Power supply unit - STEP3-PS/1AC/24DC/5/PT - 1088478

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Primary-switched power supply unit, STEP POWER, Push-in technology, DIN rail mounting, input: 1-phase, output: 24 V DC / 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.

Key Commercial Data

Packing unit	1 pc
GTIN	4 055626 890203
GTIN	4055626890203
Weight per Piece (excluding packing)	255.000 g

Technical data

Dimensions

Width	72 mm
Height	90 mm
Depth	55 mm
Horizontal pitch	4 Div. (DIN 43880)
Installation distance top/bottom	30 mm / 30 mm

Ambient temperature (operation)	-10 °C ... 70 °C (Derating: > 50 °C; 2 %/K)
Ambient temperature (start-up type tested)	-25 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Maximum altitude	≤ 4000 m (> 2000 m, Derating: 10 %/1000 m)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)
	15 Hz ... 150 Hz, 2.3g, 90 min.

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Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Degree of pollution	2
Climatic class	3K3 (EN 60721)
Overvoltage category (EN 61010-1)	II (≤ 4000 m)
Overvoltage category (EN 62477-1)	III (≤ 2000 m)

Input data

Input voltage range	100 V AC ... 240 V AC -15 % ... +10 %
	110 V DC ... 250 V DC -10 % ... +40 %
Derating	< 115 V AC ... 85 V AC (1 %/V)
	< 115 V DC ... 99 V DC (1 %/V)
Frequency range (f_N)	50 Hz ... 60 Hz ±10 %
Typical national grid voltage	120 V AC
	230 V AC
Voltage type of supply voltage	AC/DC
Network type	Star network
Current consumption	1.32 A (100 V AC)
	0.57 A (240 V AC)
	1.29 A (110 V DC)
	0.51 A (250 V DC)
Discharge current to PE	< 0.25 mA
Mains buffering time	typ. 20 ms (120 V AC)
	typ. 20 ms (230 V AC)
Switch-on time	typ. 2 s
Inrush current	typ. 37 A
Inrush current integral (I^2t)	typ. 0.4 A^2s
Type of protection	Transient surge protection
Protective circuit/component	Varistor
Device mains fuse	4 A internal (device protection), slow-blow
Recommended breaker for input protection	6 A ... 16 A (Characteristics B, C, D, K)

Output data

Nominal output voltage	24 V DC
Setting range of the output voltage (U_{Set})	22 V DC ... 27 V DC (> 24 V DC, constant capacity restricted)
Nominal output current (I_N)	5 A
Control deviation	< 0.5 % (Static load change 10 % ... 90 %)
	< 3 % (Dynamic load change 10 % ... 90 %, (10 Hz))
	< 0.1 % (change in input voltage ±10 %)
Short-circuit-proof	yes
No-load proof	yes
Residual ripple	typ. 150 mV_{PP}
Connection in parallel	yes, for increasing power and redundancy with diode

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Output data

Connection in series	yes, for increased efficiency
Feedback voltage resistance	≤ 35 V DC
Protection against overvoltage at the output (OVP)	< 35 V DC
Rise time	typ. 100 ms (U_{Out} = 10 % ... 90 %)
Derating	> 50 °C ... 70 °C (2.5%/K)
Crest factor	typ. 1.74
	typ. 2.08
Output power	120 W
Minimum no-load power dissipation	< 0.21 W (120 V AC)
Maximum power dissipation in no-load condition	< 0.21 W (230 V AC)
Minimum nominal load power dissipation	< 8.8 W (120 V AC)
Power loss nominal load max.	< 6.8 W (230 V AC)

General

Net weight	255 g
Efficiency	> 93 % (120 V AC)
	> 94.5 % (230 V AC)
MTBF (IEC 61709, SN 29500)	> 1350000 h (25 °C)
	> 750000 h (40 °C)
	> 488000 h (50 °C)
Insulation voltage input/output	4 kV AC (type test)
	3.75 kV AC (routine test)
Degree of protection	IP20
Protection class	II (in closed control cabinet)
Inflammability class in acc. with UL 94 (housing / terminal blocks)	V0
Efficiency Level	VI
Housing material	Polycarbonate
Foot latch material	Polyamid
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	alignable: 0 mm horizontally, 30 mm vertically

Input connection data

Connection method	Push-in technology
Stripping length	10 mm
Conductor cross section solid	0.2 mm² ... 2.5 mm²
Conductor cross section flexible	0.2 mm² ... 2.5 mm²
Flexible conductor cross section (ferrule with plastic sleeve)	0.2 mm² ... 1 mm²
Flexible conductor cross section flexible (ferrule, w/o plastic sleeve)	0.5 mm² ... 2.5 mm²
Conductor cross section AWG	24 ... 14 (Cu)

Output connection data

Connection method	Push-in technology

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Output connection data

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LED signaling

Types of signaling	LED
U_{Out}	> 0,9 x U_N (U_N = 24 V DC) (LED lights up green)
	< 0,9 x U_N (U_N = 24 V DC) (LED off)

Standards

Standard designation	Electrical safety
Standards/regulations	IEC 61010-1 (SELV)
Standard designation	Safety extra-low voltage
Standards/regulations	IEC 61010-1 (SELV)
	IEC 61010-2-201 (PELV)
Standard designation	Safe isolation
Standards/regulations	IEC 61558-2-16
Standard designation	Low-voltage power supplies, DC output
Standards/regulations	EN 61204-3
Standard designation	Safety requirements for electrical equipment for measurement, control, and laboratory use
Standards/regulations	IEC 61010-1
Standard designation	Safety of electrical devices for household use and similar purposes
Standards/regulations	DIN EN 60335-1

Conformance/approvals

Designation	UL
Identification	UL/C-UL Listed UL 61010-1
Designation	UL
Identification	UL/C-UL Listed UL 61010-2-201
Designation	UL
Identification	UL/C-UL Listed ANSI/UL 121201 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
Conducted noise emission	EN 55016
	EN 61000-6-3 (Class B)
Noise emission	EN 55016

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EMC data

	EN 61000-6-3 (Class B)
Harmonic currents	EN 61000-3-2
	EN 61000-3-2 (Class A)
Flicker	EN 61000-3-3
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 (Test Level 3)
Frequency range	1 GHz ... 6 GHz
Test field strength	10 V/m (Test Level 3)
Comments	Criterion A
Fast transients (burst)	EN 61000-4-4
Input	asymmetrical 4 kV (Test Level 4)
Output	asymmetrical 2 kV (Test Level 3)
Comments	Criterion A
Surge voltage load (surge)	EN 61000-4-5
Input	symmetrical 2 kV (Test Level 4)
	asymmetrical 4 kV (Test Level 4)
Output	symmetrical 1 kV (Test Level 3)
	asymmetrical 2 kV (Test Level 3)
Comments	Criterion A
Conducted interference	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Voltage	10 V (Test Level 3)
Comments	Criterion A
Voltage dips	EN 61000-4-11
Voltage	230 V AC
Frequency	50 Hz
Voltage dip	70 %
Number of periods	25 periods
Additional text	Class 3
Comments	Criterion A
Voltage dip	40 %
Number of periods	10 periods
Additional text	Class 3
Comments	Criterion B
Voltage dip	0 %
Number of periods	1 period

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EMC data

Additional text	Class 3
Comments	Criterion A
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements.

Drawings

Block diagram

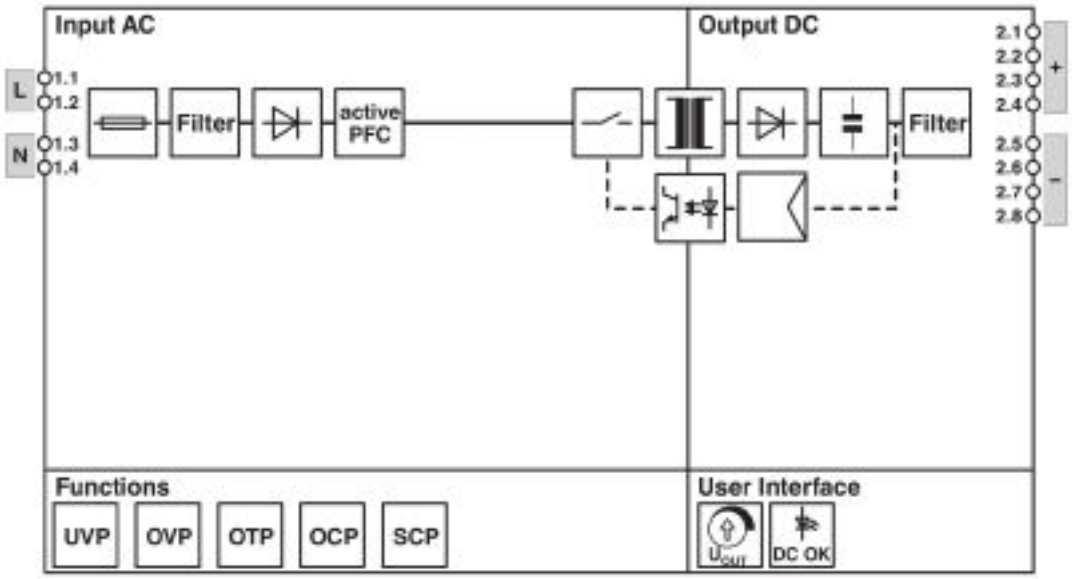

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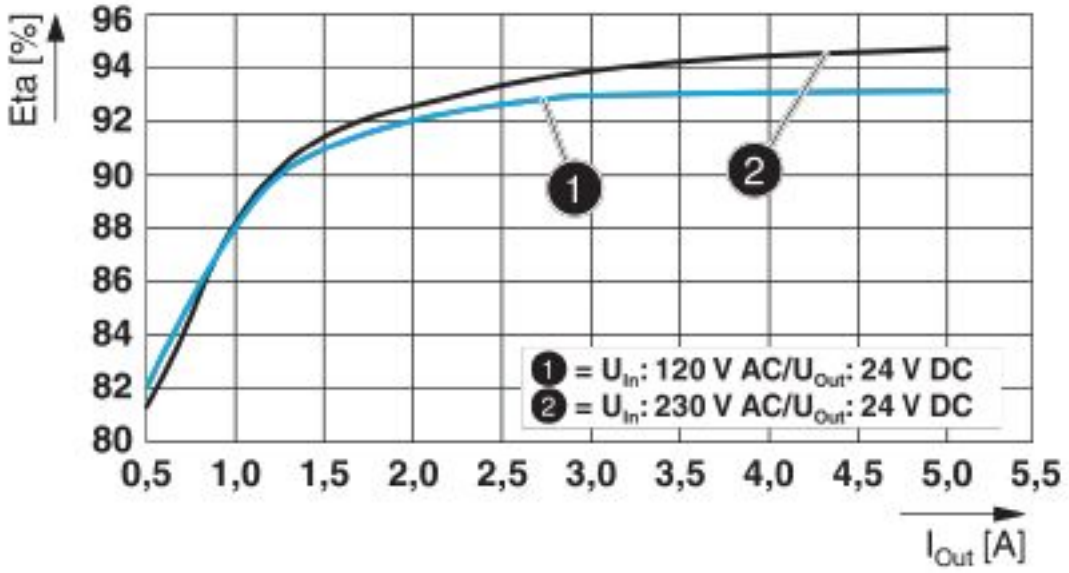
Diagram



Diagram

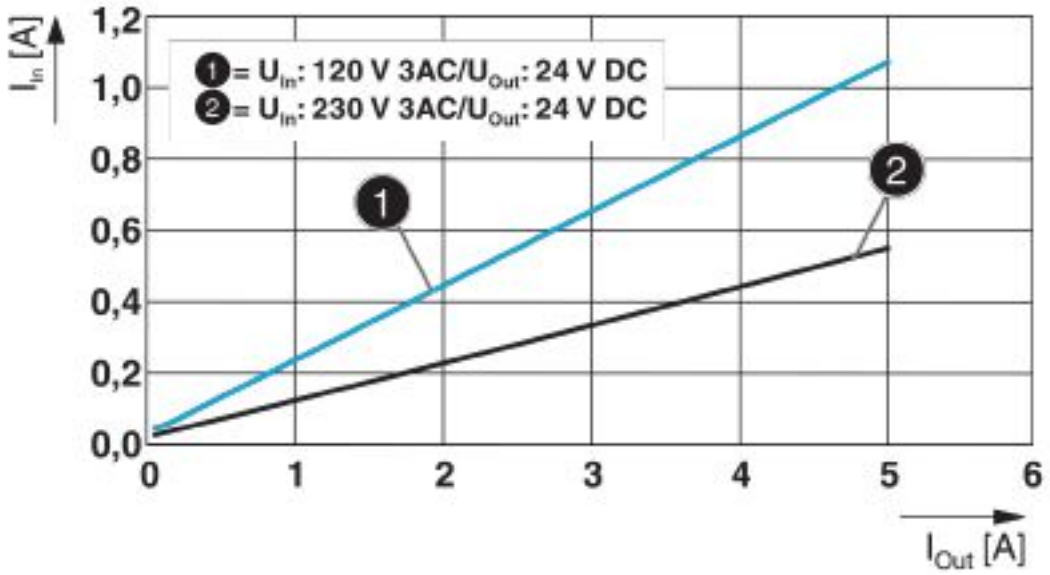


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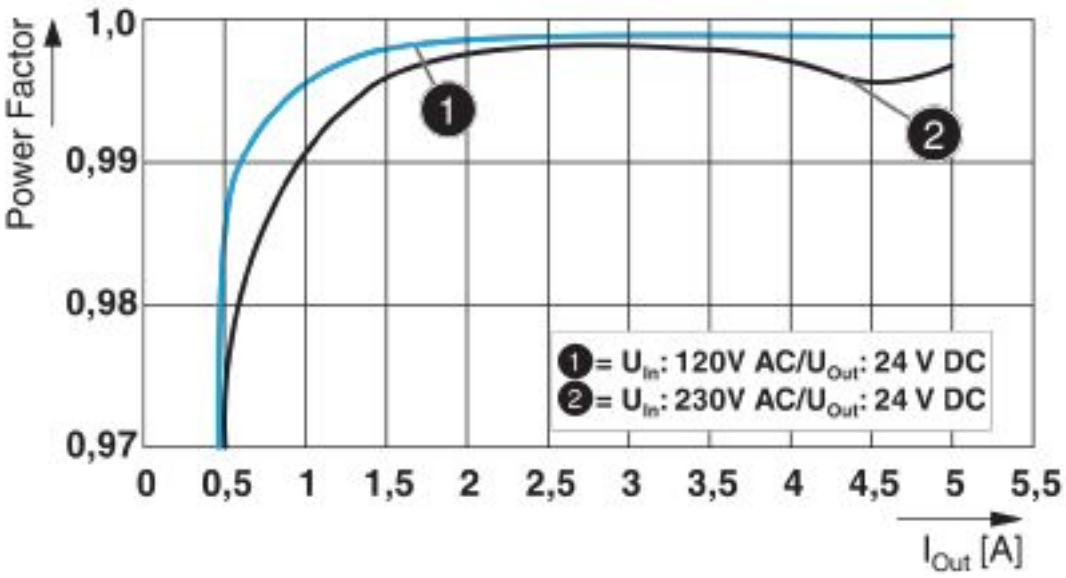
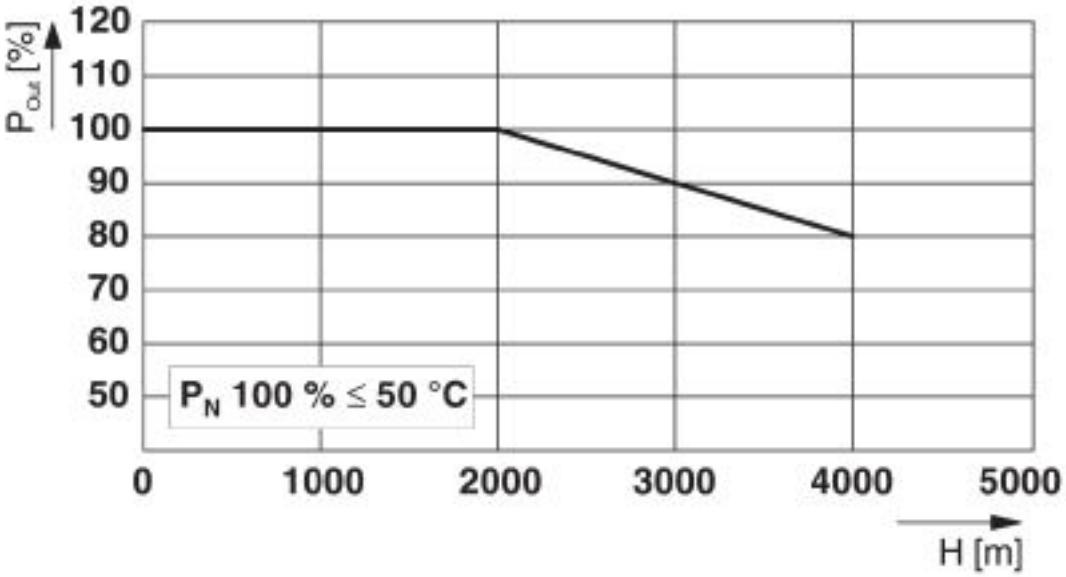
Diagram



Diagram



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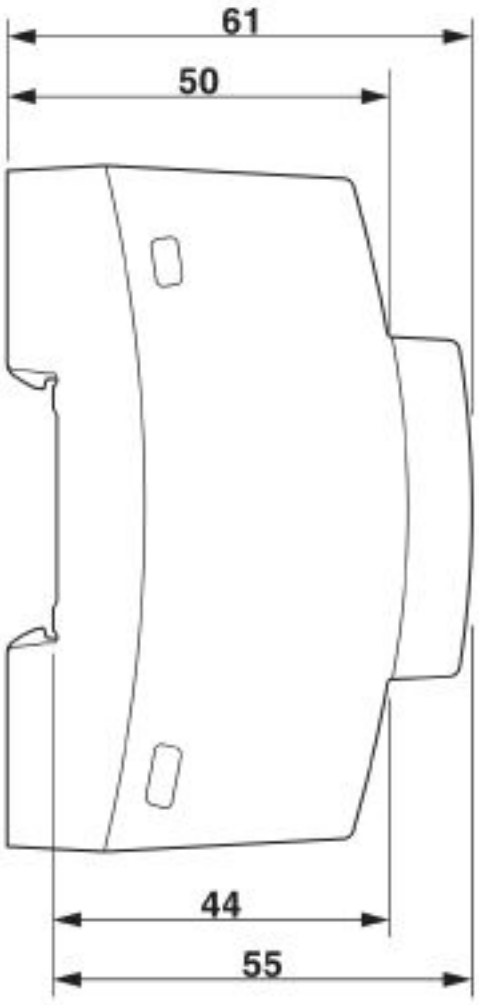
Dimensional drawing



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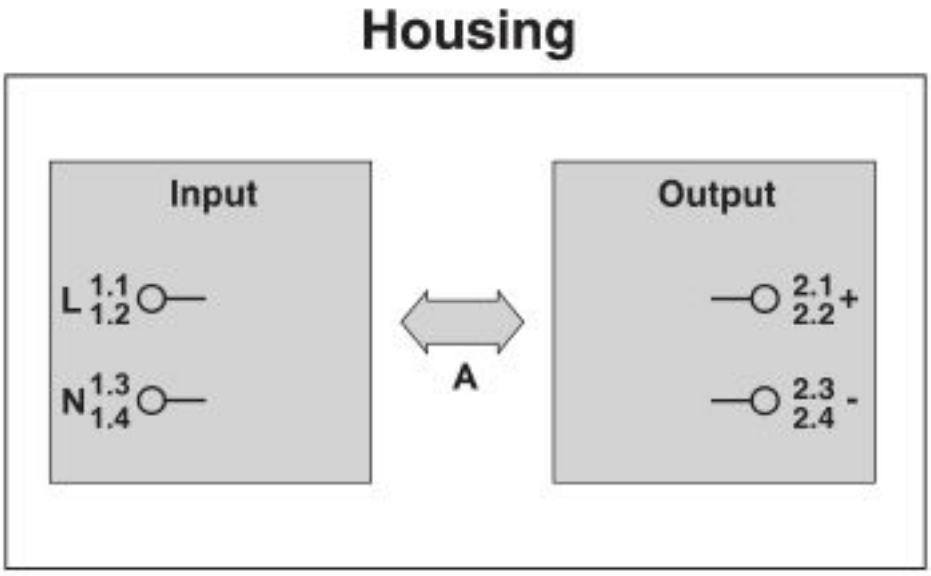
Schematic diagram



Classifications

eCl@ss

eCl@ss 10.0.1	27040701
eCl@ss 9.0	27040701

Approvals

Approvals

Approvals

cULus Listed

Ex Approvals

cULus Listed

Approval details

cULus Listed	c UL us LISTED	http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 123528

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Accessories

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Redundancy module

Redundancy module - STEP-DIODE/5-24DC/2X5/1X10 - 2868606

Redundancy module, 5 ... 24 V DC, 2x 5 A, 1x 10 A

Closing cap - STEP3 SEALING PLUG - 1175957

Sealing plug for protection against manipulation (adjustment of the DC output voltage) by sealing off the potentiometer opening

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