

STEP-PS/277AC/24DC/3.5 - Power supply unit



2904945

<https://www.phoenixcontact.com/us/products/2904945>

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DIN rail power supply unit 24 V DC/3.5 A, primary switched-mode, 1-phase.



Product description

STEP POWER power supplies - for building technology

Due to their design, the flat power supplies are particularly suitable for distribution boards and flat control panels. The power supply units are available with 24 V DC output voltage in various performance classes and overall widths as well as special voltages 5, 12, 15, and 48 V DC. Their high degree of efficiency and low standby losses ensure a high level of energy efficiency.

Your advantages

- Flexible mounting by simply snapping onto the DIN rail or screwing onto a level surface
- Reliable power supply thanks to high MTBF (mean time between failures) of more than 500,000 hours and U/I characteristic curve
- Energy savings thanks to maximum energy efficiency and incredibly low idling losses

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 2904945 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM13 |
| Product key | CMPS93 |
| Catalog page | Page 281 (C-4-2019) |
| GTIN | 4046356903875 |
| Weight per piece (including packing) | 396.5 g |
| Weight per piece (excluding packing) | 379 g |
| Customs tariff number | 85044095 |
| Country of origin | VN |

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Technical data

Input data

AC operation

| | |
|--|---|
| Nominal input voltage range | 100 V AC ... 277 V AC |
| Input voltage range | 85 V AC ... 305 V AC |
| | 95 V DC ... 250 V DC |
| Input voltage range AC | 85 V AC ... 305 V AC |
| Input voltage range DC | 95 V DC ... 250 V DC |
| Voltage type of supply voltage | AC/DC |
| Inrush current | < 40 A (typical) |
| Inrush current integral (I^2t) | < 2.8 A ² s |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Mains buffering time | typ. 25 ms (120 V AC) |
| | typ. 160 ms (277 V AC) |
| Current consumption | 1.43 A (120 V AC) |
| | 0.75 A (277 V AC) |
| Nominal power consumption | 147.7 VA |
| Power factor (cos phi) | 0.64 |
| Typical response time | < 0.5 s |
| Input fuse | 4 A (slow-blow, internal) |
| Permissible backup fuse | B6 B10 B16 |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |

Output data

| | |
|--|---|
| Efficiency | > 88 % (for 277 V AC and nominal values) |
| Output characteristic | U/I |
| Nominal output voltage | 24 V DC \pm 1 % |
| Setting range of the output voltage (U_{Set}) | 22.5 V DC ... 25 V DC (> 24 V DC, constant capacity restricted) |
| Output current I_{max} | 6 A |
| Nominal output current (I_N) | 3.5 A (-25 °C ... 55 °C) |
| Derating | 55 °C ... 70 °C (2.5%/K) |
| Feedback voltage resistance | \leq 35 V DC |
| Protection against overvoltage at the output (OVP) | < 35 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| | < 2 % (change in load, dynamic 10 % ... 90 %) |
| | < 0.1 % (change in input voltage \pm 10 %) |
| Residual ripple | < 10 mV _{PP} (20 MHz) |
| Output power | 84 W |
| Peak switching voltages nominal load | < 30 mV _{PP} (20 MHz) |
| Maximum no-load power dissipation | < 0.6 W |
| Power loss nominal load max. | 11.5 W |

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| | |
|----------------------|--------------------------------------|
| Rise time | < 0.5 s (U_{OUT} (10 % ... 90 %)) |
| Connection in series | yes |

Connection data

Input

| | |
|---------------------------------------|---------------------|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm ² |
| Conductor cross section, rigid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 6.5 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Output

| | |
|---------------------------------------|---------------------|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm ² |
| Conductor cross section, rigid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 6.5 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Signaling

| | |
|---------------------------|-----------|
| Types of signaling | LED |
| Operating voltage display | Green LED |

Signal output: LED status indicator

| | |
|------------------------|-----------------------------------|
| Status display | "DC OK" LED green |
| Note on status display | $U_{OUT} > 21.5$ V: LED lights up |

Electrical properties

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

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Product properties

| | |
|----------------------------|---------------------|
| Product type | Power supply |
| Product family | STEP POWER |
| MTBF (IEC 61709, SN 29500) | > 1094000 h (40 °C) |

Insulation characteristics

| | |
|----------------------|-----|
| Protection class | II |
| Overvoltage category | III |
| Degree of pollution | 2 |

Dimensions

| | |
|------------------|--------|
| Width | 90 mm |
| Height | 90 mm |
| Depth | 61 mm |
| Horizontal pitch | 5 Div. |

Installation dimensions

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

Mounting

| | |
|-------------------------|--|
| Mounting type | DIN rail 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

| | |
|---------------------|------------------------|
| Housing material | Plastic |
| Foot latch material | POM (Polyoxymethylene) |
| Housing material | Polycarbonate |

Environmental and real-life conditions

Ambient conditions

| | |
|--|--|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 70 °C (> 55° C derating : 2.5%/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Climatic class | 3K3 (in acc. with EN 60721) |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing) |
| Shock | 18 ms, 30g, in each space direction (according to IEC 60068-2-27) |
| Vibration (operation) | < 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) 15 Hz ... 150 Hz, 2.3g, 90 min. |

Standards and regulations

| | |
|-------------------|------------|
| Rail applications | EN 50121-4 |
|-------------------|------------|

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| | |
|--|--|
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV) |
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | IEC 62368-1 (SELV) |
| Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment | EN 50178 |
| Standard – Safety extra-low voltage | IEC 62368-1 (SELV) und EN 60204-1 (PELV) |
| Standard - Safe isolation | DIN VDE 0100-410 |
| Standard - Safety of transformers | EN 61558-2-16 |

Approvals

| | |
|--------------|-------------------------------|
| UL approvals | UL/C-UL listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |
| | NEC Class 2 as per UL 1310 |

Conformity/Approvals

| | |
|----------------------------------|---|
| SIL in accordance with IEC 61508 | 0 |
|----------------------------------|---|

EMC data

| | |
|-------------------------------------|---|
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| EMC requirements for noise emission | EN 61000-6-3 |
| | EN 61000-6-4 |
| EMC requirements for noise immunity | EN 61000-6-1 |
| | EN 61000-6-2 |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |

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 B |

Electromagnetic HF field

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

Electromagnetic HF field

| | |
|---------------------|------------------|
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 10 V/m |
| Frequency range | 1 GHz ... 2 GHz |
| Test field strength | 10 V/m |
| Frequency range | 2 GHz ... 3 GHz |
| Test field strength | 10 V/m |
| Comments | Criterion A |

Fast transients (burst)

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

Fast transients (burst)

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

Surge voltage load (surge)

| | |
|-----------------------|--------------------------------------|
| Standards/regulations | EN 61000-4-5 |
| Input | 2 kV (Test Level 3 - symmetrical) |
| | 4 kV (Test Level 4 - asymmetrical) |
| Output | 1 kV (Test Level 2 - symmetrical) |
| | 0.5 kV (Test Level 1 - asymmetrical) |
| Comments | Criterion B |

Conducted interference

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

Conducted interference

| | |
|-----------------|--------------------|
| Frequency range | 10 kHz ... 15 kHz |
| | 10 kHz ... 15 kHz |
| Comments | Criterion A |
| | Criterion A |
| Voltage | 3 V (Test Level 2) |
| | 3 V (Test Level 2) |

Conducted interference

| | |
|-----------------|--------------------|
| Frequency range | 10 kHz ... 15 kHz |
| | 10 kHz ... 15 kHz |
| Comments | Criterion A |
| | Criterion A |
| Voltage | 3 V (Test Level 2) |
| | 3 V (Test Level 2) |

Voltage dips

| | |
|-----------------------|---------------|
| Standards/regulations | EN 61000-4-11 |
|-----------------------|---------------|

Emitted interference

| | |
|--|---|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) class B used in industry and residential area / EMC 1 |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) class B used in industry and residential area / EMC 1 |

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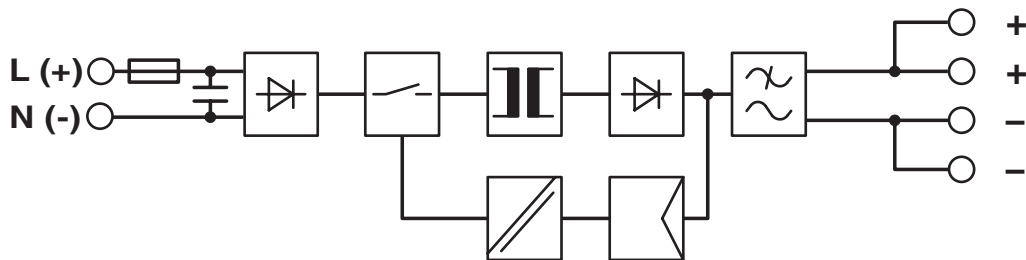
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Drawings

Block diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2904945>



cUL Recognized
Approval ID: FILE E 214596



UL Recognized
Approval ID: FILE E 214596



IECEE CB Scheme
Approval ID: DK-43974-UL



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



UL Listed
Approval ID: FILE E 123528



cUL Listed
Approval ID: FILE E 123528



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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27040701 |
| ECLASS-13.0 | 27040701 |
| ECLASS-12.0 | 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; For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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Accessories

PLT-SEC-T3-24-FM-UT - Type 3 surge protection device

2907916

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Type 3 surge protection, consisting of protective plug and base element, with integrated status indicator and remote signaling for single-phase power supply networks. Nominal voltage: 24 V AC/DC

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