

## Power supply unit - STEP-PS/ 1AC/24DC/0.5 - 2868596

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Primary-switched STEP POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/0.5 A

### Product Description

STEP POWER power supplies for distribution boards

The STEP POWER power supply range was developed especially for building automation. The low idling losses and high degree of efficiency ensure maximum energy efficiency. They allow flexible use and can be snapped onto the DIN rail or screwed onto an even surface.

### 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 519953 |
| GTIN                                 | 4046356519953   |
| Weight per Piece (excluding packing) | 75.000 g  |
| Custom tariff number                 | 85044030  |
| Country of origin                    | Poland  |

### Technical data

#### Dimensions

|        |       |
|--------|-------|
| Width  | 18 mm |
| Height | 90 mm |
| Depth  | 61 mm |

#### Ambient conditions

|                                 |                  |
|---------------------------------|------------------|
| Degree of protection            | IP20             |
| Ambient temperature (operation) | -25 °C ... 70 °C |

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### Technical data

#### Ambient conditions

|  |                                   |
|--|-----------------------------------|
| 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 ... 240 V AC                     |
| Input voltage range                      | 85 V AC ... 264 V AC                      |
|  | 95 V DC ... 250 V DC                      |
| AC frequency range                       | 45 Hz ... 65 Hz                           |
| Frequency range DC                       | 0 Hz                                      |
| Current consumption                      | 0.28 A (120 V AC)                         |
|  | 0.13 A (230 V AC)                         |
| Nominal power consumption                | 37.9 VA                                   |
| Inrush current                           | < 15 A (typical)                          |
| Mains buffering time                     | typ. 15 ms (120 V AC)                     |
|  | typ. 90 ms (230 V AC)                     |
| Input fuse                               | 1.25 A (slow-blow, internal)              |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |
| Power factor (cos phi)                   | 0.38                                      |

#### Output data

|  |   |
|--|---|
| Nominal output voltage                             | 24 V DC ±1 %                                  |
| Nominal output current (I <sub>N</sub> )           | 0.5 A (-25 °C ... 55 °C)                      |
|  | 0.55 A  |
| Output current I <sub>max</sub>                    | 1 A   |
| Derating   | 55 °C ... 70 °C (2.5%/K)                      |
| Connection in parallel                             | Yes, for redundancy and increased capacity    |
| 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 %) |
|  | < 0.1 % (change in input voltage ±10 %)       |
| Residual ripple                                    | < 20 mV <sub>PP</sub> (20 MHz)                |
| Output power                                       | 12 W  |
| Typical response time                              | < 0.5 s                                       |
| Peak switching voltages nominal load               | < 30 mV <sub>PP</sub> (20 MHz)                |
| Maximum power dissipation in no-load condition     | < 0.3 W                                       |
| Power loss nominal load max.                       | < 2.2 W                                       |

#### General

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### Technical data

#### General

|                                 |  |
|---------------------------------|--|
| Net weight                      | 0.07 kg  |
| Efficiency                      | > 84 % (for 230 V AC and nominal values)       |
| Insulation voltage input/output | 4 kV AC (type test)                            |
|                                 | 3.75 kV AC (routine test)                      |
| Insulation voltage input / PE   | 3.5 kV AC (type test)                          |
|                                 | 2 kV AC (routine test)                         |
| Insulation voltage output / PE  | 500 V DC (routine test)                        |
| Protection class                | II (in closed control cabinet)                 |
| Degree of protection            | IP20   |
|                                 | > 1567000 h (40 °C)                            |
| 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> |
| 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 60950-1/VDE 0805 (SELV) |

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### Technical data

#### Standards

|  |  |
|--|--|
| 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 60950-1 (SELV) and 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   |
|              | UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location) |
|              | NEC Class 2 as per UL 1310  |

#### EMC data

|                               |   |
|-------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Low Voltage Directive         | Conformance with LV directive 2006/95/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                               |
| Fast transients (burst)       | EN 61000-4-4                              |
| Input                         | 4 kV (Test Level 4 - asymmetrical)        |
| Output                        | 2 kV (Test Level 3 - asymmetrical)        |
| Comments                      | Criterion A                               |
| 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 A                               |
| Frequency range               | 10 kHz ... 15 kHz                         |
|                               | 0.15 MHz ... 80 MHz                       |
| Voltage                       | 3 V (Test Level 2)                        |

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## Technical data

### EMC data

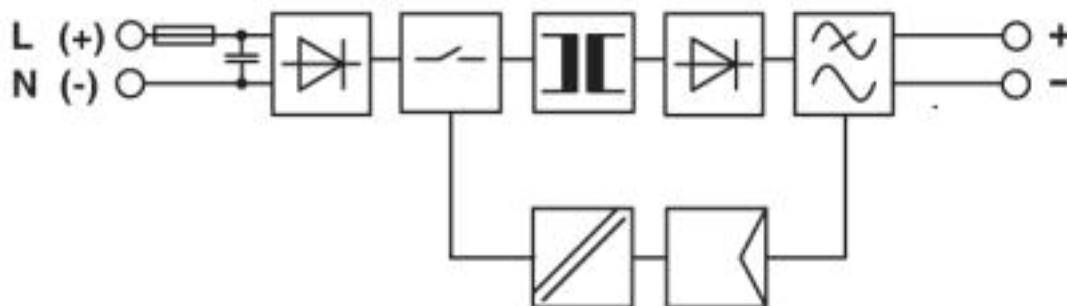
|              |                     |
|--------------|---------------------|
|              | 10 V (Test Level 3) |
| Comments     | Criterion A         |
|              | Criterion A         |
| Voltage dips | EN 61000-4-11       |

### 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 4.0 | 27040700 |
| eCl@ss 4.1 | 27040700 |
| eCl@ss 5.0 | 27242200 |
| eCl@ss 5.1 | 27242200 |
| eCl@ss 6.0 | 27049000 |
| eCl@ss 7.0 | 27049002 |
| eCl@ss 8.0 | 27049002 |
| eCl@ss 9.0 | 27040701 |

### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001039 |
| ETIM 3.0 | EC001039 |
| ETIM 4.0 | EC002540 |
| ETIM 5.0 | EC002540 |
| ETIM 6.0 | EC002540 |
| ETIM 7.0 | EC002540 |

<https://www.phoenixcontact.com/gb/products/2868596>



## Power supply unit - STEP-PS/ 1AC/24DC/0.5 - 2868596

### Classifications

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211502 |
| UNSPSC 7.0901 | 39121004 |
| UNSPSC 11     | 39121004 |
| UNSPSC 12.01  | 39121004 |
| UNSPSC 13.2   | 39121004 |

### Approvals

#### Approvals






##### Approvals

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

##### Ex Approvals


UL Listed / cUL Listed / cULus Listed

#### Approval details

|                 |   |   |                   |
|-----------------|---|---|-------------------|
| UL 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     |
| 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-20185-A1-M1-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     |


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### Approvals

|     |   |               |
|-----|---|---------------|
| EAC |  | EAC-Zulassung |
|-----|---|---------------|

|     |   |                          |
|-----|---|--------------------------|
| EAC |  | RU C-<br>DE.A*30.B.01082 |
|-----|---|--------------------------|

|                  |   |  |
|------------------|---|--|
| cULus Recognized |  |  |
|------------------|---|--|

|              |   |  |
|--------------|---|--|
| cULus Listed |  |  |
|--------------|---|--|



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