

PS-EE-2G/1AC/24DC/240W/SC - Power supply unit



1234304

<https://www.phoenixcontact.com/us/products/1234304>

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Primary-switched power supply unit, ESSENTIAL POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 10 A, adjustable from 24 V DC ... 28 V DC

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1234304 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM07 |
| Product key | CMB313 |
| GTIN | 4063151338039 |
| Weight per piece (including packing) | 970 g |
| Weight per piece (excluding packing) | 855 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 $\pm 10\%$ ($P_N = 240\text{ W}$) |
| | 100 V AC ... 109 V AC -15% ... $+10\%$ ($P_N = 200\text{ W}$) |
| Typical national grid voltage | 120 V AC |
| | 230 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | typ. 30 A (at 25 °C) |
| Inrush current integral (I^2t) | typ. 0.2 A ² s |
| Frequency range (f_N) | 50 Hz ... 60 Hz $\pm 10\%$ |
| Mains buffering time | typ. 30 ms (120 V AC) |
| | typ. 30 ms (230 V AC) |
| Current consumption | max. 3 A (240 W) |
| | max. 2.5 A (200 W) |
| | typ. 2.4 A (110 V AC (240 W)) |
| | typ. 1.2 A (240 V AC (240 W)) |
| | typ. 2.4 A (100 V AC (200 W)) |
| Protective circuit | typ. 2.3 A (109 V AC (200 W)) |
| | Transient protection; Varistor |
| Switch-on time | typ. 1 s |
| Device mains fuse | 5 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. 91 % (120 V AC) |
| | typ. 92 % (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. 10 A ($P_N = 240\text{ W}$) |
| | max. 8.33 A ($P_N = 200\text{ W}$) |
| Short-circuit-proof | yes |
| No-load proof | yes |
| Crest factor | typ. 1.5 (120 V AC) |
| | typ. 1.9 (230 V AC) |
| Output power (P_N) | 240 W (240 V AC) |
| | 200 W (100 V AC) |
| Connection in parallel | yes, for increasing power and redundancy with diode |
| Connection in series | yes, for increased output voltage |

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




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| | |
|--|--|
| 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 | < 100 ms (U _{Out} = 10 % ... 90 %) |
| Minimum no-load power dissipation | < 3 W (120 V AC) |
| Maximum no-load power dissipation | < 3 W (230 V AC) |
| Minimum nominal load power dissipation | < 24 W (120 V AC) |
| Power loss nominal load max. | < 20 W (230 V AC) |
| Integrated fuse protection | no |

Connection data

Input

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

Conductor connection

| | |
|--|---|
| Connection method | Screw connection |
| rigid | 0.75 mm ² ... 2.5 mm ² |
| flexible | 0.75 mm ² ... 2.5 mm ² |
| flexible with ferrule without plastic sleeve | 0.75 mm ² ... 2.5 mm ² |
| flexible with ferrule with plastic sleeve | 0.75 mm ² ... 2.5 mm ² |
| rigid (AWG) | 18 ... 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 | 1.5 mm ² ... 2.5 mm ² |
| flexible | 1.5 mm ² ... 2.5 mm ² |
| flexible with ferrule without plastic sleeve | 1.5 mm ² ... 2.5 mm ² |
| flexible with ferrule with plastic sleeve | 1.5 mm ² ... 2.5 mm ² |
| rigid (AWG) | 16 ... 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 |

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Signaling

LED signaling

| | |
|-----------------------|--|
| Types of signaling | LED DC OK – signal state operation ($U_N = 24 \text{ V DC}$, $I_{Out} = I_N$) |
| Function | Visual operating state display |
| Color | green |
| LED off | Supply voltage input AC not present (Off) |
| LED on (green), DC OK | $U_{OUT} > 11 \text{ V}$ (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) | > 1170000 h (25 °C) |
| | > 800000 h (40 °C) |
| | > 700000 h (45 °C) |

Data management status

| | |
|------------------|----|
| Article revision | 01 |
|------------------|----|

Insulation characteristics

| | |
|---------------------|---|
| Protection class | I |
| Degree of pollution | 2 |

Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 10 A |
| Temperature | 40 °C |
| Time | 23000 h |
| Additional text | 120 V AC |

Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 10 A |
| Temperature | 30 °C |
| Time | 46000 h |
| Additional text | 120 V AC |

Life expectancy (electrolytic capacitors)

| | |
|-------------|---------|
| Current | 10 A |
| Temperature | 40 °C |
| Time | 31000 h |

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| | |
|---|----------|
| Additional text | 230 V AC |
| Life expectancy (electrolytic capacitors) | |
| Current | 10 A |
| Temperature | 30 °C |
| Time | 60000 h |
| Additional text | 230 V AC |

Dimensions

Item dimensions

| | |
|--------|--------|
| Width | 60 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 | ≤ 3000 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

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Overvoltage category

| | |
|------------|---------------------|
| EN 61010-1 | II (≤ 3000 m) |
|------------|---------------------|

Electrical safety

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

Electronic equipment for use in power installations

| | |
|--------------------------|--|
| Standard designation | Equipping high voltage installations with electronic equipment |
| Standards/specifications | EN 50178/VDE 0160 (PELV) |

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 |

Safe isolation

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

Mains voltage dips

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

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| | |
|-------------------------------------|--|
| 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 3 - symmetrical) |
| | 2 kV (Test Level 3 - asymmetrical) |

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| | |
|----------|-------------------------------------|
| Output | 0.5 kV (Test Level 2 - 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

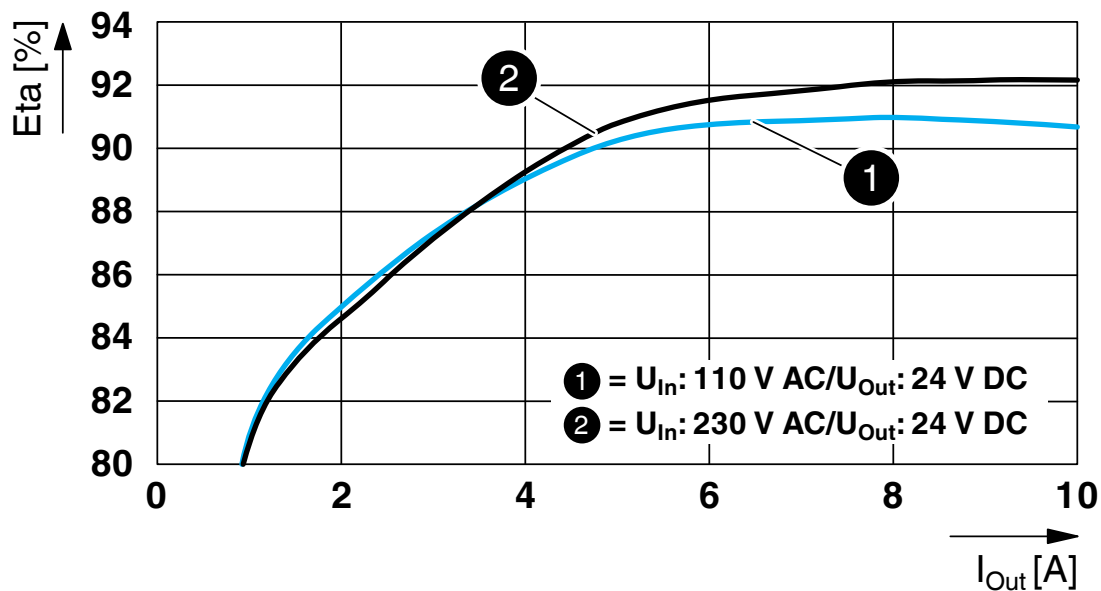
| | |
|-----------------------|---------------|
| Standards/regulations | EN 61000-4-11 |
| Voltage | 230 V AC |
| Frequency | 50 Hz |
| Voltage dip | 70 % |
| Number of periods | 25 periods |
| Comments | Criterion A |
| Voltage dip | 40 % |
| Number of periods | 10 periods |
| Comments | Criterion 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. |
| Criterion C | Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements. |

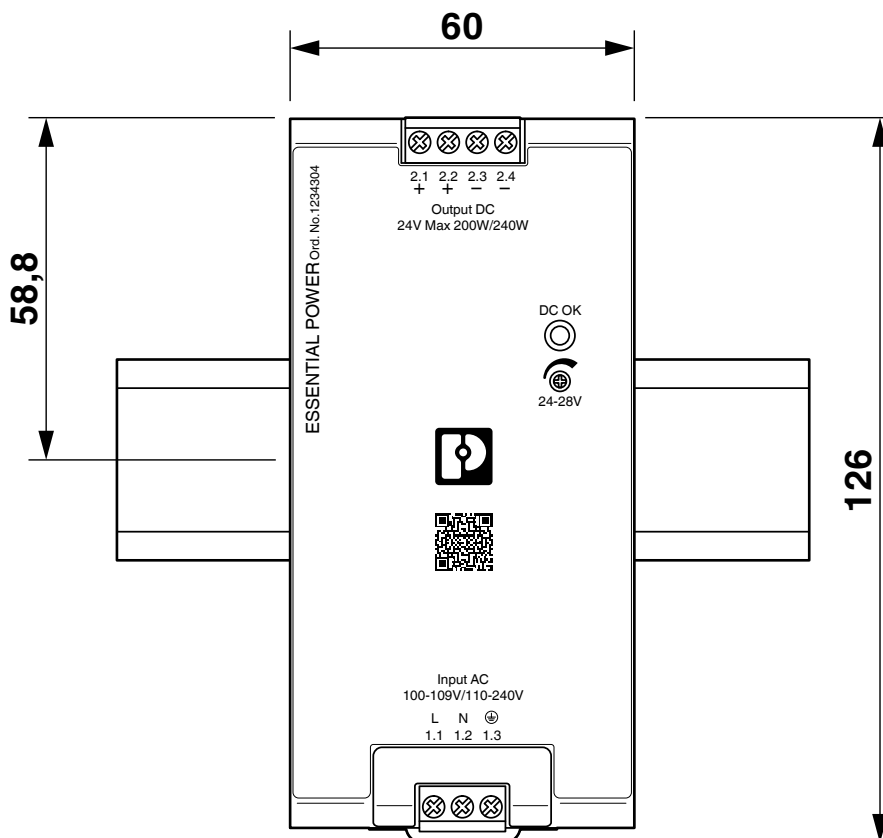
Drawings

Diagram



Efficiency

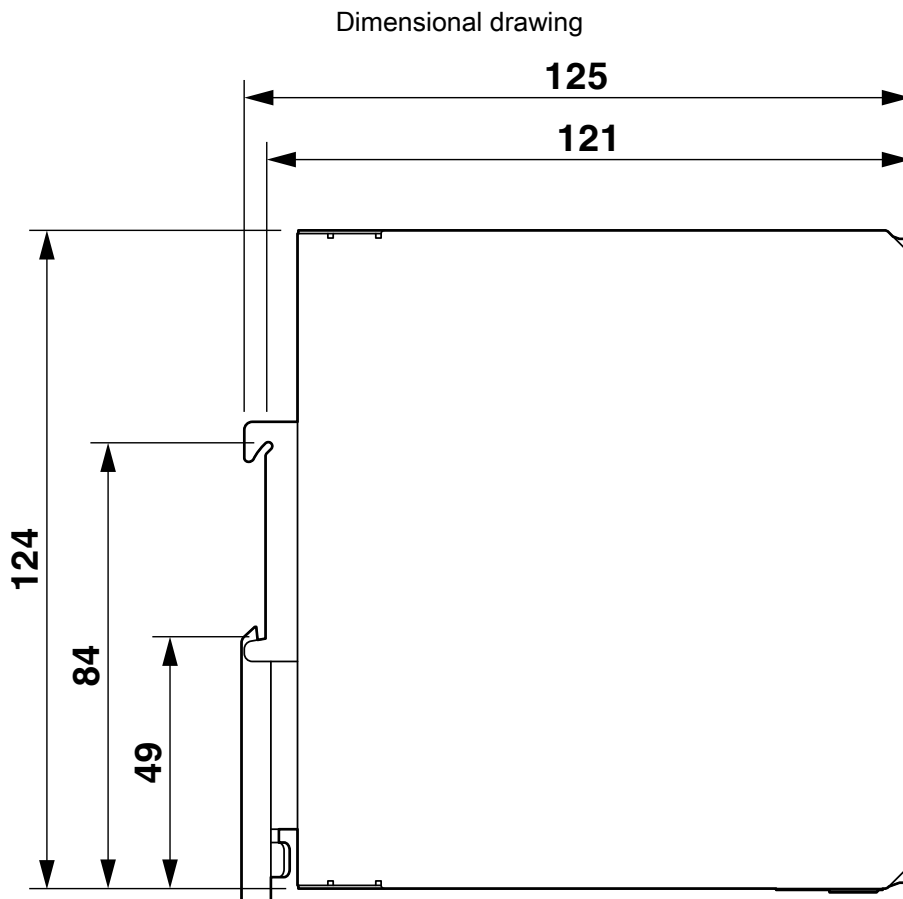
Dimensional drawing



Device dimensions (dimensions in mm)

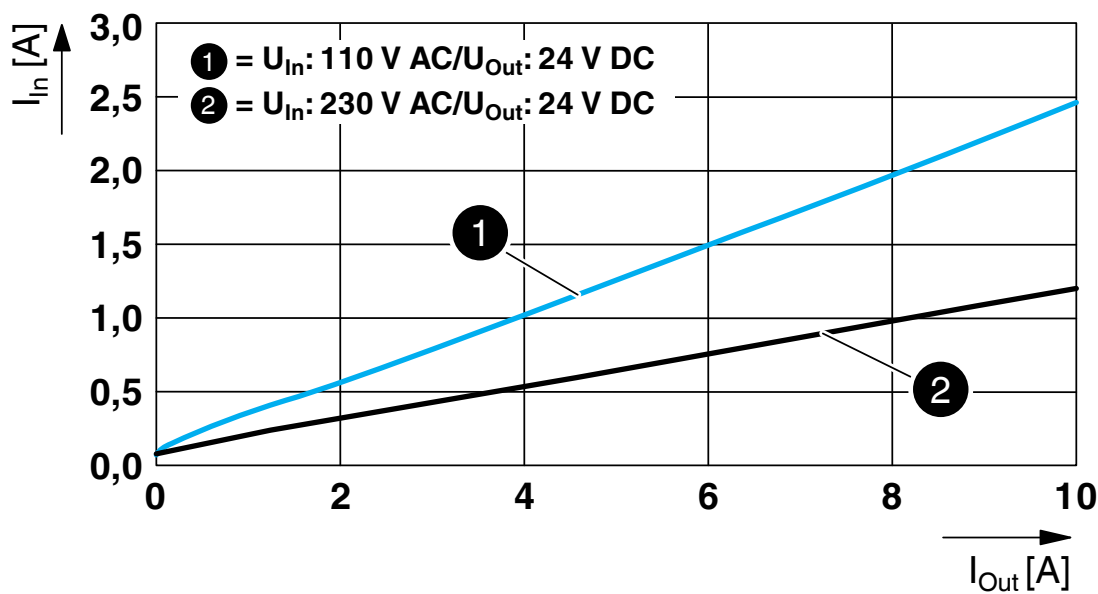
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Device dimensions (dimensions in mm)

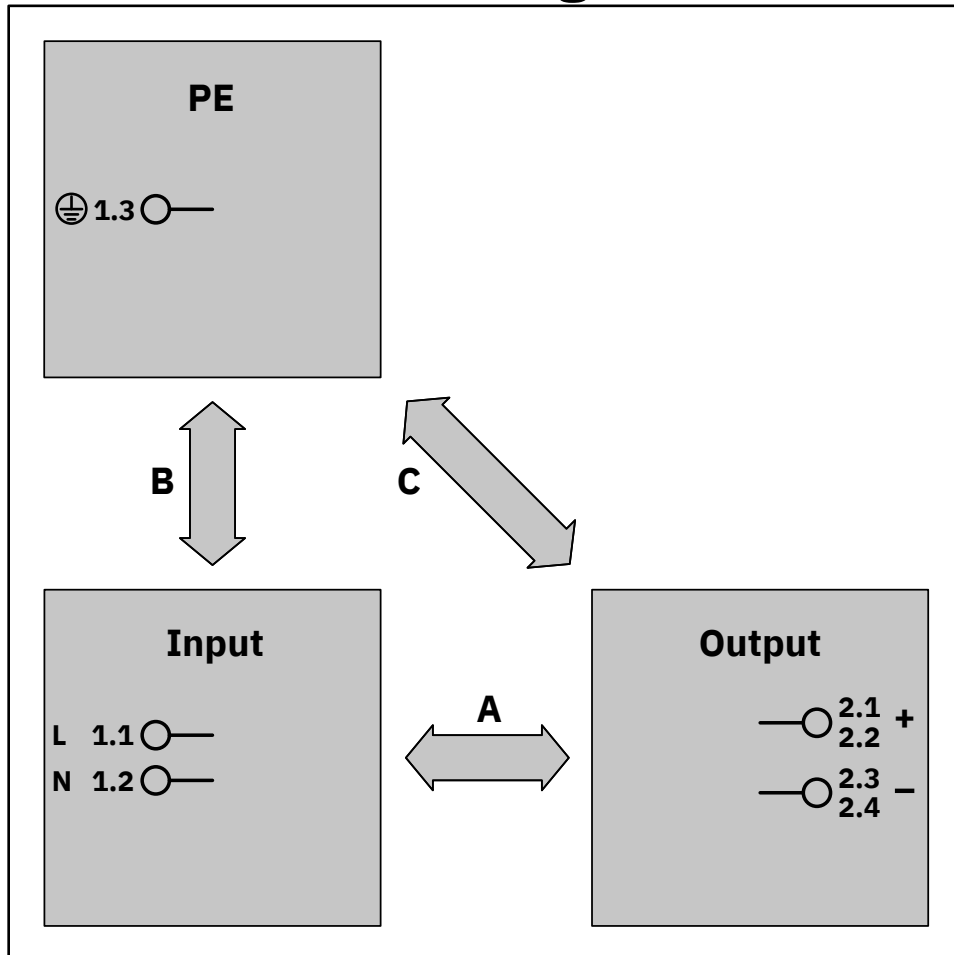
Diagram



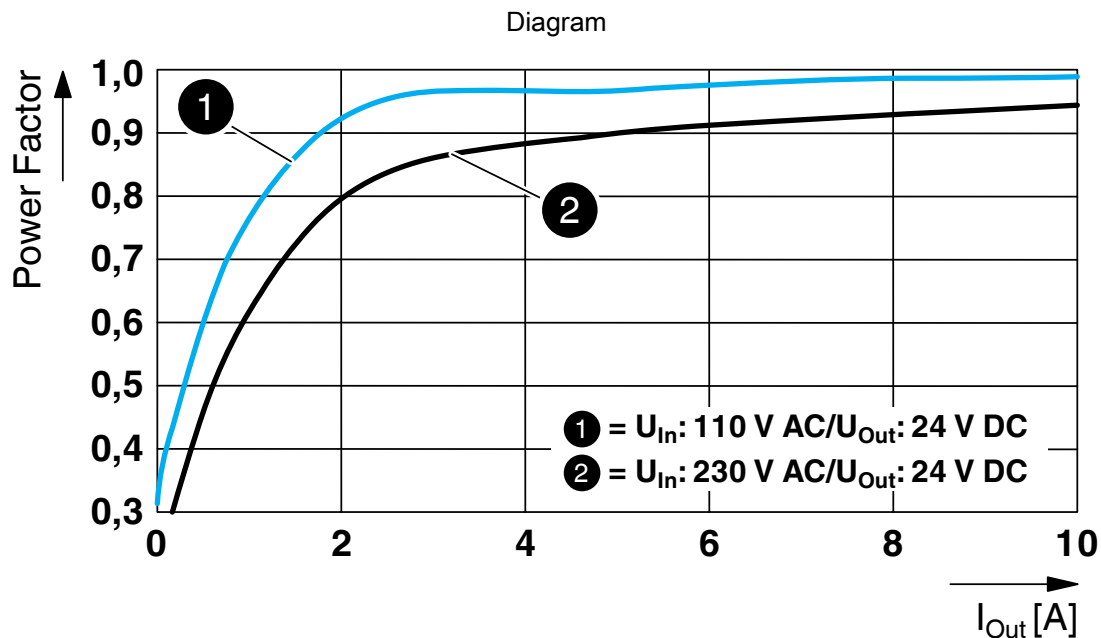
Input current/output current

Schematic diagram

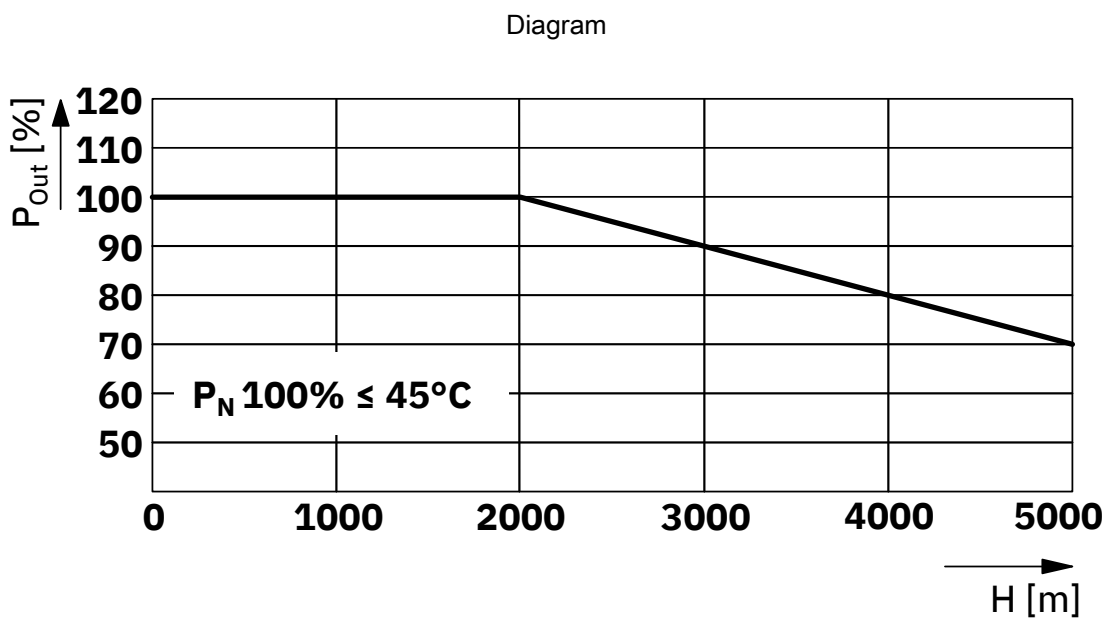
Housing



Test sections, insulation voltage



Power factor



Output power Installation altitude

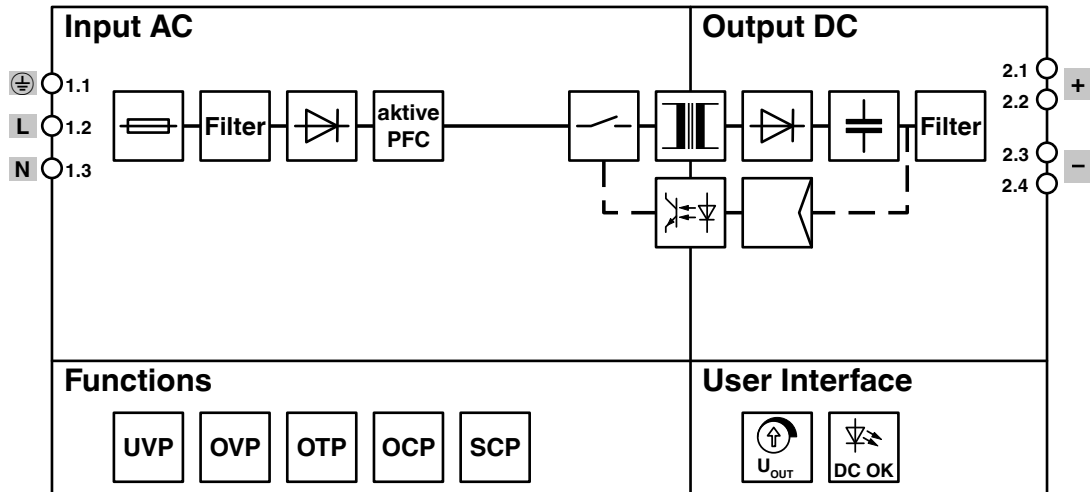
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Block diagram



Block diagram

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Approvals

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IECEE CB Scheme

Approval ID: DE 2-039089



cULus Listed

Approval ID: E123528-20230428



IECEE CB Scheme

Approval ID: DE 2-039089

BIS Licence Document

Approval ID: R-41287490



cULus Listed

Approval ID: E123528-20230428



IECEE CB Scheme

Approval ID: JPTUV-148040-M1



IECEE CB Scheme

Approval ID: JPTUV-148040-M1

BIS Licence Document

Approval ID: R-41287490

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Classifications

ECLASS

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

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC002540 |
|----------|----------|

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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) |
|-------------------------------------|----------------------|

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Accessories

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

2905489

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

TRIO2-DIODE/12-24DC/2X20/1X40 - Redundancy module

2907379

<https://www.phoenixcontact.com/us/products/2907379>



Redundancy module, 12 V - 24 V DC, 2 x 20 A, 1 x 40 A

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

2905229

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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.

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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

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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.

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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/240W/SC - Power supply unit



1234304

<https://www.phoenixcontact.com/us/products/1234304>

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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