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

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

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^2s
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 ±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	≤ 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	< 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

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 mm²
Conductor cross section, rigid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
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 mm²
Conductor cross section, rigid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
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)

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 note	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
Housing material	Polycarbonate
Foot latch material	POM (Polyoxymethylene)

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

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)

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

Surge voltage load (surge)

Input	1 kV (Test Level 2 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Output	0.5 kV (Test Level 1 - 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

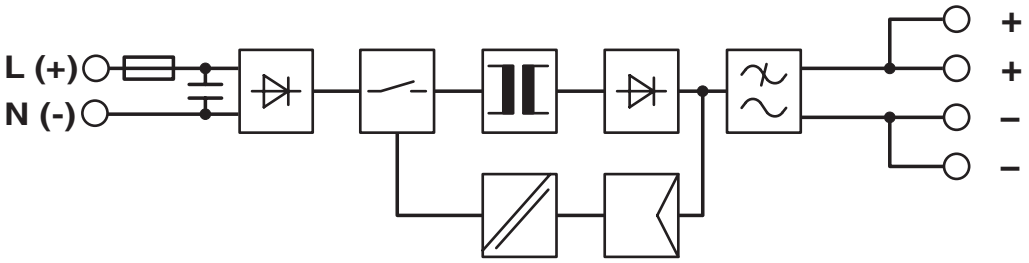
Standards/regulations	EN 61000-4-11

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

Drawings

Block diagram



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

IECEE CB Scheme
Approval ID: DE/PTZ/0107

cULus Recognized

cULus Listed

Classifications

ECLASS

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

ETIM

ETIM 9.0	EC002540

UNSPSC

UNSPSC 21.0	39121000

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-25
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)

EF3.0 Climate Change

CO2e kg	10.724 kg CO2e

Accessories

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

2907916

https://www.phoenixcontact.com/us/products/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

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