

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



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 903875 |
| GTIN                                 | 4046356903875                                                                                           |
| Weight per Piece (excluding packing) | 380.000 g                                                                                               |
| Custom tariff number                 | 85044030                                                                                                |
| Country of origin                    | Germany                                                                                                 |

### Technical data

#### Dimensions

|        |       |
|--------|-------|
| Width  | 90 mm |
| Height | 90 mm |

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## Technical data

### Dimensions

|                                  |               |
|----------------------------------|---------------|
| Depth                            | 61 mm         |
| Installation distance right/left | 0 mm / 0 mm   |
| Installation distance top/bottom | 30 mm / 30 mm |

### 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                             |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing)            |
| Climatic class                                 | 3K3 (in acc. with EN 60721)                  |
| Degree of pollution                            | 2                                            |

### Input data

|                                          |                                           |
|------------------------------------------|-------------------------------------------|
| 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                      |
| AC frequency range                       | 45 Hz ... 65 Hz                           |
| Frequency range DC                       | 0 Hz                                      |
| Current consumption                      | 1.43 A (120 V AC)                         |
|                                          | 0.75 A (277 V AC)                         |
| Nominal power consumption                | 147.7 VA                                  |
| Inrush current                           | < 40 A (typical)                          |
| Mains buffering time                     | typ. 25 ms (120 V AC)                     |
|                                          | typ. 160 ms (277 V AC)                    |
| Input fuse                               | 4 A (slow-blow, internal)                 |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |
| Power factor (cos phi)                   | 0.64                                      |

### Output data

|                                                         |                                                                 |
|---------------------------------------------------------|-----------------------------------------------------------------|
| Nominal output voltage                                  | 24 V DC ±1 %                                                    |
| Setting range of the output voltage (U <sub>Set</sub> ) | 22.5 V DC ... 25 V DC (> 24 V DC, constant capacity restricted) |
| Nominal output current (I <sub>N</sub> )                | 3.5 A (-25 °C ... 55 °C)                                        |
| Output current I <sub>max</sub>                         | 6 A                                                             |
| Derating                                                | 55 °C ... 70 °C (2.5%/K)                                        |
| Connection in series                                    | yes                                                             |
| Feedback voltage resistance                             | ≤ 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 %)                   |

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## Technical data

### Output data

|                                      |                                              |
|--------------------------------------|----------------------------------------------|
|                                      | < 0.1 % (change in input voltage $\pm 10$ %) |
| Residual ripple                      | < 10 mV <sub>pp</sub> (20 MHz)               |
| Output power                         | 84 W                                         |
| Typical response time                | < 0.5 s                                      |
| Peak switching voltages nominal load | < 30 mV <sub>pp</sub> (20 MHz)               |
| Maximum no-load power dissipation    | < 0.6 W                                      |
| Power loss nominal load max.         | 11.5 W                                       |

### General

|                                 |                                                |
|---------------------------------|------------------------------------------------|
| Net weight                      | 0.3 kg                                         |
| Operating voltage display       | Green LED                                      |
| Efficiency                      | > 88 % (for 277 V AC and nominal values)       |
| MTBF (IEC 61709, SN 29500)      | > 1094000 h (40 °C)                            |
| Insulation voltage input/output | 4 kV AC (type test)                            |
|                                 | 3.75 kV AC (routine test)                      |
| Degree of protection            | IP20                                           |
| Protection class                | II                                             |
| Housing material                | Polycarbonate                                  |
| Foot latch material             | POM (Polyoxymethylene)                         |
| Mounting position               | horizontal DIN rail NS 35, EN 60715            |
| Assembly instructions           | alignable: 0 mm horizontally, 30 mm vertically |

### Connection data, input

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |
| Conductor cross section AWG min.      | 24                  |
| Conductor cross section AWG max.      | 12                  |
| Stripping length                      | 6.5 mm              |
| Screw thread                          | M3                  |

### Connection data, output

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |

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## Technical data

### Connection data, output

|                                  |        |
|----------------------------------|--------|
| Conductor cross section AWG min. | 24     |
| Conductor cross section AWG max. | 12     |
| Stripping length                 | 6.5 mm |
| Screw thread                     | M3     |

### Standards

|                                                                                                                                  |                                          |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| EMC requirements for noise immunity                                                                                              | EN 61000-6-1                             |
|                                                                                                                                  | EN 61000-6-2                             |
| EMC requirements for noise emission                                                                                              | EN 61000-6-3                             |
|                                                                                                                                  | EN 61000-6-4                             |
| Standard - Safety of transformers                                                                                                | EN 61558-2-16                            |
| Standard - Electrical safety                                                                                                     | IEC 62368-1 (SELV)                       |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV)                 |
| Standard – Safety extra-low voltage                                                                                              | IEC 62368-1 (SELV) und EN 60204-1 (PELV) |
| Standard - Safe isolation                                                                                                        | DIN VDE 0100-410                         |
| Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment               | EN 50178                                 |
| Standard – Limitation of mains harmonic currents                                                                                 | EN 61000-3-2                             |
| Rail applications                                                                                                                | EN 50121-4                               |

### Conformance/approvals

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

### EMC data

|                               |                                                   |
|-------------------------------|---------------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU         |
| Low Voltage Directive         | Conformance with Low Voltage Directive 2014/35/EC |
| Electrostatic discharge       | EN 61000-4-2                                      |
| Contact discharge             | 6 kV (Test Level 3)                               |
| Discharge in air              | 8 kV (Test Level 3)                               |
| Electromagnetic HF field      | EN 61000-4-3                                      |
| 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                                       |

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### Technical data

#### EMC data

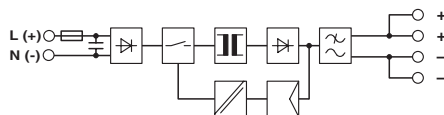
|                            |                                      |
|----------------------------|--------------------------------------|
| Fast transients (burst)    | EN 61000-4-4                         |
| Input                      | 4 kV (Test Level 4 - asymmetrical)   |
| Output                     | 2 kV (Test Level 3 - asymmetrical)   |
| Comments                   | Criterion B                          |
| Surge voltage load (surge) | 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     | EN 61000-4-6                         |
| Frequency range            | 10 kHz ... 15 kHz                    |
|                            | 0.15 MHz ... 80 MHz                  |
| Voltage                    | 3 V (Test Level 2)                   |
|                            | 10 V (Test Level 3)                  |
| Comments                   | Criterion A                          |
|                            | Criterion A                          |
| Voltage dips               | EN 61000-4-11                        |

#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 25;                                                           |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

### Drawings

#### Block diagram



### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27040701 |
|---------------|----------|

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### Classifications

#### eCl@ss

|             |          |
|-------------|----------|
| eCl@ss 11.0 | 27040701 |
| eCl@ss 4.0  | 27040700 |
| eCl@ss 4.1  | 27040700 |
| eCl@ss 5.0  | 27049000 |
| eCl@ss 5.1  | 27049000 |
| eCl@ss 6.0  | 27049000 |
| eCl@ss 7.0  | 27049002 |
| eCl@ss 9.0  | 27040701 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002540 |
| ETIM 6.0 | EC002540 |
| ETIM 7.0 | EC002540 |

#### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 13.2 | 39121004 |
| UNSPSC 18.0 | 39121004 |
| UNSPSC 19.0 | 39121004 |
| UNSPSC 20.0 | 39121004 |
| UNSPSC 21.0 | 39121004 |

### Approvals

#### Approvals

#### Approvals

UL Listed / UL Recognized / cUL Recognized / IECCE CB Scheme / cUL Listed / EAC / cULus Recognized / cULus Listed

#### Ex Approvals

#### Approval details

UL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 123528

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### Approvals

|                  |                                                                                     |                                                                                                                                                       |                          |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| UL Recognized    |    | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 214596            |
| cUL Recognized   |    | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 214596            |
| IECEE CB Scheme  |    | <a href="http://www.iecee.org/">http://www.iecee.org/</a>                                                                                             | DK-43974-UL              |
| cUL Listed       |    | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528            |
| EAC              |  |                                                                                                                                                       | RU S-<br>DE.BL08.W.00764 |
| cULus Recognized |  |                                                                                                                                                       |                          |
| cULus Listed     |  |                                                                                                                                                       |                          |

### Accessories

#### Accessories

#### Device protection

#### Type 3 surge protection device - PLT-SEC-T3-24-FM-UT - 2907916



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

