

STEP-PS/48AC/24DC/0.5 Single-Phase DIN Rail Power Supply

 [perle.com/products/industrial-power-supply/step-ps-48ac-24dc-0.5-28687168.shtml](https://www.perle.com/products/industrial-power-supply/step-ps-48ac-24dc-0.5-28687168.shtml)

24V Industrial Power Supply for Regulated AC/DC or DC/DC Conversion

- 24 V DC Output Voltage
- 0.5 Amps
- 12 Watts
- Single phase AC or DC Input
- Input Voltage Range: 43 ... 52 V AC and 60 ... 80 V DC

The **STEP-PS/48AC/24DC/0.5 Industrial Power Supply** is a rugged AC to DC and DC to DC Converter built to meet the high stability and efficiency expectations of industrial, machine automation and process control environments. With its **low-profile design**, this STEP power supply is ideal for building automation, installation distributors and **flat control panels**. This Switching (switch mode) Power Supply ensures a regulated output voltage even in the event of voltage fluctuations in the power supply network. With all required safety certifications to support ITE (Information Technology Equipment), ruggedized packaging, extended operating temperatures, high peak load capabilities and high isolation voltages, this STEP Industrial Power Supply is designed to meet the needs of your industrial application.



Industrial operating temperature of -25°C to $+70^{\circ}\text{C}$ with reliable device start-up at -40°C

Equipment found in traffic management, oil and gas pipelines, weather tracking, industrial and outdoor applications must function in temperatures that cannot be supported by a commercial power supplies. With an operating temperature of -25°C to $+70^{\circ}\text{C}$, and reliable device start-up at -40°C , the STEP-PS/48AC/24DC/0.5 Industrial Power Supply is ideal for use with equipment subjected to harsh environments and severe temperatures.

High efficiency and low no load power consumption

Compared with other products on the market, this STEP Industrial Power Supply provides excellent energy savings. With a very low no load power consumption and high efficiency at nominal load, just a small amount of electrical energy is converted into undesired heat energy making this a very ECO friendly power supply. This is important if the power supply is on call 24 hours a day, but rarely loaded.

Flexible mounting

The STEP-PS/48AC/24DC/0.5 power supply offers flexible mounting options. It can either be snapped onto a DIN rail or screwed onto a level surface. When mounting on level surfaces, lugs integrated into the housing eliminate the need for additional mounting material.

U/I characteristic curve for the supply of capacitive loads

The STEP-PS/48AC/24DC/0.5 Industrial Power Supply is well suited for driving capacitive loads, and DC/DC converters in the primary circuit, due to its U/I characteristic curve. This makes STEP DIN Rail Power Supply suitable for applications such as solar cell testing, solar panel testing, testing of piezoelectric driving devices, capacitor testing, driving and testing of capacitive transducers, powering industrial substation capacitors, and lab-type applications with capacitive-resistive loads. This STEP Power Supply can also be used to power resistive loads, and inductive loads.



Ideal application environments for a STEP-PS/48AC/24DC/0.5 DIN Rail Power Supply

- flat control panels
- testing of solar cells, solar panels, piezoelectric driving devices and capacitors
- driving and testing of capacitive transducers
- powering industrial substation capacitors
- lab-type applications with capacitive-resistive loads
- automated production process
- building control, security and surveillance, and climate control systems

Other reasons to choose a STEP-PS/48AC/24DC/0.5 Industrial Power Supply

- DIN Rail mount narrow housing saves space in the control cabinet
- Voltage Isolation input/output: 4 kV AC
- LED indicator for voltage out failure: If the output voltage is below the operational range, the LED turns off.
- Protections: Short-circuit, Overload, Over voltage, Over-temperature
- High MTBF (Mean Time Between Failure) values of more than 500,000 hours at +40°C ensure maximum availability
- IEC Protection Class II Power Supplies

Industrial Class 2 Power Supply

With the NEC designation as a **Class 2 Power Supply**, all regulations address the wiring requirements (wire size and insulation, wire derating factors, overcurrent protection limits and methods of wiring installation) between the output of the supply and the input of the load are met by this STEP. The output voltage and power delivery capabilities of this Class 2 power supply will lower the risk of fire initiation and electrical shocks, which allows for lower cost wiring methods to be employed when installing an electrical system in a building.

Environmental Product Compliance

<https://www.perle.com/products/industrial-power-supply/step-ps-48ac-24dc-0.5-28687168.shtml>

REACH SVHC

Lead 7439-92-1

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| China RoHS | Environmentally Friendly Use Period = 25; |
| General | |
| Net weight | 0.07 kg |
| Efficiency | > 81 % (for 48 V AC and nominal values) |
| Insulation voltage input/output | 4 kV AC (type test) |
| | 3.75 kV AC (routine test) |
| Protection class | II (in closed control cabinet) |
| Degree of protection | IP20 |
| MTBF (IEC 61709, SN 29500) | |
| | > 1860000 h (40 °C) |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |
| Assembly instructions | alignable: 0 mm horizontally, 30 mm vertically |
| Standards and Regulations | |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Noise immunity | EN 61000-6-2:2005 |
| Connection in acc. with standard | CUL |
| Standards/regulations | EN 61000-4-2 |
| Contact discharge | 4 kV (Test Level 2) |
| Standards/regulations | EN 61000-4-3 |
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 10 V/m |
| Frequency range | 1.4 GHz ... 2 GHz |
| Test field strength | 3 V/m |
| Standards/regulations | EN 61000-4-4 |
| Comments | Criterion B |
| Standards/regulations | EN 61000-6-3 |
| Standards/regulations | EN 61000-4-6 |

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| Frequency range | 10 kHz ... 80 MHz |
| Voltage | 10 V (Test Level 3) |
| Low Voltage Directive | Conformance with LV directive 2006/95/EC |
| Standard - Safety of transformers | EN 61558-2-16 |
| Standard - Electrical safety | IEC 60950-1/VDE 0805 (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 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 |
| UL approvals | UL/C-UL listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |
| | NEC Class 2 as per UL 1310 |
| 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. |
| Rail applications | EN 50121-4 |
| Connection data, input | |
| Connection method | Screw connection |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid 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 |

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| Stripping length | 6.5 mm |
| Screw thread | M3 |
| Output data | |
| Nominal output voltage | 24 V DC ± 1 % |
| Nominal output current (I_N) | 0.5 A (-25 °C ... 55 °C) |
| | 0.55 A (-25°C ... 40°C permanent) |
| Output current I_{max} | 1 A |
| Derating | 55 °C ... 70 °C (2.5%/K) |
| Connection in parallel | Yes, for redundancy and increased capacity |
| Connection in series | yes |
| Feedback resistance | ≤ 35 V DC |
| Protection against surge voltage on the output | < 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 | < 30 mV _{PP} (20 MHz) |
| Output power | 12 W |
| Typical response time | < 0.5 s |
| Peak switching voltages nominal load | < 20 mV _{PP} (20 MHz) |
| Maximum power dissipation in no-load condition | < 0.3 W |
| Power loss nominal load max. | < 3.4 W |
| Dimensions | |
| Width | 18 mm |
| Height | 90 mm |
| Depth | 61 mm |
| Weight per piece | 88.0 GRM |

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| Nominal input voltage range | 48 V AC |
| Input voltage range | 43 V AC ... 52 V AC |
| | 60 V DC ... 80 V DC |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Current consumption | 0.5 A (43 V AC) |
| | 0.45 A (48 V AC) |
| Nominal power consumption | 21 VA |
| Inrush surge current | < 10 A (typical) |
| Mains buffering | typ. 15 ms (48 V AC) |
| | typ. 20 ms (52 V AC) |
| Input fuse | 1.25 A (slow-blow, internal) |
| Choice of suitable circuit breakers | 6 A ... 16 A (Characteristics B, C, D, K) |
| Power factor (cos phi) | 0.7 |
| Connection data, onput | |
| Connection method | Screw connection |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid 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 |
| 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 |

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

Approvals

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

STEP-PS Industrial Power Supply Block Diagram

