PS-EE-2G/1AC/24DC/60W/SC - Power supply

1394764

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Primary-switched power supply unit ESSENTIAL POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 2.5 A, adjustable from 24 V DC ... 28 V DC

Commercial data

Item number	1394764
Packing unit	1 pc
Minimum order quantity	5 pc
Sales key	CMB313
Product key	CMB313
GTIN	4063151775797
Weight per piece (including packing)	313.6 g
Weight per piece (excluding packing)	298 g
Country of origin	Information on the country of origin is provided with the delivery.

Technical data

Input data

AC operation

Supply system configuration	TN, TT, IT (PE)
Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	100 V AC ... 240 V AC -15 % ... +10 % (P_N = 60 W)
Typical national grid voltage	120 V AC
	230 V AC
Voltage type of supply voltage	AC
Inrush current	typ. 27 A (at 25 °C)
Inrush current integral (I^2t)	typ. 0.5 A^2s
Frequency range (f_N)	50 Hz ... 60 Hz ±10 %
Mains buffering time	typ. 14 ms (120 V AC)
	typ. 70 ms (230 V AC)
Current consumption	max. 1.5 A
	typ. 1.3 A (110 V AC (60 W))
	typ. 0.75 A (240 V AC (60 W))
Protective circuit	Transient protection; Varistor
Switch-on time	typ. 1 s
Device mains fuse	3.15 A internal (device protection), fast-blow
Recommended breaker for input protection	6 A ... 16 A (Characteristic B, C, D, K or comparable)
Discharge current to PE	< 3.5 mA

Output data

Efficiency	typ. 88 % (120 V AC)
	typ. 89 % (230 V AC)
Nominal output voltage	24 V DC
Setting range of the output voltage (U_{Set})	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Nominal output current (I_N)	max. 2.5 A
Short-circuit-proof	yes
No-load proof	yes
Crest factor	typ. 3 (120 V AC)
	typ. 4 (230 V AC)
Output power (P_N)	60 W (240 V AC)
Connection in parallel	yes, for increasing power and redundancy with diode
Connection in series	yes, for increased output voltage
Feedback voltage resistance	≤ 35 V DC
Protection against overvoltage at the output (OVP)	≤ 35 V DC
Residual ripple	typ. 30 mV_{PP} (with nominal values)
Control deviation	< 2 % (change in load, static 10 % ... 90 %)
	< 4 % (change in load, dynamic 10 % ... 90 %)
	< 0.1 % (change in input voltage ±10 %)

Rise time	< 100 ms (U_{Out} = 10 % ... 90 %)
Minimum no-load power dissipation	< 1 W (120 V AC)
Maximum no-load power dissipation	< 1 W (230 V AC)
Minimum nominal load power dissipation	< 9 W (120 V AC)
Power loss nominal load max.	< 7 W (230 V AC)
Integrated fuse protection	no

Connection data

Input

Position	1.x

Connection technology

Position marking	1.1 (L1), 1.2 (N), 1.3 (⏚)

Conductor connection

Connection method	Screw connection
rigid	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible with ferrule without plastic sleeve	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible with ferrule with plastic sleeve	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
AWG	20 ... 14 (Cu)
	14 (recommended)
Stripping length	6.5 mm (Rigid/flexible/ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm
	5 lb_f-in. ... 7 lb_f-in.
Drive form screw head	Slotted Phillips recess H1L

Output

Position	2.x

Connection technology

Position marking	2.1, 2.2 (+), 2.3, 2.4 (-)

Conductor connection

Connection method	Screw connection
rigid	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible with ferrule without plastic sleeve	0.5 mm² ... 2.5 mm²
	2.5 mm² (recommended)
flexible with ferrule with plastic sleeve	0.5 mm² ... 2.5 mm²

	2.5 mm² (recommended)
AWG	20 ... 14 (Cu)
	14 (recommended)
Stripping length	6.5 mm (Rigid/flexible/ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm
	5 lb_f-in. ... 7 lb_f-in.
Drive form screw head	Slotted Phillips recess H1L

Signaling

LED signaling

Types of signaling	LED DC OK - signal state operation (U_N = 24 V DC, I_{Out} = I_N)
Function	Visual operating state display
Color	green
LED off	Supply voltage input AC not present (Off)
LED on (green), DC OK	U_{OUT} > 17.5 V (On (green), DC OK)

Electrical properties

Number of phases	1
Insulation voltage input/output	4 kV AC (type test)
	3 kV AC (routine test)
Insulation voltage input / PE	3.5 kV AC (type test)
	2.4 kV AC (routine test)

Product properties

Product type	Power supply
Product family	ESSENTIAL POWER
MTBF (Telcordia SR-332)	> 2800000 h (25 °C)
	> 2300000 h (40 °C)
	> 2100000 h (45 °C)

Insulation characteristics

Protection class	II
Degree of pollution	2

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	40 °C
Time	50000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	30 °C
Time	100000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	40 °C
Time	70000 h
Additional text	230 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	30 °C
Time	140000 h
Additional text	230 V AC

Dimensions

Item dimensions

Width	33 mm
Height	90 mm
Depth	100 mm

Installation dimensions

Installation distance right/left	10 mm / 10 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	PC
Hood version	Stainless steel
Side element version	Aluminum
Foot latch material	Polyamid

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-20 °C ... 70 °C (Derating >45°C: 2.5%/K)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 5000 m (> 2000 m, Derating: 10 %/1000 m)
Climatic class	3K22 (in accordance with EN 60721-3-3)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Shock (operation)	15 ms, 15g, per spatial direction (IEC 60068-2-27)

Vibration (operation)	10 Hz ... 50 Hz, amplitude ±0.2 mm
	50 Hz ... 150 Hz, 2.3g, 90 min.
Temp code	T4 (-20 ... +70 °C; > 45 °C, Derating: 2,5 %/K)

Standards and regulations

Electrical safety

Standard designation	Electrical safety
Standards/specifications	IEC 61010-2-201 (SELV)

Safety for measurement, control, and laboratory equipment

Standard designation	Safety for equipment for measurement, control, and laboratory use
Standards/specifications	IEC 61010-1

Protective extra-low voltage

Standard designation	Protective extra-low voltage
Standards/specifications	IEC 61010-1 (SELV)
	IEC 61010-2-201 (PELV)

Limitation of harmonic line currents

Standard designation	Limitation of harmonic line currents
Standards/specifications	EN 61000-3-2

Mains voltage dips

Standard designation	Requirement of the semiconductor industry with regard to mains voltage dips
Standards/specifications	SEMI F47 - 0706 (185 V AC)

Safe isolation

Standard designation	Safe isolation
Standards/specifications	IEC 61558-2-16
Note	Transformer

Approvals

UL

Identification	UL/C-UL Listed UL 61010-1

UL

Identification	UL/C-UL Listed UL 61010-2-201

CB scheme

Identification	CB scheme (IEC 61010-1, IEC 61010-2-201)

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC

Interference emission	Interference emission in accordance with EN 61000-6-3 (residential and commercial) and EN 61000-6-4 (industrial)
EMC requirements for noise immunity	EN 61000-6-2

Conducted noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

Noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

Harmonic currents

Standards/regulations	EN 61000-3-2
	EN 61000-3-2 (Class A)
Frequency range	0 kHz ... 2 kHz

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 A

Electromagnetic HF field

Standards/regulations	EN 61000-4-3

Electromagnetic HF field

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)
Frequency range	2 GHz ... 3 GHz
Test field strength	1 V/m (Test Level 3)
Comments	Criterion A

Fast transients (burst)

Standards/regulations	EN 61000-4-4

Fast transients (burst)

Input	asymmetrical 4 kV (Test Level 4)
Output	asymmetrical 2 kV (Test Level 3)
Comments	Criterion A

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5

Surge voltage load (surge)

Input	symmetrical 2 kV (Test Level 4)
	asymmetrical 4 kV (Test Level 4)
Output	symmetrical 0.5 kV (Test Level 2)
	asymmetrical 1 kV (Test Level 3)
Comments	Criterion A

Conducted interference

Standards/regulations	EN 61000-4-6

Conducted interference

Input/Output	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V (Test Level 3)

Voltage dips

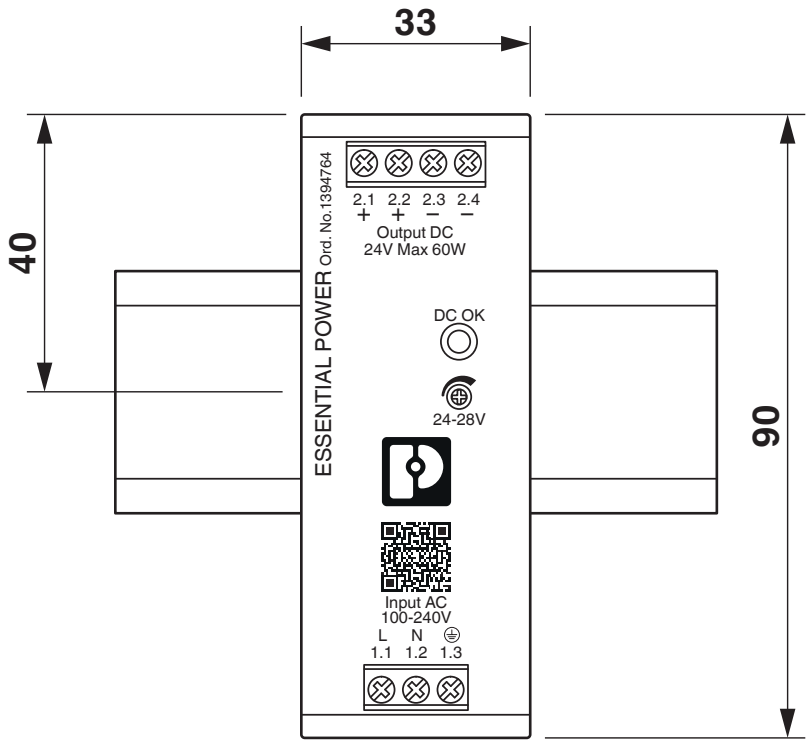
Standards/regulations	EN 61000-4-11
Voltage	230 V AC
Frequency	50 Hz
Voltage dip	40 %
Number of periods	10 periods
Comments	Criterion A
Voltage dip	0 %
Number of periods	1 period
Comments	Criterion B
Voltage dip	0 %
Number of periods	1 period
Comments	Criterion A

Criteria

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.

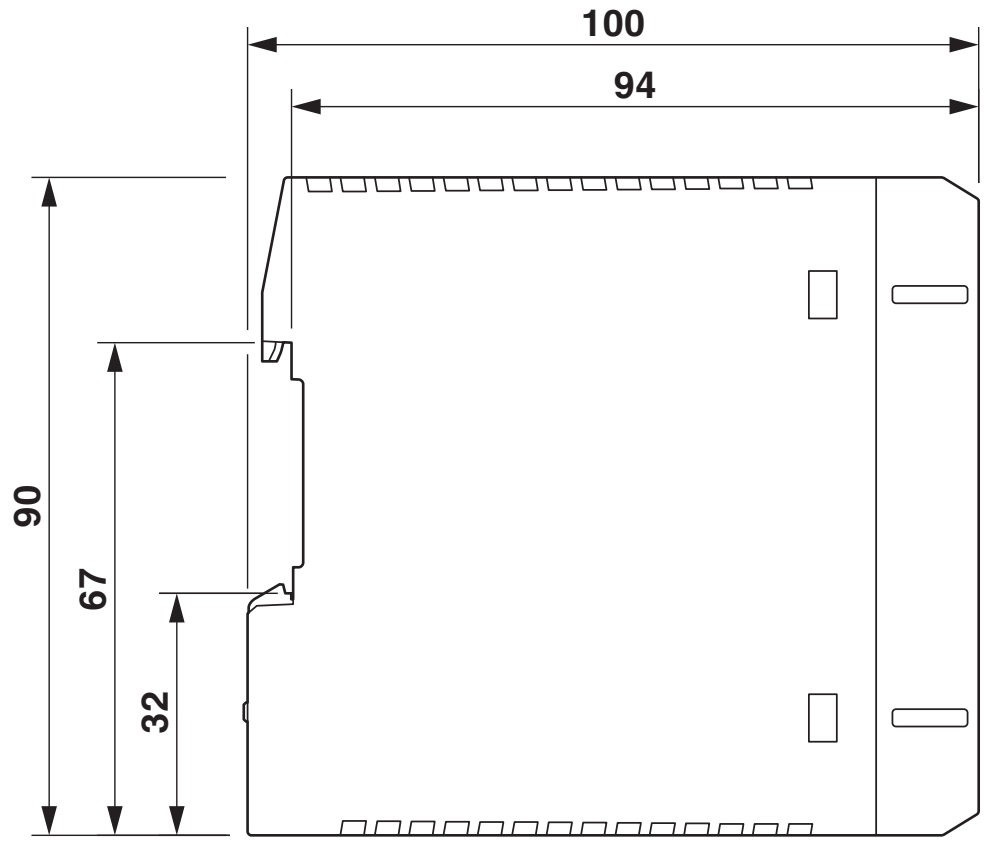
Drawings

Dimensional drawing



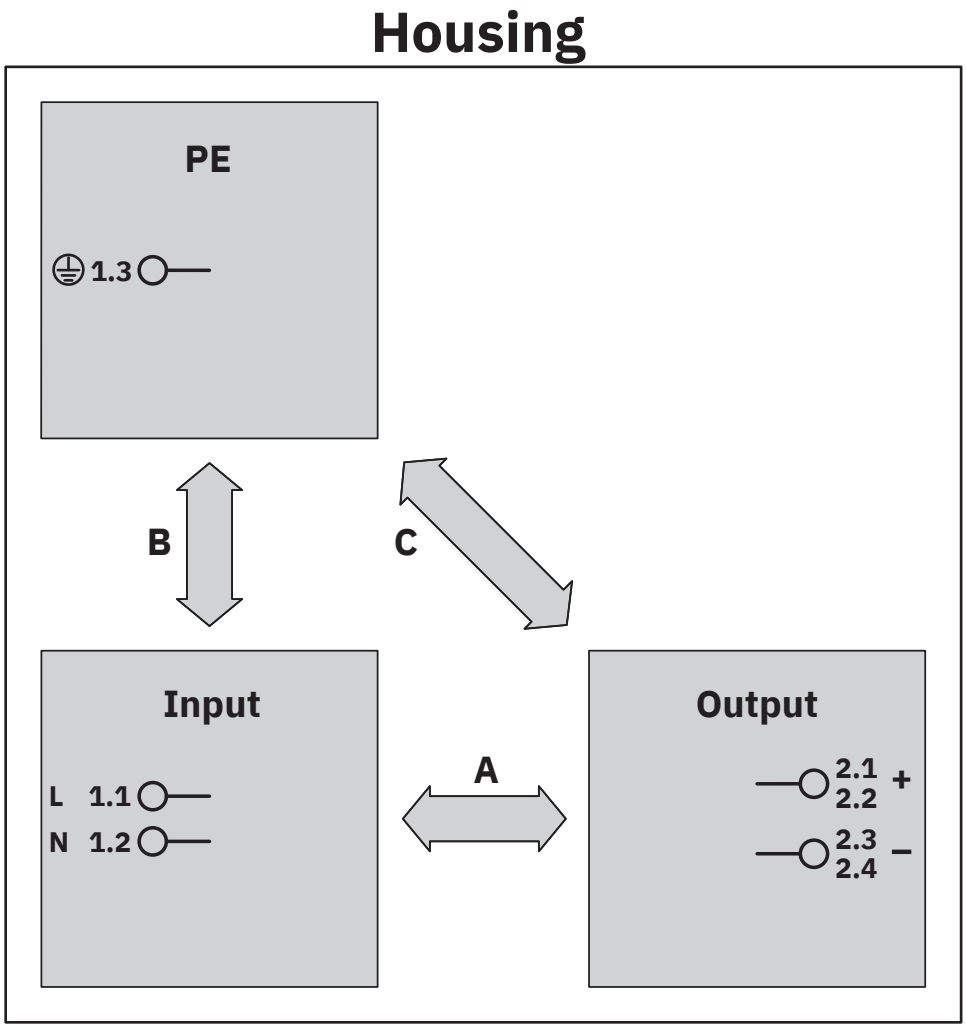
Device dimensions (dimensions in mm)

Dimensional drawing



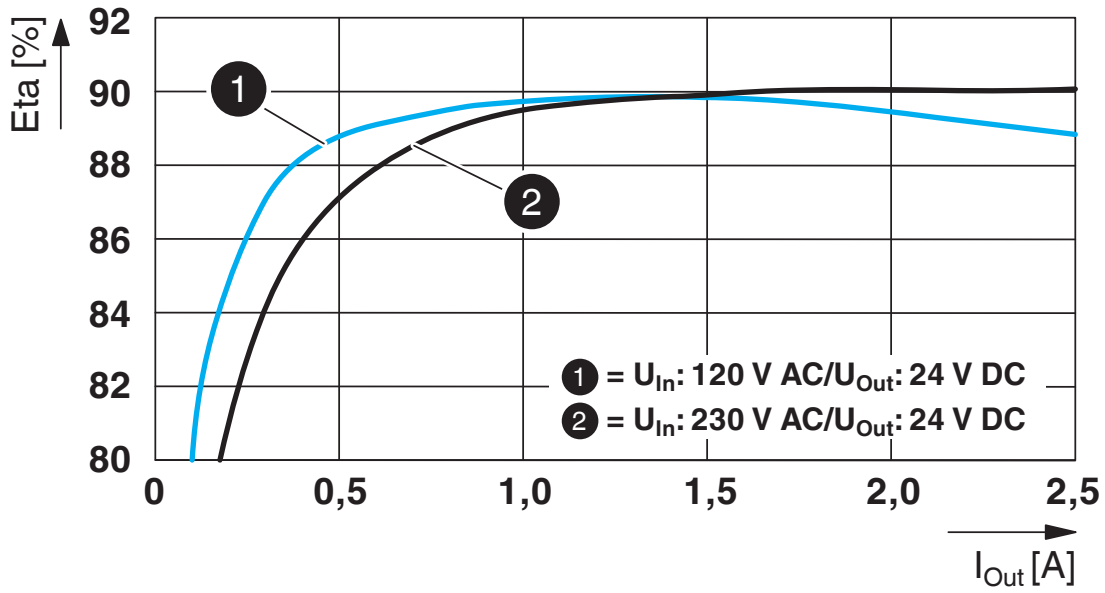
Device dimensions (dimensions in mm)

Schematic diagram



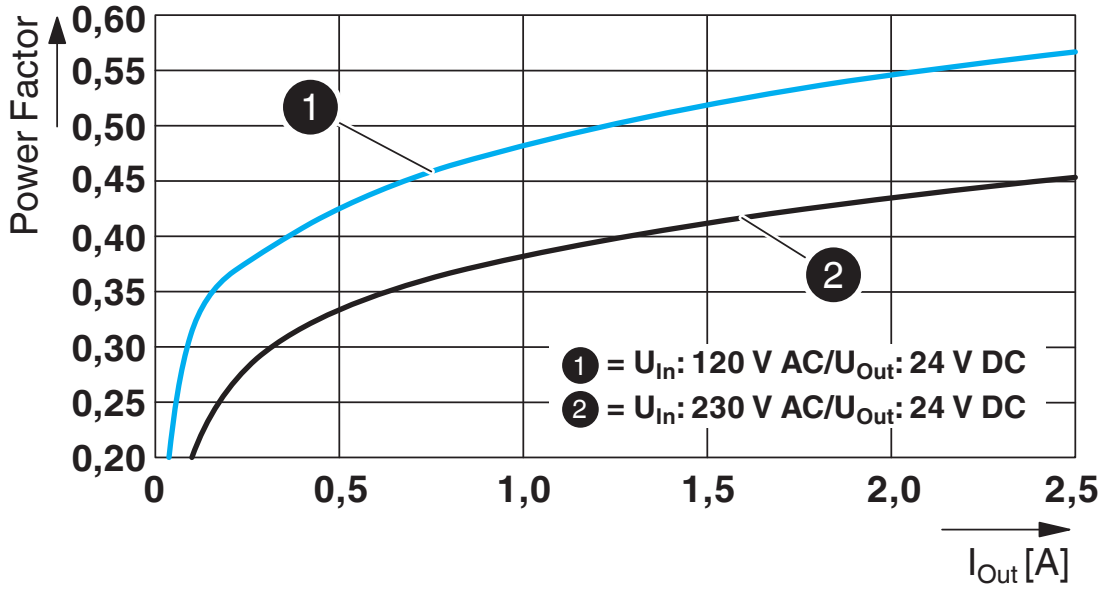
Test sections, insulation voltage

Diagram



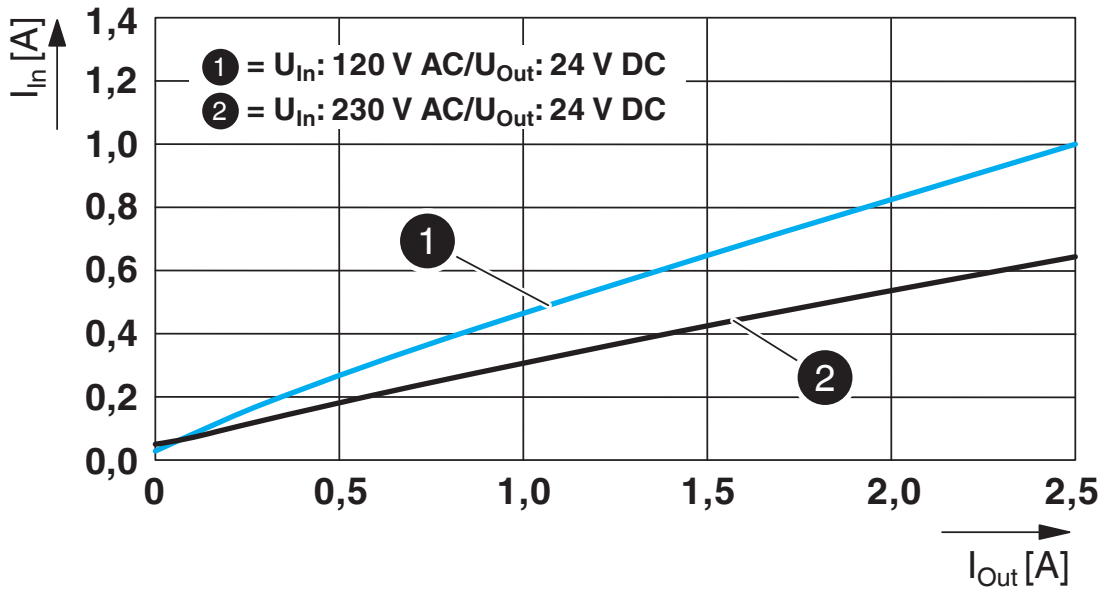
Efficiency

Diagram



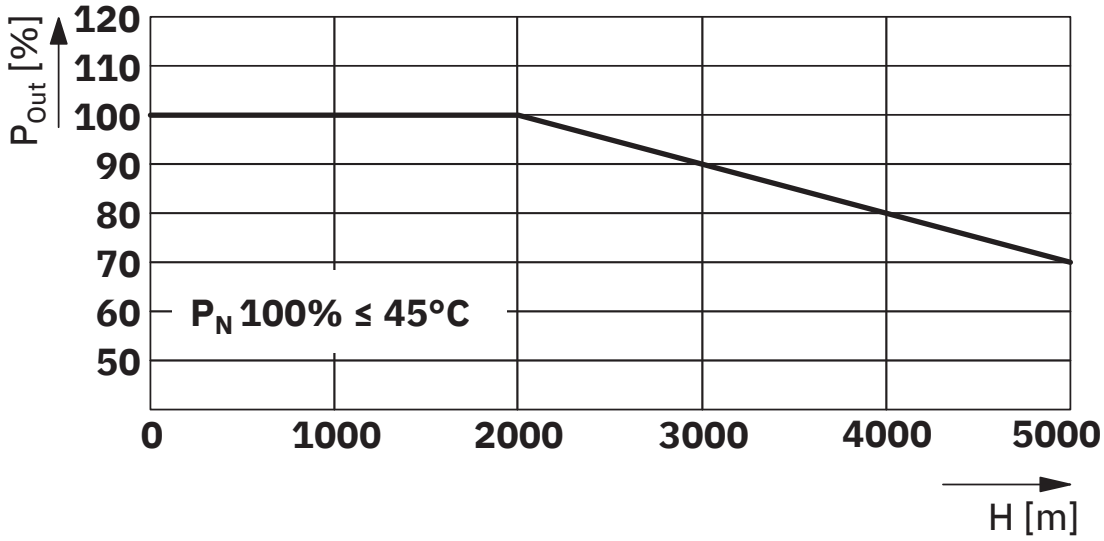
Power factor

Diagram



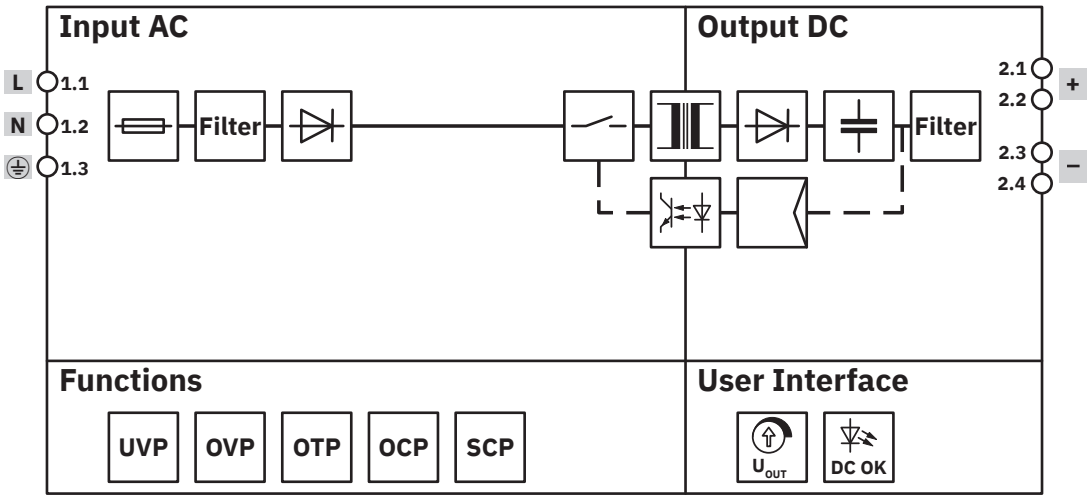
Input current/output current

Diagram



Output power Installation altitude

Block diagram



Block diagram

Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/nz/products/1394764

IECEE CB Scheme
Approval ID: DE 2-038745

cULus Listed
Approval ID: E123528-20230331

IECEE CB Scheme
Approval ID: JPTUV-147263-M1

BIS Licence Document
Approval ID: R-41287490

Classifications

ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	27040701

ETIM

ETIM 10.0	EC002540

UNSPSC

UNSPSC 21.0	26111700

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)
SCIP	e0cebcab-42a0-4ba0-b8cd-9d85ca65e633

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