

# STEP3-PS/1AC/5DC/3/PT - Power supply unit



1170954

<https://www.phoenixcontact.com/us/products/1170954>

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Primary-switched power supply unit, STEP POWER, Push-in connection, DIN rail or direct mounting, input: 1-phase, output: 5 V DC / 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                          | 1170954       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CM09          |
| Product key                          | CMPH11        |
| GTIN                                 | 4063151195915 |
| Weight per piece (including packing) | 92.55 g       |
| Weight per piece (excluding packing) | 83 g          |
| Customs tariff number                | 85044083      |
| 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/DC  |
| 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. 18 ms (120 V AC)<br>typ. 80 ms (230 V AC) |
| Current consumption                      | 0.3 A (100 V AC)<br>0.14 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 % ... +10 %  |
| Current consumption | 0.17 A (110 V DC)<br>0.07 A (250 V DC) |

### Output data

|  |   |
|--|---|
| Efficiency   | > 82 % (120 V AC)<br>> 82.5 % (230 V AC)            |
| Efficiency Level                                   | VI  |
| Nominal output voltage                             | 5 V DC  |
| Nominal output current ( $I_N$ )                   | 3 A   |
| Short-circuit-proof                                | yes   |
| No-load proof                                      | yes   |
| Derating   | > 50 °C ... 70 °C (2 % / K)                         |
| Crest factor                                       | typ. 3<br>typ. 4.2                                  |
| 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                        | $\leq$ 10 V DC                                      |
| Protection against overvoltage at the output (OVP) | < 10 V DC   |
| Residual ripple                                    | typ. 150 mV <sub>PP</sub>                           |

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|  |  |
|--|--|
| Control deviation                      | < 1.5 % (Static load change 10 % ... 90 %)         |
|  | < 5 % (Dynamic load change 10 % ... 90 %, (10 Hz)) |
|  | < 0.1 % (change in input voltage $\pm 10$ %)       |
| 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 | < 3.4 W (120 V AC)                                 |
| Power loss nominal load max.           | < 3.2 W (230 V AC)                                 |

## Connection data

### Input

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

### Conductor connection

|  |   |
|--|---|
| Connection method                            | Push-in connection                          |
| rigid  | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible                                     | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible with ferrule without plastic sleeve | 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible with ferrule with plastic sleeve    | 0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>   |
|  | 1 mm <sup>2</sup> (recommended)             |
| rigid (AWG)                                  | 24 ... 14 (Cu)                              |
|  | 17 (recommended)                            |
| Stripping length                             | 10 mm (rigid/flexible)                      |
|  | 10 mm (Ferrule)                             |

### Output

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

### Conductor connection

|  |   |
|--|---|
| Connection method                            | Push-in connection                          |
| rigid  | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible                                     | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible with ferrule without plastic sleeve | 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
|  | 1 mm <sup>2</sup> (recommended)             |
| flexible with ferrule with plastic sleeve    | 0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>   |
|  | 1 mm <sup>2</sup> (recommended)             |
| rigid (AWG)                                  | 24 ... 14 (Cu)                              |
|  | 17 (recommended)                            |
| Stripping length                             | 10 mm                                       |

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## Signaling

### LED signaling

|                    |  |
|--------------------|--|
| Types of signaling | LED  |
| Signal threshold   | > 0.9 x U <sub>N</sub> (U <sub>N</sub> = 5 V DC) (LED lights up green)<br>< 0.9 x U <sub>N</sub> (U <sub>N</sub> = 5 V DC) (LED off) |

## Electrical properties

|                                 |  |
|---------------------------------|--|
| Number of phases                | 1.00   |
| Insulation voltage input/output | 4 kV AC (type test)<br>3.75 kV AC (routine test) |

## Product properties

|                                    |  |
|------------------------------------|--|
| Product type                       | Power supply   |
| Product family                     | STEP POWER   |
| MTBF (IEC 61709, SN 29500)         | > 2746000 h (25 °C)<br>> 1439000 h (40 °C)<br>> 913000 h (50 °C) |
| Environmental protection directive | RoHS Directive 2011/65/EU<br>WEEE<br>Reach                       |

### Insulation characteristics

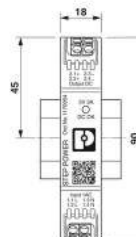
|                     |                                |
|---------------------|--------------------------------|
| Protection class    | II (in closed control cabinet) |
| Degree of pollution | 2                              |

## Dimensions

### Item dimensions

|        |   |
|--------|---|
| Width  | 18 mm   |
| Height | 90 mm   |
| Depth  | 61 mm<br>55 mm (Device depth (DIN rail mounting)) |

### Dimensional drawing



|                  |                    |
|------------------|--------------------|
| Horizontal pitch | 1 Div. (DIN 43880) |
|------------------|--------------------|

### Installation dimensions

|                                  |             |
|----------------------------------|-------------|
| Installation distance right/left | 0 mm / 0 mm |
|----------------------------------|-------------|

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|                                  |               |
|----------------------------------|---------------|
| Installation distance top/bottom | 30 mm / 30 mm |
|----------------------------------|---------------|

## Mounting

|                         |  |
|-------------------------|--|
| Mounting type           | DIN rail or direct mounting                    |
| Assembly instructions   | 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                                     |
| Foot latch material                    | Polyamid                                    |
| Housing material                       | Polycarbonate                               |

## 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)<br>15 Hz ... 150 Hz, 2.3g, 90 min. |

## Standards and regulations

### Overvoltage category

|            |               |
|------------|---------------|
| EN 61010-1 | II (≤ 4000 m) |
|------------|---------------|

### Overvoltage category

|            |                |
|------------|----------------|
| EN 62477-1 | III (≤ 2000 m) |
|------------|----------------|

### Electrical safety

|                          |                    |
|--------------------------|--------------------|
| Standard designation     | Electrical safety  |
| Standards/specifications | IEC 61010-1 (SELV) |

### Protective extra-low voltage

|                          |  |
|--------------------------|--|
| Standard designation     | Protective extra-low voltage                 |
| Standards/specifications | IEC 61010-1 (SELV)<br>IEC 61010-2-201 (PELV) |

### Safe isolation

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

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## 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

|                               |  |
|-------------------------------|--|
| 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  |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU  |
| Conducted noise emission      | EN 55016<br>EN 61000-6-3 (Class B)   |
| Noise emission                | EN 55016<br>EN 61000-6-3 (Class B)   |

## Harmonic currents

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

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## 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                     |
| 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

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|                       |               |
|-----------------------|---------------|
| 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   |

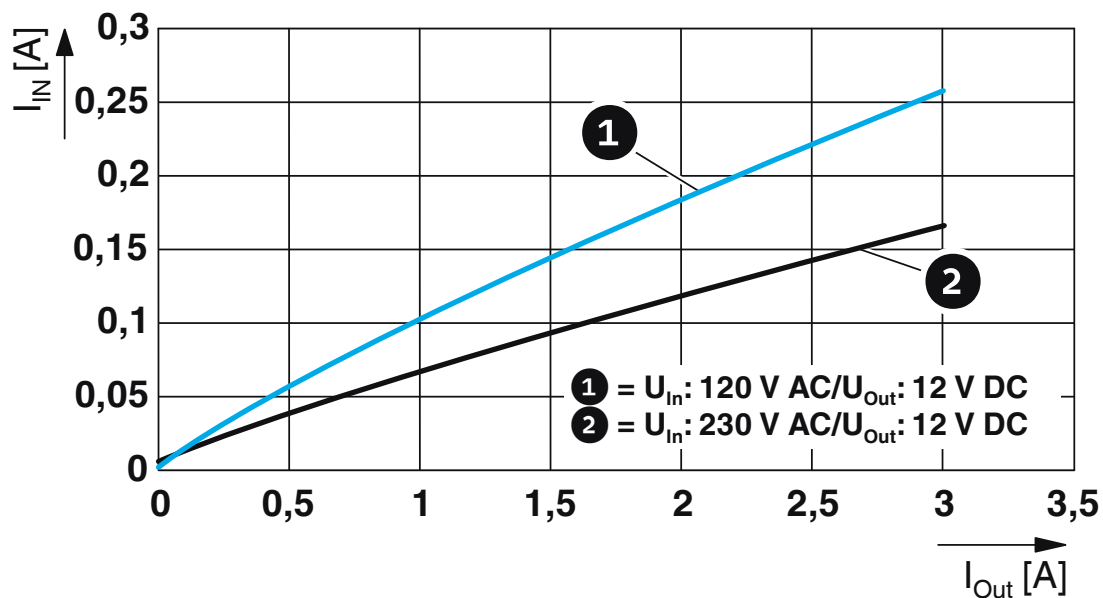
## Criteria

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



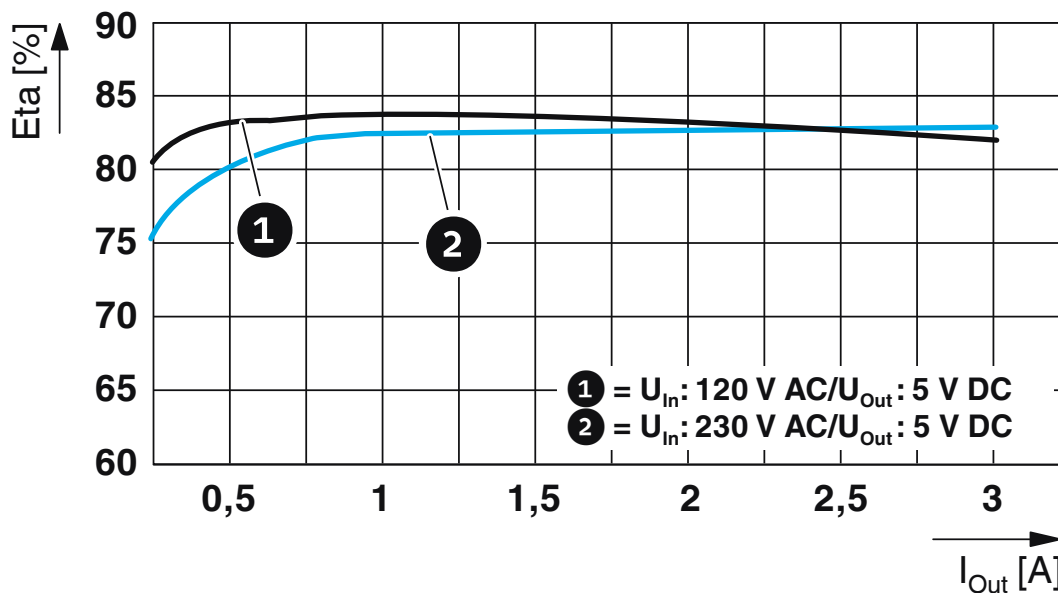
Drawings

Diagram



Input current/output current

Diagram



Efficiency

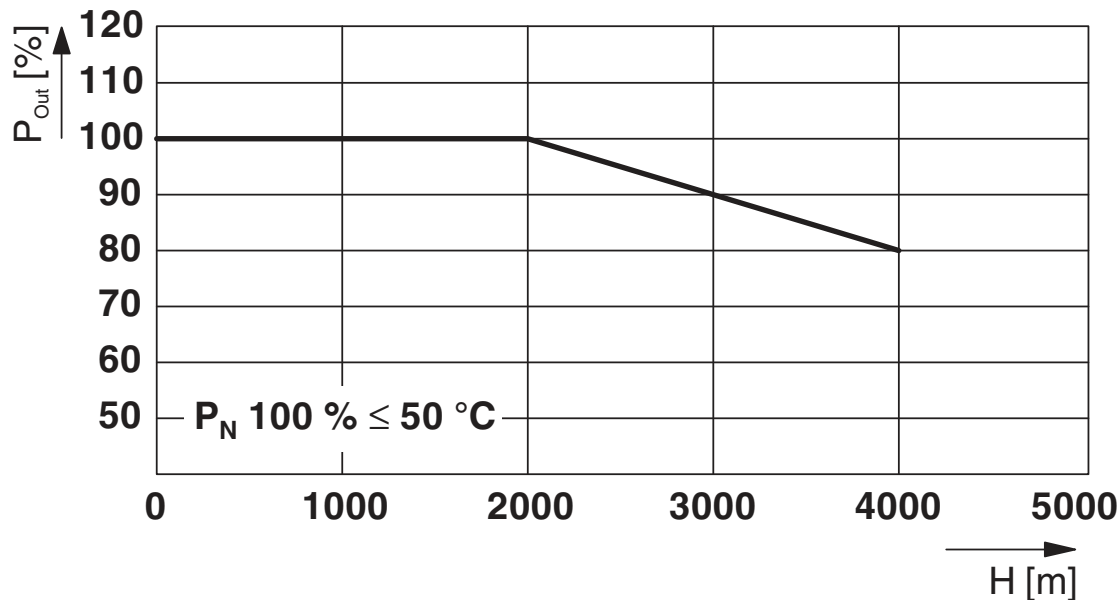
# STEP3-PS/1AC/5DC/3/PT - Power supply unit



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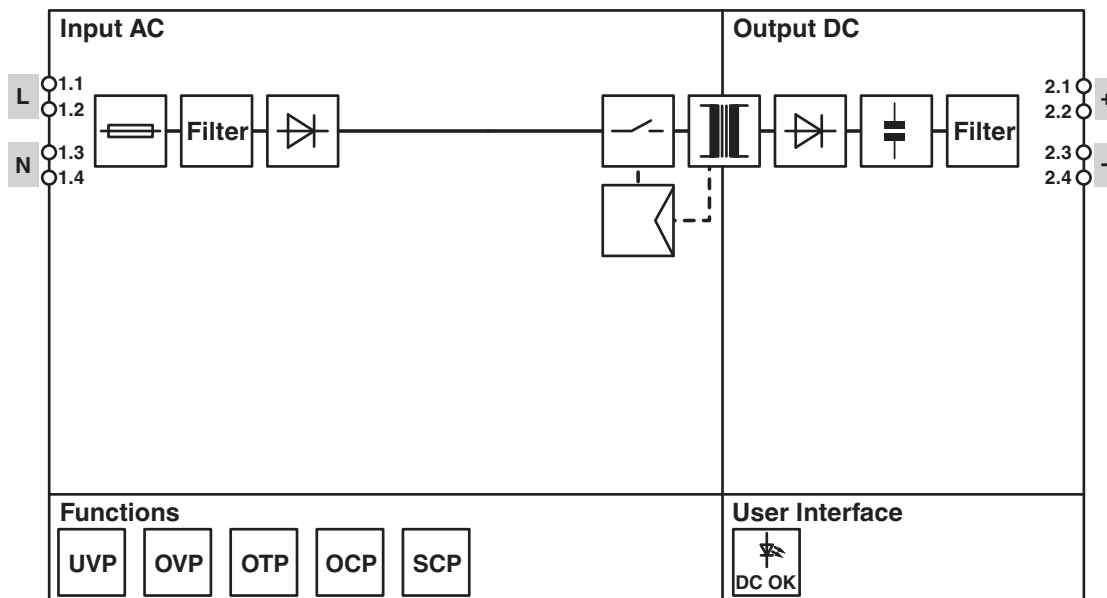
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Diagram



Output power/installation altitude

Block diagram



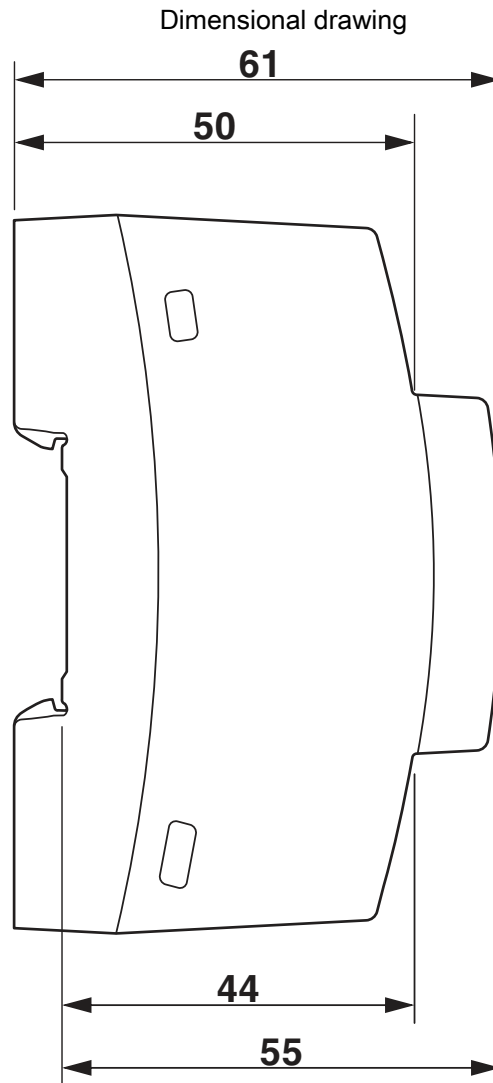
Block diagram

# STEP3-PS/1AC/5DC/3/PT - Power supply unit



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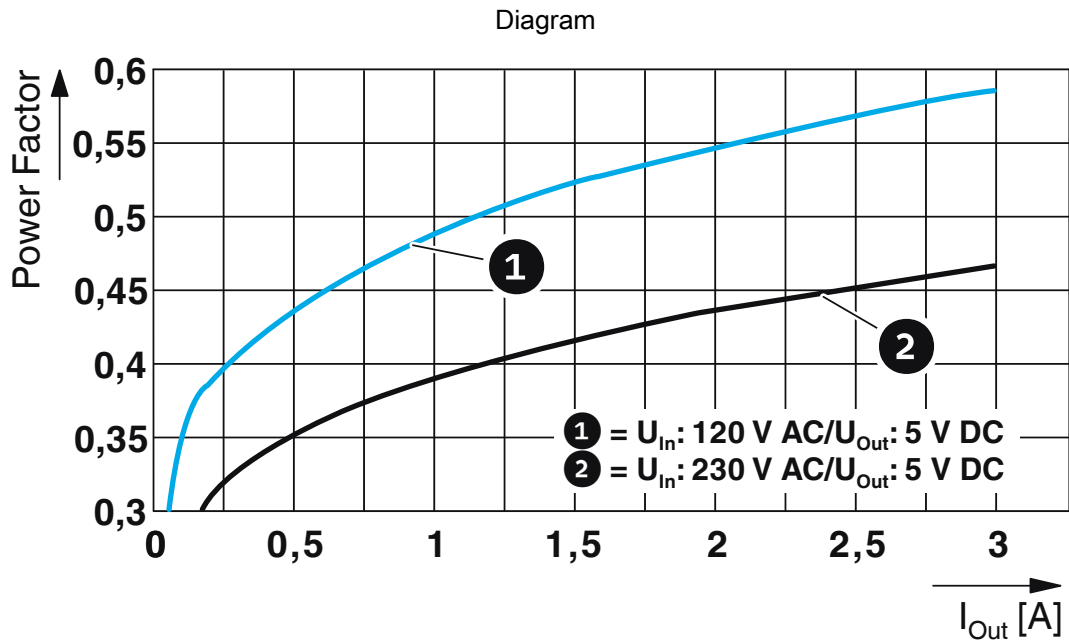
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Device dimensions (dimensions in mm)

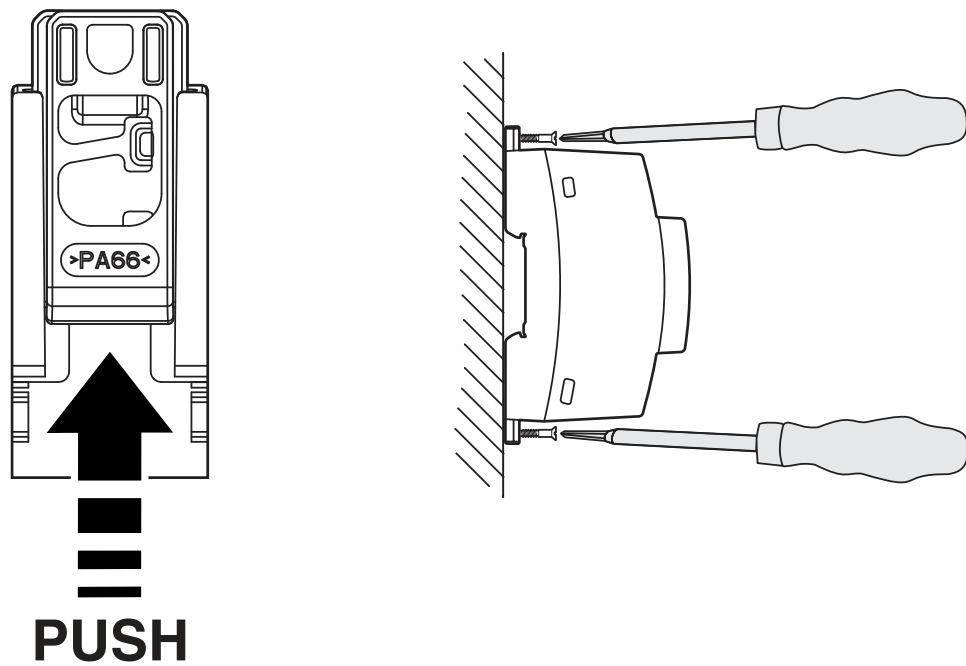
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Power factor

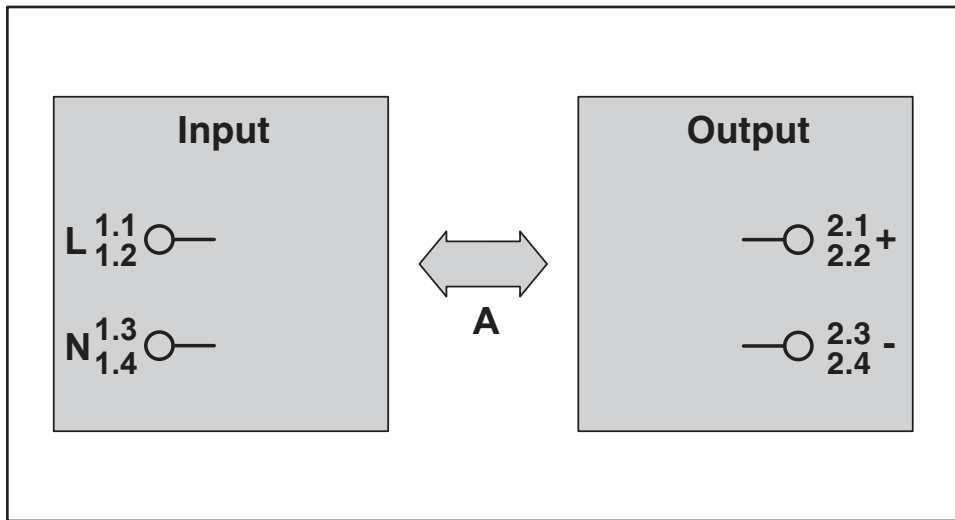
Schematic diagram



Mounting option

Schematic diagram

## Housing



Test sections, insulation voltage

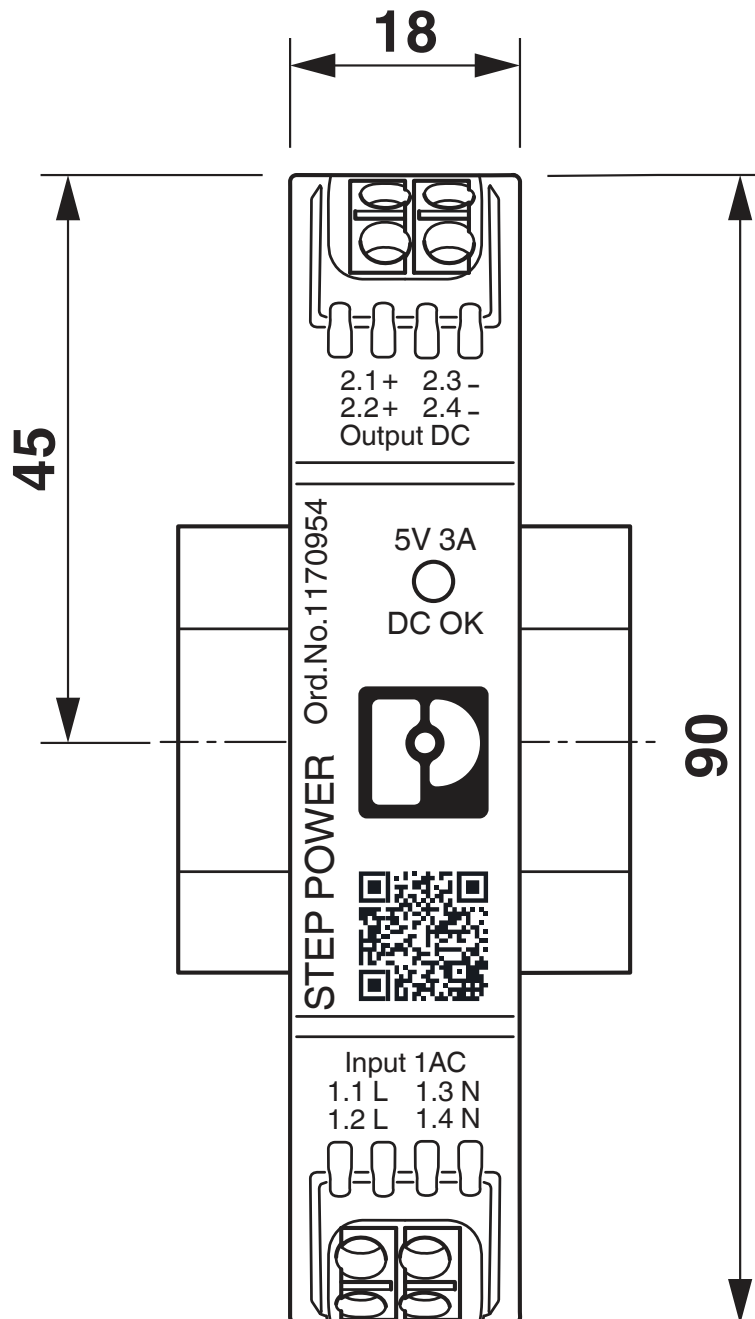
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Dimensional drawing



Device dimensions (dimensions in mm)

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1170954>



**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



**cULus Listed**

Approval ID: FILE E 199827

# STEP3-PS/1AC/5DC/3/PT - Power supply unit



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27040701 |
| ECLASS-12.0 | 27040701 |
| ECLASS-13.0 | 27040701 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC002540 |
|----------|----------|

### UNSPSC

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



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## Environmental product compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 25;<br>For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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## Accessories

### STEP-DIODE/5-24DC/2X5/1X10 - Redundancy module

2868606

<https://www.phoenixcontact.com/us/products/2868606>

Redundancy module, 5 ... 24 V DC, 2x 5 A, 1x 10 A



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### RPI-BC 107,6 DEV-KIT KMGY - Electronic housing

2202874

<https://www.phoenixcontact.com/us/products/2202874>

DIN rail housing for Raspberry Pi computers (suitable for Raspberry Pi A+, B+, B2, B3, B4); set consisting of lower part, upper part, cover, and PCB retainer; housing according to DIN 43880



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## RPI-BC 107,6 EXT DEV-KIT KMGY - Electronic housing

1107460

<https://www.phoenixcontact.com/us/products/1107460>



DIN rail housing for Raspberry Pi computers (suitable for Raspberry Pi A+, B+, B2, B3, B4); set consisting of lower part, upper part, cover, perfboard, and holder for connecting the HBUS and GPIO strip; housing in accordance with DIN 43880

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