PS-EE-2G/1AC/24DC/120W/SC - Power supply unit

1234302

https://www.phoenixcontact.com/us/products/1234302

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Primary-switched power supply unit, ESSENTIAL POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 5 A, adjustable from 24 V DC ... 28 V DC

Commercial data

Item number	1234302
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CM07
Product key	CMB313
GTIN	4063151338336
Weight per piece (including packing)	710 g
Weight per piece (excluding packing)	611 g
Customs tariff number	85044095
Country of origin	CN

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	110 V AC ... 240 V AC ±10 % (P_N = 120 W)
	100 V AC ... 109 V AC -15 % ... +10 % (P_N = 100 W)
Typical national grid voltage	120 V AC
	230 V AC
Voltage type of supply voltage	AC
Inrush current	typ. 43 A (at 25 °C)
Inrush current integral (I^2t)	typ. 0.7 A^2s
Frequency range (f_N)	50 Hz ... 60 Hz ±10 %
Mains buffering time	typ. 15 ms (120 V AC)
	typ. 42 ms (230 V AC)
Current consumption	max. 2 A (120 W)
	max. 1.5 A (100 W)
	typ. 1.3 A (110 V AC (120 W))
	typ. 0.6 A (240 V AC (120 W))
	typ. 1.2 A (100 V AC (100 W))
	typ. 1.1 A (109 V AC (100 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	10 A ... 16 A (Characteristic B, C, D, K or comparable)
Discharge current to PE	< 3.5 mA

Output data

Efficiency	typ. 87 % (120 V AC)
	typ. 88 % (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. 5 A (P_N = 120 W)
	max. 4.16 A (P_N = 100 W)
Short-circuit-proof	yes
No-load proof	yes
Crest factor	typ. 1.5 (120 V AC)
	typ. 1.5 (230 V AC)
Output power (P_N)	120 W (240 V AC)
	100 W (100 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. 70 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	< 2 s (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	< 20 W (120 V AC)
Power loss nominal load max.	< 16 W (230 V AC)
Integrated fuse protection	no

Connection data

Input

Position	1.x
Identification	1.1 (L), 1.3 (N)

Conductor connection

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

Output

Position	2.x
Identification	2.1, 2.2 (+), 2.3, 2.4 (-)

Conductor connection

Connection method	Screw connection
rigid	1 mm² ... 2.5 mm²
flexible	1 mm² ... 2.5 mm²
flexible with ferrule without plastic sleeve	1 mm² ... 2.5 mm²
flexible with ferrule with plastic sleeve	1 mm² ... 2.5 mm²
rigid (AWG)	17 ... 14 (Cu)
Stripping length	6.5 mm
Tightening torque	0.5 Nm ... 0.6 Nm
	5 lb_f-in. ... 7 lb_f-in.
Drive form screw head	Slotted L

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} > 15 V (On (green), DC OK)

Electrical properties

Number of phases	1.00
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)	> 2470000 h (25 °C)
	> 2000000 h (40 °C)
	> 1840000 h (45°C)

Insulation characteristics

Protection class	I
Degree of pollution	2

Life expectancy (electrolytic capacitors)

Current	5 A
Temperature	40 °C
Time	24000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	5 A
Temperature	30 °C
Time	48000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	5 A
Temperature	40 °C
Time	32000 h
Additional text	230 V AC

Life expectancy (electrolytic capacitors)

Current	5 A
Temperature	30 °C
Time	64000 h
Additional text	230 V AC

Dimensions

Item dimensions

Width	40 mm
Height	124 mm
Depth	125 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	Metal
Housing material	Aluminum (AlMg3) / sheet steel, zinc-plated
Hood version	Stainless steel
Side element version	Aluminum
Foot latch material	Sheet steel, zinc-plated

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, 15 g, 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.

Standards and regulations

Overvoltage category

EN 61010-1	II (≤ 3000 m)

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 (120 V AC)

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

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
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 55016
	EN 61000-6-3 (Class B)
Noise emission	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	4 kV (Test Level 4 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)
Comments	Criterion A

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)
	1 kV (Test Level 2 - asymmetrical)
Comments	Criterion B

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

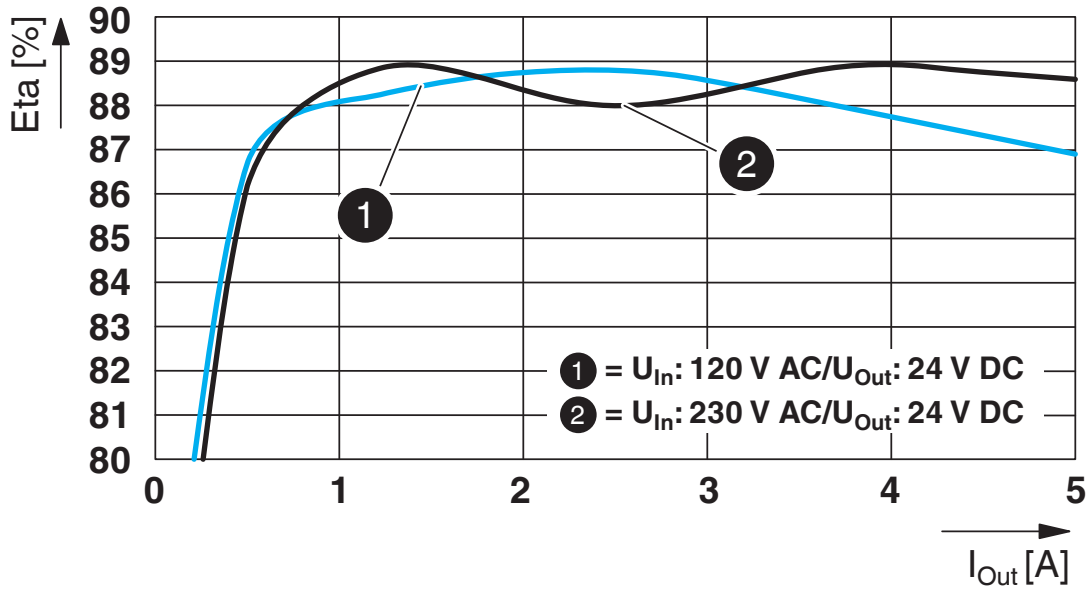
Standards/regulations	EN 61000-4-11
Voltage	230 V AC
Frequency	50 Hz
Voltage dip	70 %
Number of periods	25 periods
Comments	Criterion A
Voltage dip	40 %
Number of periods	12 periods
Comments	Criterion A
Voltage dip	0 %
Number of periods	1 period
Comments	Criterion A

Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

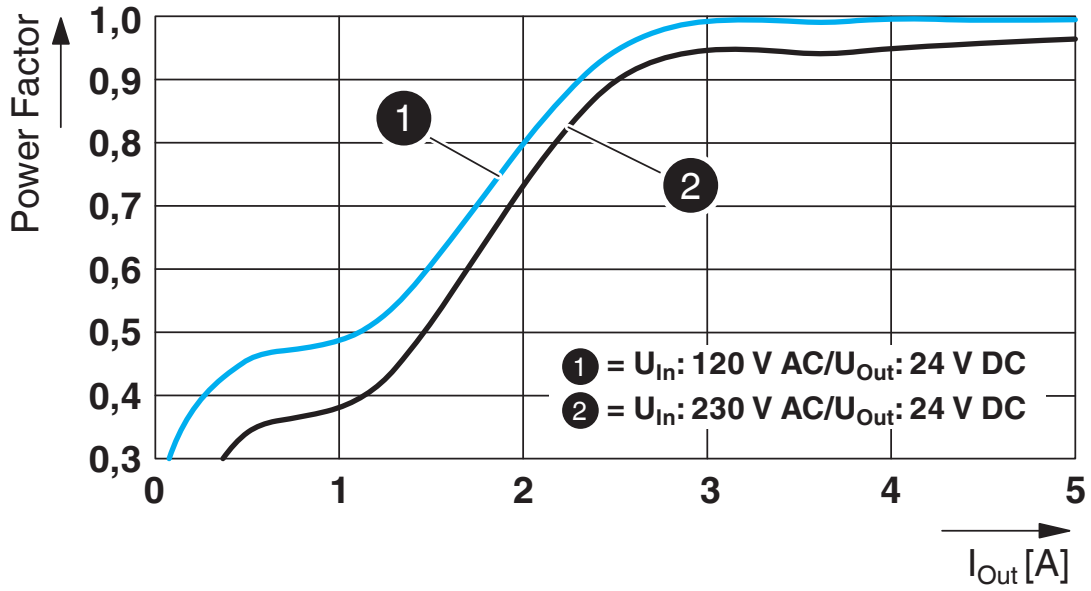
Drawings

Diagram



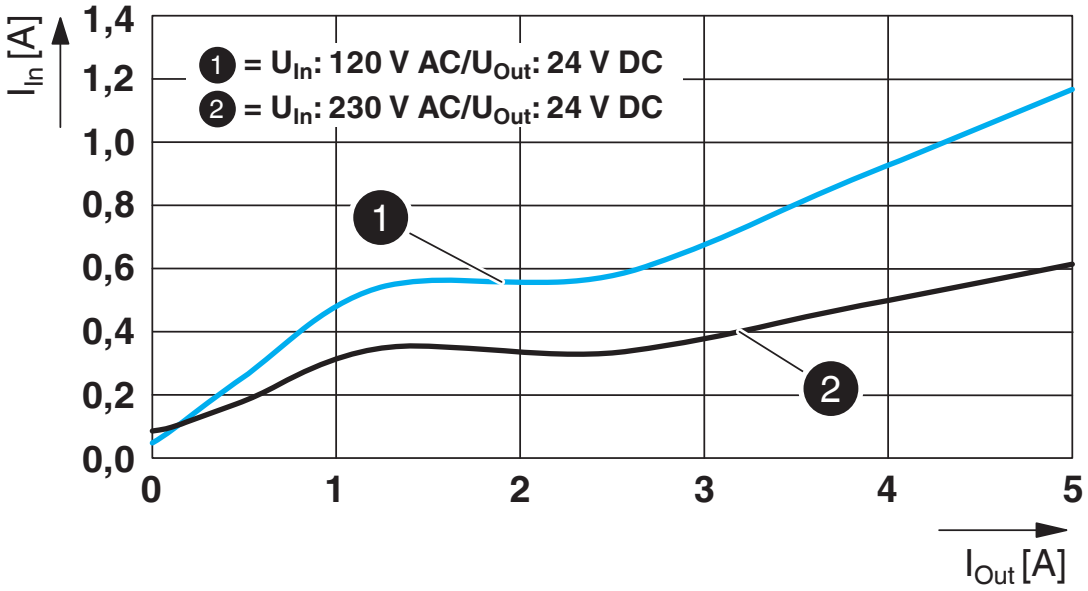
Efficiency

Diagram



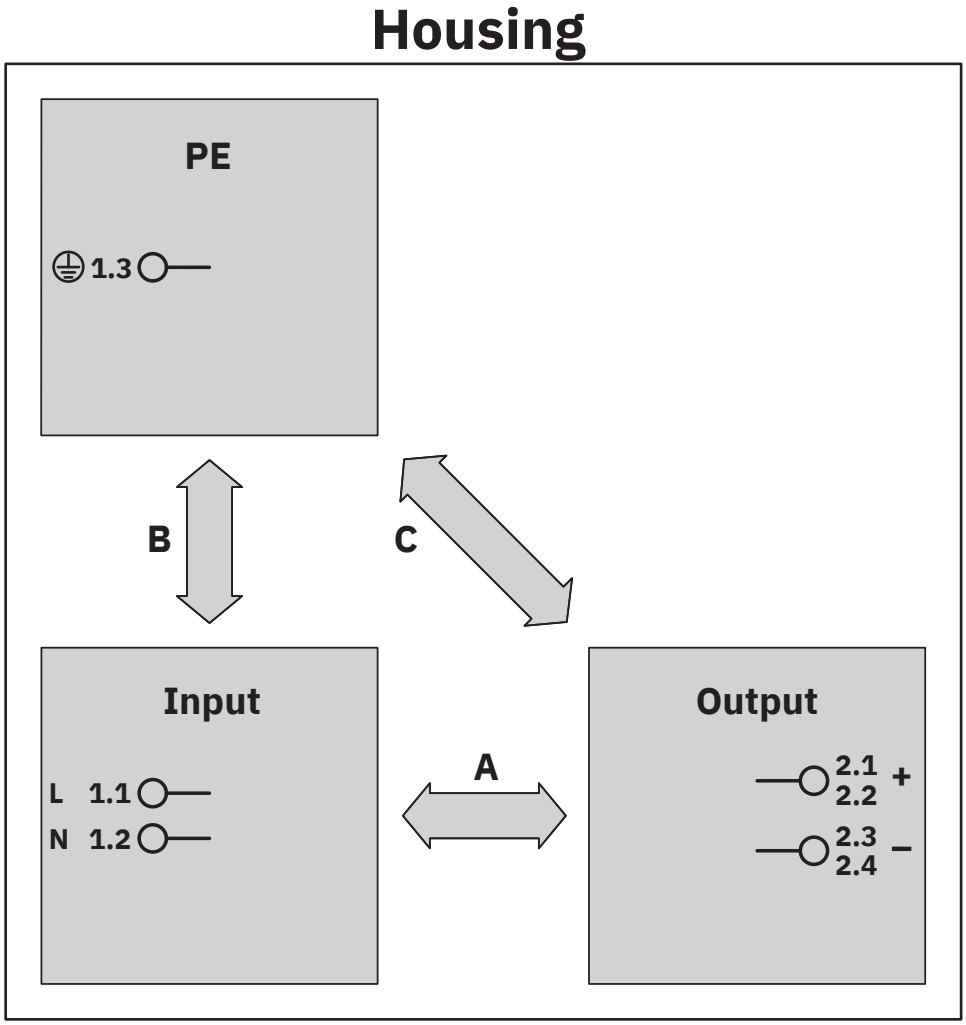
Power factor

Diagram



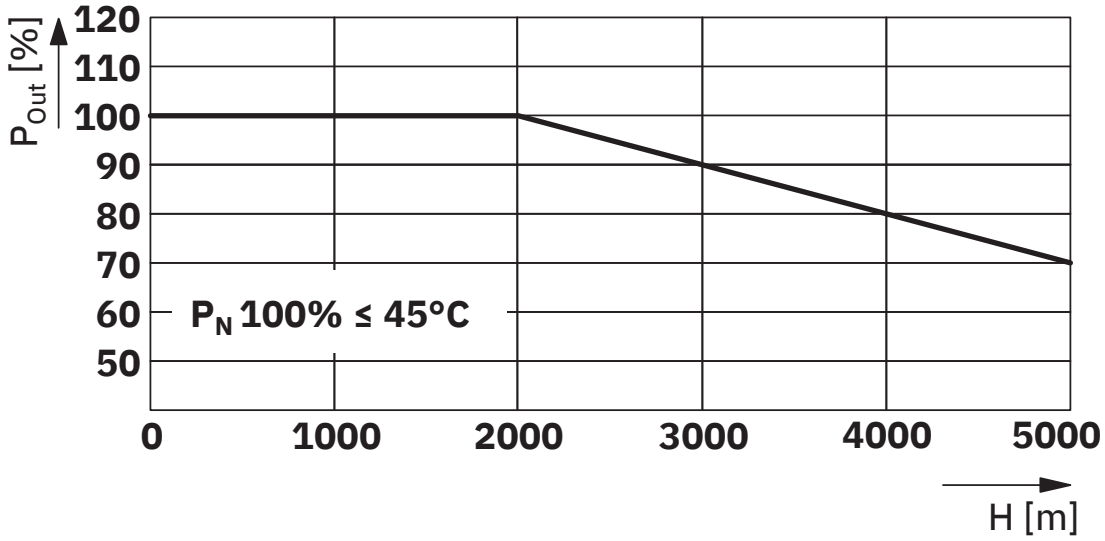
Input current/output current

Schematic diagram



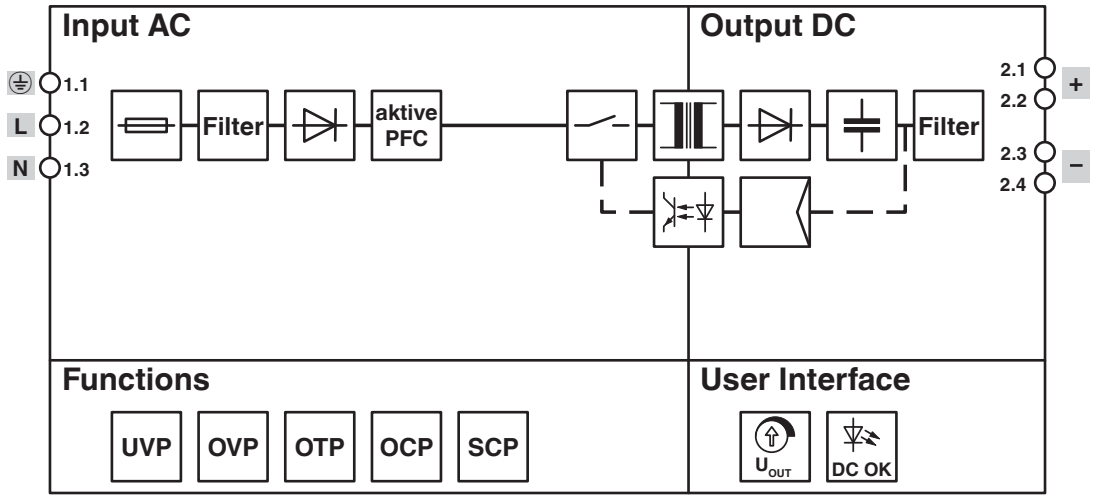
Test sections, insulation voltage

Diagram



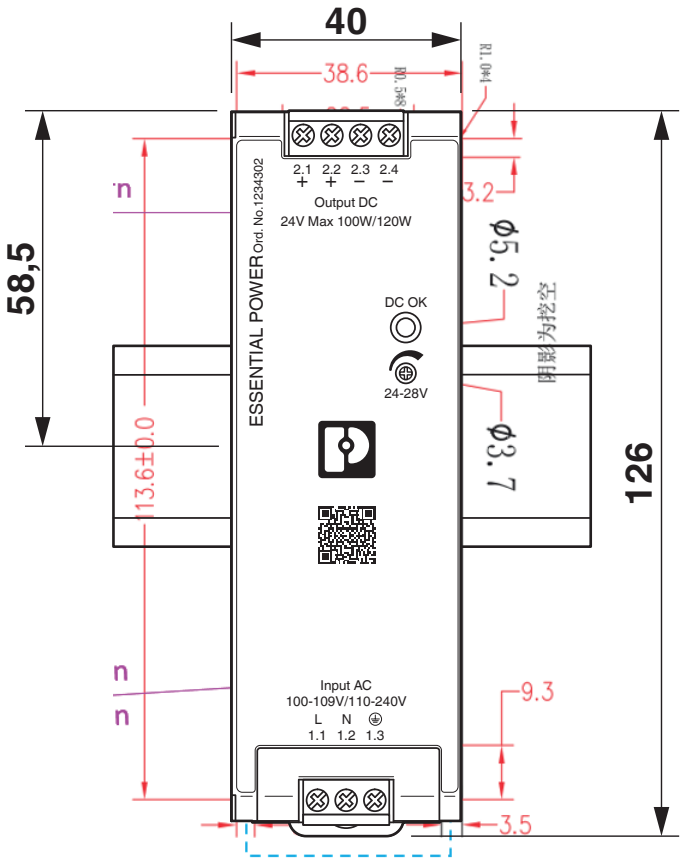
Output power Installation altitude

Block diagram



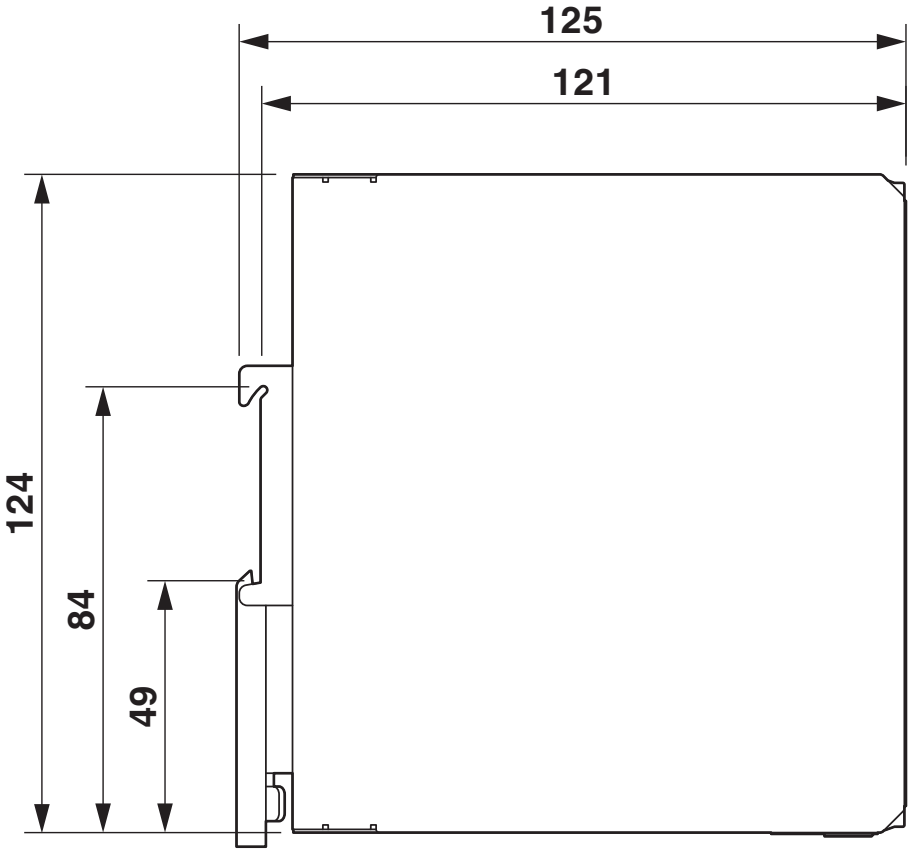
Block diagram

Dimensional drawing



Device dimensions (dimensions in mm)

Dimensional drawing



Device dimensions (dimensions in mm)

Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1234302

IECEE CB Scheme
Approval ID: DE 2-039094

cULus Listed
Approval ID: E123528-20230401

IECEE CB Scheme
Approval ID: JPTUV-147260-M1

Classifications

ECLASS

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

ETIM

ETIM 8.0	EC002540

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)

Accessories

UNO-DIODE/5-24DC/2X10/1X20 - Redundancy module

2905489

https://www.phoenixcontact.com/us/products/2905489

Redundancy module, 5 V - 24 V DC, 2 x 10 A, 1 x 20 A.

TRIO2-DIODE/12-24DC/2X10/1X20 - Redundancy module

2907380

https://www.phoenixcontact.com/us/products/2907380

Redundancy module, 12 V - 24 V DC, 2 x 10 A, 1 x 20 A

PLT-SEC-T3-230-FM - Type 3 surge protection device

2905229

https://www.phoenixcontact.com/us/products/2905229

Pluggable device protection, according to type 3/class III, for 1-phase power supply networks with separate N and PE (3-conductor system: L1, N, PE), with integrated surge-proof fuse and remote indication contact. Also suitable for DC applications.

CBMC E4 24DC/1-4A NO - Electronic circuit breaker

2906031

https://www.phoenixcontact.com/us/products/2906031

Multi-channel electronic circuit breaker for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

CBMC E4 24DC/1-10A NO - Electronic circuit breaker

2906032

https://www.phoenixcontact.com/us/products/2906032

Multi-channel electronic circuit breaker for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker

2910410

https://www.phoenixcontact.com/us/products/2910410

Multi-channel electronic circuit breaker with IO-Link interface for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

CBMC E4 24DC/1-10A IOL - Electronic circuit breaker

2910411

https://www.phoenixcontact.com/us/products/2910411

Multi-channel electronic circuit breaker with IO-Link interface for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

CBM E4 24DC/0.5-10A NO-R - Electronic circuit breaker

2905743

https://www.phoenixcontact.com/us/products/2905743

Multi-channel, electronic circuit breaker with active current limitation for protecting four loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.

PS-EE-2G/1AC/24DC/120W/SC - Power supply unit

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CBM E8 24DC/0.5-10A NO-R - Electronic circuit breaker

2905744

https://www.phoenixcontact.com/us/products/2905744

Multi-channel, electronic circuit breaker with active current limitation for protecting eight loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.

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