     |
|----------------------------------------------------|-----------------------------------------------------|
| Efficiency                                         | > 86 % (120 V AC)<br>> 87 % (230 V AC)              |
| Efficiency Level                                   | VI                                                  |
| Nominal output voltage                             | 24 V DC                                             |
| Nominal output current ( $I_N$ )                   | 0.63 A                                              |
| Short-circuit-proof                                | yes                                                 |
| No-load proof                                      | yes                                                 |
| Derating                                           | > 50 °C ... 70 °C (2 % / K)                         |
| Crest factor                                       | typ. 3.24<br>typ. 4.17                              |
| Output power ( $P_N$ )                             | 15 W                                                |
| Connection in parallel                             | yes, for increasing power and redundancy with diode |
| Connection in series                               | yes, for increased output voltage                   |
| Feedback voltage resistance                        | $\leq 35$ V DC                                      |
| Protection against overvoltage at the output (OVP) | < 35 V DC                                           |

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|                                        |                                                    |
|----------------------------------------|----------------------------------------------------|
| Residual ripple                        | typ. 100 mV <sub>PP</sub>                          |
| Control deviation                      | < 0.5 % (Static load change 10 % ... 90 %)         |
|                                        | < 4 % (Dynamic load change 10 % ... 90 %, (10 Hz)) |
|                                        | < 0.1 % (change in input voltage ±10 %)            |
| Rise time                              | typ. 100 ms (U <sub>Out</sub> = 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 | < 2.5 W (120 V AC)                                 |
| Power loss nominal load max.           | < 2.3 W (230 V AC)                                 |
| Integrated fuse protection             | no                                                 |
| Fuse protection (secondary side)       | electronic                                         |

## Connection data

### Input

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

### Connection technology: Positions

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

### Conductor connection

|                                                               |                        |
|---------------------------------------------------------------|------------------------|
| Connection method                                             | Push-in connection     |
| rigid (Terminal block)                                        | 0.2 mm² ... 2.5 mm²    |
| rigid (recommended)                                           | 1 mm² (recommended)    |
| flexible (Klemme)                                             | 0.2 mm² ... 2.5 mm²    |
| flexible (empfohlen)                                          | 1 mm² (recommended)    |
| flexible with ferrule without plastic sleeve (Terminal block) | 0.25 mm² ... 2.5 mm²   |
| flexible with ferrule without plastic sleeve (recommended)    | 1 mm² (recommended)    |
| flexible with ferrule with plastic sleeve (Terminal block)    | 0.25 mm² ... 1 mm²     |
| flexible with ferrule with plastic sleeve (recommended)       | 1 mm² (recommended)    |
| AWG (recommended)                                             | 17                     |
| AWG (Terminal block)                                          | 24 ... 12 (Cu)         |
| Stripping length (starr/flexibel)                             | 10 mm (rigid/flexible) |
| Stripping length (Aderendhülse)                               | 10 mm (Ferrule)        |

### Output

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

### Connection technology: Positions

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

### Conductor connection

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

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|                                                               |                                              |
|---------------------------------------------------------------|----------------------------------------------|
| flexible with ferrule without plastic sleeve (Terminal block) | 0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| flexible with ferrule without plastic sleeve (recommended)    | 1 mm <sup>2</sup> (recommended)              |
| flexible with ferrule with plastic sleeve (Terminal block)    | 0.25 mm <sup>2</sup> ... 1 mm <sup>2</sup>   |
| flexible with ferrule with plastic sleeve (recommended)       | 1 mm <sup>2</sup> (recommended)              |
| AWG (recommended)                                             | 17                                           |
| AWG (Terminal block)                                          | 24 ... 12 (Cu)                               |
| Stripping length (starr/flexibel)                             | 10 mm (rigid/flexible)                       |
| Stripping length (Aderendhülse)                               | 10 mm (Ferrule)                              |

## Signaling

### LED signaling

|                    |                                                                         |
|--------------------|-------------------------------------------------------------------------|
| Types of signaling | LED                                                                     |
| Signal threshold   | > 0,9 x U <sub>N</sub> (U <sub>N</sub> = 24 V DC) (LED lights up green) |
|                    | < 0,9 x U <sub>N</sub> (U <sub>N</sub> = 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)         | > 3500000 h (25 °C)       |
|                                    | > 1800000 h (40 °C)       |
|                                    | > 1200000 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                                    | 18 mm                                    |
| Height                                   | 90 mm                                    |
| Depth                                    | 61 mm                                    |
| Depth (Device depth (DIN rail mounting)) | 55 mm (Device depth (DIN rail mounting)) |

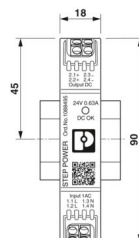
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## Dimensional drawing



## Horizontal pitch

1 HP (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                                                                                                |

# STEP3-PS/1AC/24DC/0.63/PT - Power supply



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## 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) |

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|          |                                  |
|----------|----------------------------------|
| 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. |

# STEP3-PS/1AC/24DC/0.63/PT - Power supply

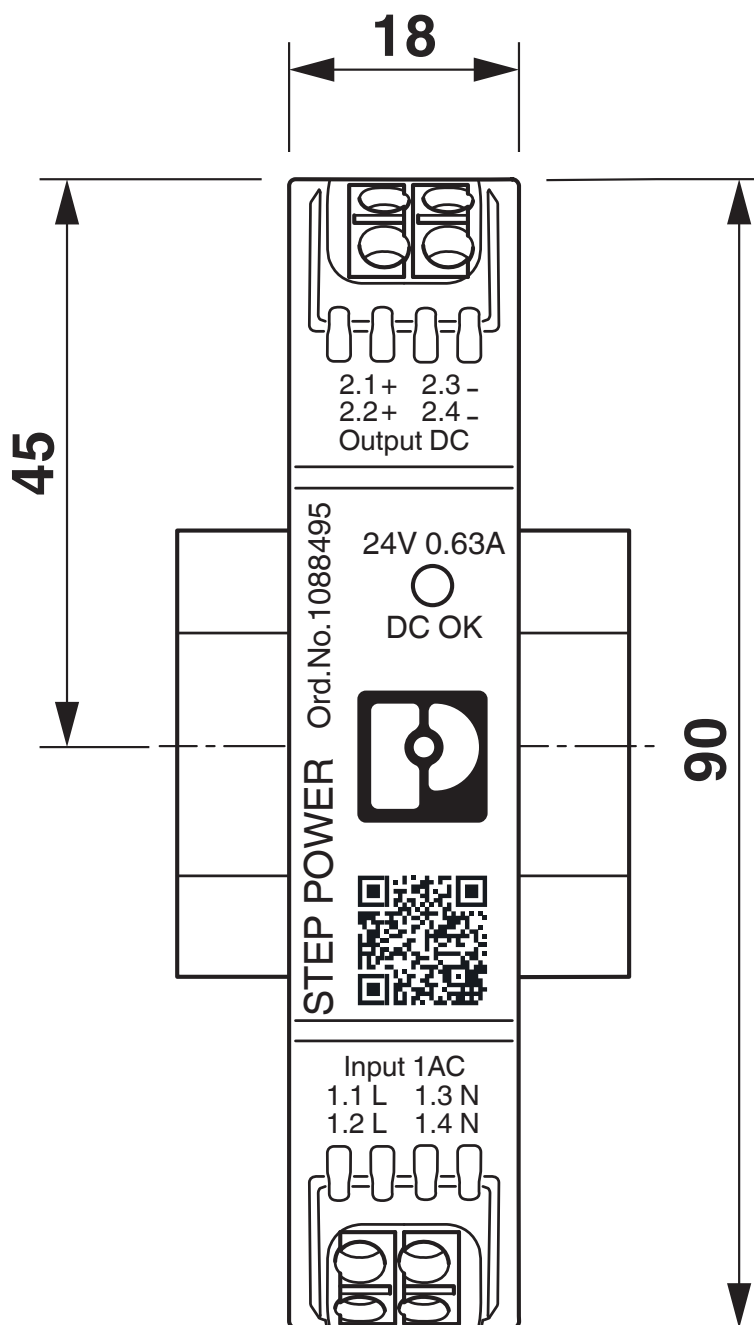
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## Drawings

Dimensional drawing

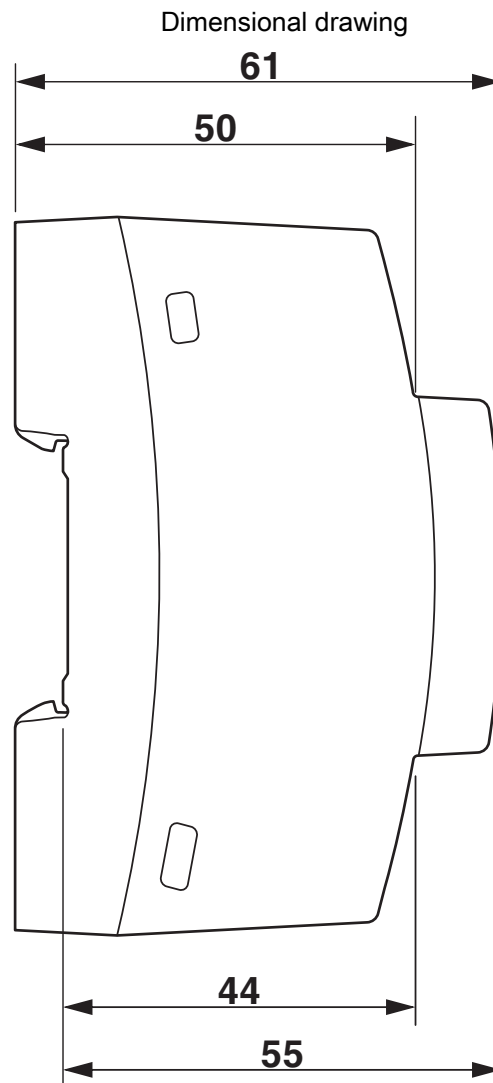


Device dimensions (dimensions in mm)

# STEP3-PS/1AC/24DC/0.63/PT - Power supply

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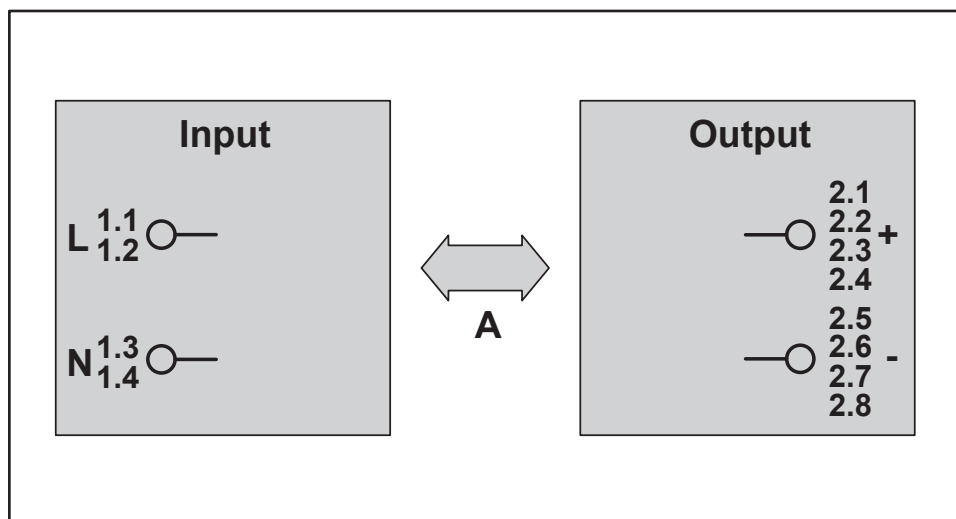
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Device dimensions (dimensions in mm)

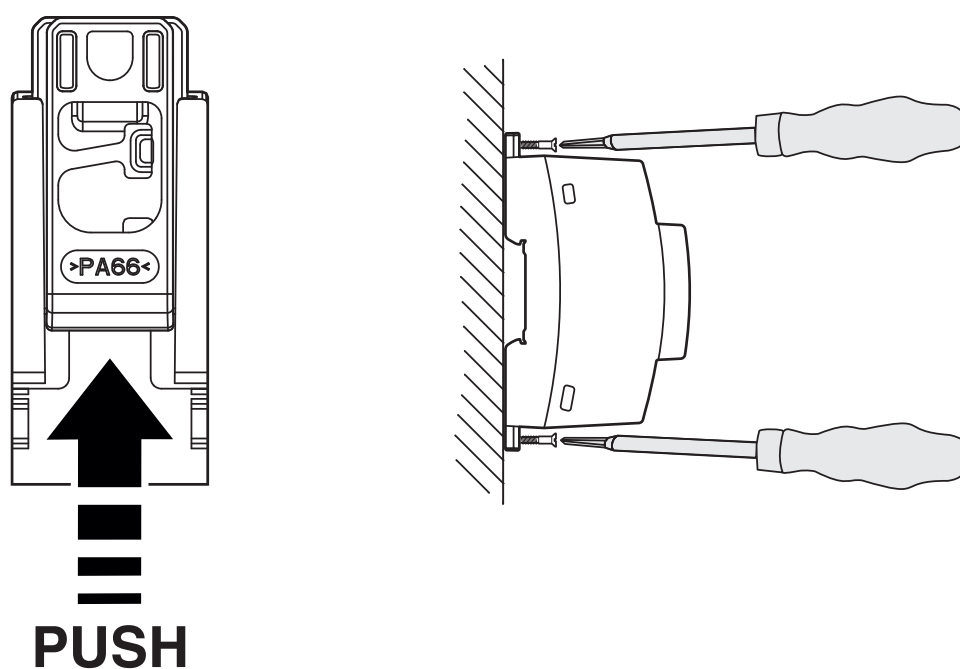
Schematic diagram

## Housing

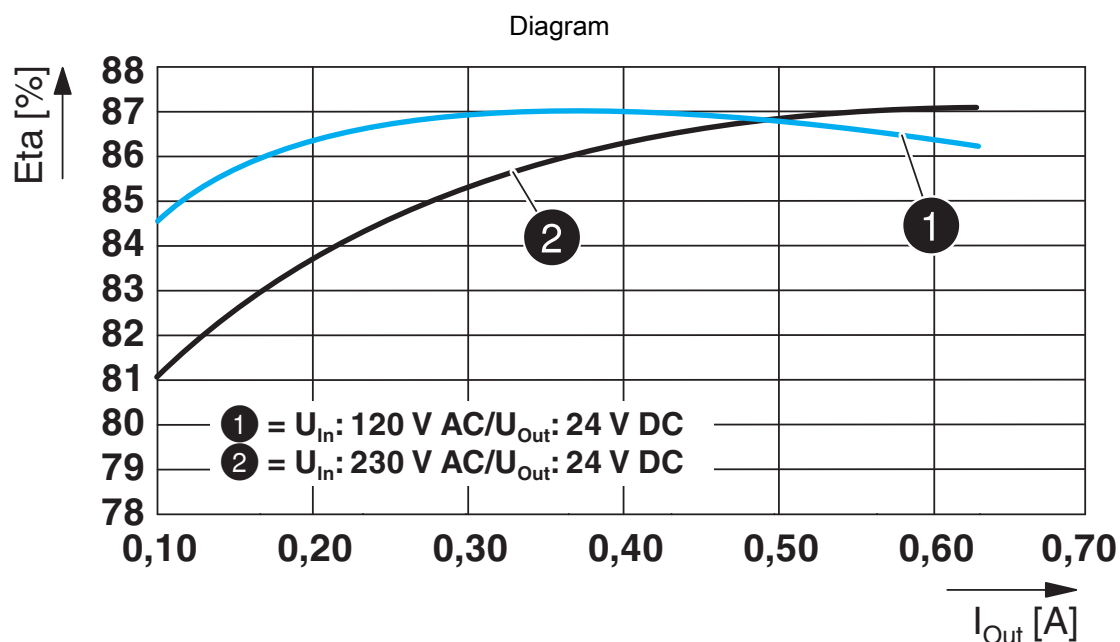


Test sections, insulation voltage

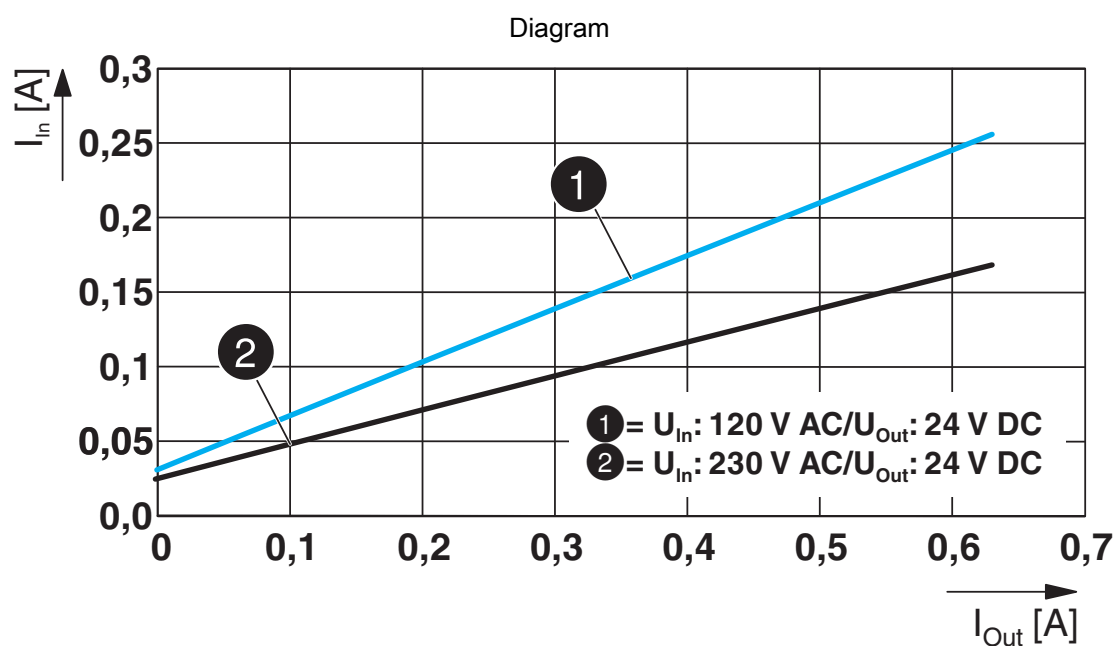
Schematic diagram



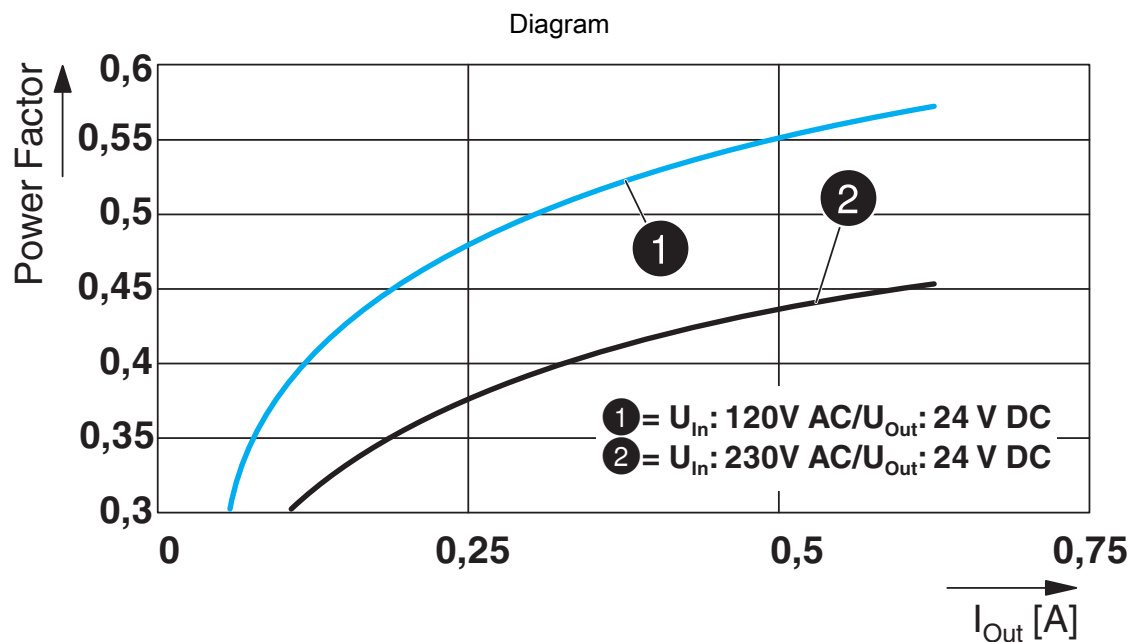
Mounting option



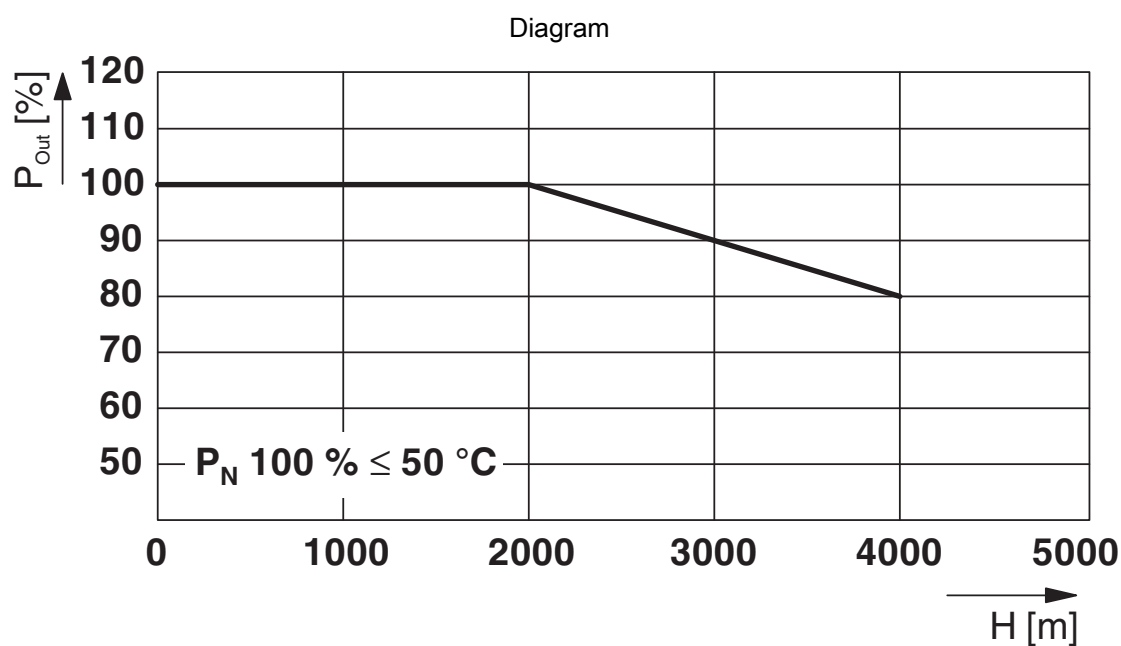
Efficiency



Input current/output current



Power factor

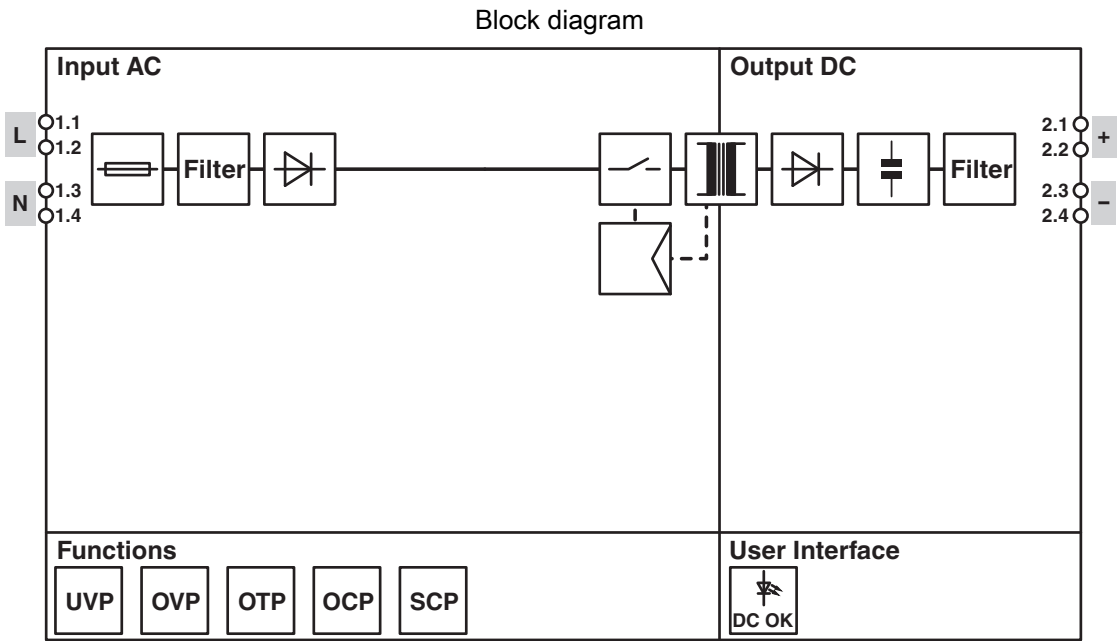


Output power/installation altitude

STEP3-PS/1AC/24DC/0.63/PT - Power supply



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Block diagram

# STEP3-PS/1AC/24DC/0.63/PT - Power supply



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1088495>



**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



**EAC**

Approval ID: KZ7500651 0101 12535



**cULus Listed**

Approval ID: FILE E 199827

# STEP3-PS/1AC/24DC/0.63/PT - Power supply



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## 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                                | ecef5742-0085-4899-af51-5b5b7bf54c2e |

## EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 2.637 kg CO2e |
|---------|---------------|