

TRIO-PS67/1AC/24DC/3.75/IPD - Power supply



1278301

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Primary-switched power supply unit TRIO POWER IP67, IPD panel feed-through with Push-in spring connection, Panel mounting, input: 1-phase, output: 24 V DC / 3.75 A

Product description

TRIO POWER 3.75 A power supplies with IP67 degree of protection for power-limited circuits offer increased safety thanks to NEC Class 2 classification. The field power supplies are equipped with basic functionality and ensure that the maximum output power of 100 W is not exceeded even in the event of a fault.

Your advantages

- Increased electrical safety with NEC Class 2
- Quick installation thanks to device connection with IPD panel feed-throughs with Push-in Technology
- Direct installation at the load in the field reduces cable lengths and saves space in the control cabinet
- Reliable use with high shock resistance, vibration resistance, and electric strength
- Robust die-cast aluminum housing with IP67 degree of protection ensures reliable protection against dust and water

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1278301 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM08 |
| Product key | CMPF13 |
| GTIN | 4063151474843 |
| Weight per piece (including packing) | 1,016 g |
| Weight per piece (excluding packing) | 766 g |
| Customs tariff number | 85044095 |
| Country of origin | VN |

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Technical data

Input data

AC operation

| | |
|--|---|
| Supply system configuration | Star network (TN, TT, IT (PE)) |
| Nominal input voltage range | 100 V AC ... 277 V AC |
| Input voltage range | 100 V AC ... 277 V AC -15 % ... +10 % 115 V AC ... 277 V AC ±10 % (UL) |
| Derating | < 100 V AC ... 85 V AC (1 %/V) |
| Switch-on voltage | ≥ 80 V AC |
| Shut-down voltage | < 75 V AC |
| Typical national grid voltage | 120 V AC 230 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | ≤ 35 A (typical, 277 V AC) 17 A (typical, 120 V AC) |
| Inrush current integral (I^2t) | < 0.45 A ² s |
| AC frequency range | 50 Hz ... 60 Hz ±10 % |
| Frequency range (f_N) | 50 Hz ... 60 Hz ±10 % |
| Mains buffering time | > 25 ms (120 V AC) > 25 ms (230 V AC) |
| Current consumption | 1 A (100 V AC) 0.4 A (277 V AC) |
| Protective circuit | Transient surge protection; Varistor |
| Power factor (cos phi) | > 0.92 |
| Switch-on time | < 0.2 s |
| Input fuse | 4 A (internal (device protection)) |
| Recommended breaker for input protection | 6 A ... 16 A (US/CAN: branch circuit protection ≤ $\frac{1}{2}$ A) (Characteristic B, C, D, K or comparable) |
| Discharge current to PE | < 0.5 mA |

DC operation

| | |
|--------------------------------|---|
| Nominal input voltage range | 110 V DC ... 250 V DC |
| Input voltage range | 110 V DC ... 250 V DC -20 % ... +10 % 120 V DC ... 250 V DC ±10 % (UL) |
| Derating | < 110 V DC ... 88 V DC (1 %/V) |
| Switch-on voltage | ≥ 75 V DC |
| Shut-down voltage | < 70 V DC |
| Voltage type of supply voltage | DC |
| Current consumption | 0.88 A (110 V DC) 0.38 A (250 V DC) |

Output data

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| | |
|--|---|
| Efficiency | typ. 93 % (120 V AC) |
| | typ. 94 % (230 V AC) |
| Nominal output voltage | 24 V DC ± 2 % (SELV) |
| Nominal output current (I_N) | 3.75 A (NEC Class 2 Output) |
| Derating | > 60 °C ... 70 °C (2.0 %/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 %) |
| | < 3 % (Dynamic load change 10 % ... 90 %, 10 Hz) |
| | < 0.1 % (change in input voltage ± 10 %) |
| Residual ripple | ≤ 10 mV _{PP} |
| Short-circuit-proof | yes |
| No-load proof | yes |
| Output power | 90 W |
| Peak switching voltages nominal load | < 100 mV |
| Maximum no-load power dissipation | < 0.25 W (120 V AC) |
| | < 0.28 W (230 V AC) |
| Power loss nominal load max. | < 7.4 W (120 V AC) |
| | < 6 W (230 V AC) |
| Rise time | typ. 100 ms (U_{OUT} (10 % ... 90 %)) |
| Connection in parallel | yes, for increasing power and redundancy with diode |
| Connection in series | yes, for increased output voltage |
| Fuse protection (secondary side) | electronic |

Signal: DC OK

| | |
|-------------------------|--------|
| Continuous load current | 100 mA |
|-------------------------|--------|

Connection data

Input

| | |
|---|---|
| Connection method | IPD panel feed-through with Push-in spring connection |
| Conductor cross-section, rigid min. | 0.5 mm ² |
| Conductor cross-section, rigid max. | 2.5 mm ² |
| Conductor cross-section flexible min. | 0.5 mm ² |
| Conductor cross-section flexible max. | 2.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm ² |
| Conductor cross-section AWG max. | 14 |
| Color-coded | gray |
| Type of locking | Clip locking |
| Number of positions | 3 |

Output

| | |
|-------------------------------------|---|
| Connection method | IPD panel feed-through with Push-in spring connection |
| Conductor cross-section, rigid min. | 0.5 mm ² |

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| | |
|---|---------------------|
| Conductor cross-section, rigid max. | 2.5 mm ² |
| Conductor cross-section flexible min. | 0.5 mm ² |
| Conductor cross-section flexible max. | 2.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm ² |
| Conductor cross-section AWG max. | 14 |
| Color-coded | black |
| Type of locking | Clip locking |
| Number of positions | 3 |

Signaling

| | |
|--------------------|-----------------|
| Types of signaling | LED |
| Status display | 2 x LED (green) |

Signal output: LED status indicator

| | |
|---------------------------|--|
| Signalization designation | AC OK |
| Status display | LED |
| Color | green |
| AC OK | $AC_{In} > 0.76 \times AC_N$ ($AC_N = 100 \text{ V AC}$) |

Signal output: LED status indicator

| | |
|---------------------------|--|
| Signalization designation | DC OK |
| Status display | LED |
| Color | green |
| DC OK | $U_{OUT} > 0.9 \times U_N$ ($U_N = 24 \text{ V DC}$) |

Electrical properties

| | |
|---------------------------------|---|
| Number of phases | 1 |
| Insulation voltage input/output | 4 kV AC (type test) 3 kV AC (routine test) |

Product properties

| | |
|----------------------------|--|
| Product type | Power supply |
| Product family | TRIO POWER IP67 |
| MTBF (IEC 61709, SN 29500) | > 1475000 h (25 °C) > 1000000 h (40 °C) > 500000 h (60 °C) |

Insulation characteristics

| | |
|-----------------------------------|-------------------------------|
| Protection class | I |
| Overvoltage category (EN 61010-1) | II ($\leq 4000 \text{ m}$) |
| Overvoltage category (EN 62477-1) | III ($\leq 2000 \text{ m}$) |
| Pollution degree | 2 (IEC 61010-1) |

Dimensions

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Item dimensions

| | |
|--------|--------|
| Width | 100 mm |
| Height | 222 mm |
| Depth | 53 mm |

Drill hole

| | |
|----------|--------|
| Diameter | 4.2 mm |
|----------|--------|

Installation dimensions

| | |
|----------------------------------|----------------|
| Installation distance right/left | 20 mm / 20 mm |
| Installation distance top/bottom | 50 mm / 100 mm |

Mounting

| | |
|-------------------------|----------------|
| Mounting type | Panel mounting |
| With protective coating | no |

Material specifications

| | |
|--|------------------|
| Flammability rating according to UL 94 (housing / terminal blocks) | V0 |
| Housing material | Metal |
| Type of housing | Aluminum (AlMg3) |

Environmental and real-life conditions

Ambient conditions

| | |
|--|---|
| Degree of protection | IP65 IP67 |
| Ambient temperature (operation) | -25 °C ... 70 °C (Derating > 60 °C: 2 %/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Maximum altitude | ≤ 4000 m (> 2000 m, Derating: 10 %/1000 m) |
| Climatic class | 4K26 (EN 60721-3-4) |
| Max. permissible relative humidity (operation) | ≤ 100 % (at 25 °C, non-condensing) |
| Permissible humidity (operation) | ≤ 100 % (at 25 °C, non-condensing) |
| Shock | 18 ms, 30g, in each space direction (according to IEC 60068-2-27) |
| Vibration (operation) | 10 Hz ... 59.6 Hz, amplitude ±0.35 mm (in accordance with IEC 60068-2-6) 59.6 Hz ... 150 Hz, 5g, 20 cycles |

Standards and regulations

Electrical safety

| | |
|--------------------------|-------------------|
| Standard designation | Electrical safety |
| Standards/specifications | IEC 61010-1 |

Protective extra-low voltage

| | |
|----------------------|------------------------------|
| Standard designation | Protective extra-low voltage |
|----------------------|------------------------------|

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| | |
|---|---|
| Standards/specifications | IEC 61010-1 |
| | IEC 61010-2-201 (SELV) |
| Low-voltage power supplies, DC output | |
| Standard designation | Low-voltage power supplies, DC output |
| Standards/specifications | EN 61204-3 |
| Safety requirements for electrical equipment for measurement, control, and laboratory use | |
| Standard designation | Safety requirements for electrical equipment for measurement, control, and laboratory use |
| Standards/specifications | IEC 61010-1 |
| Limit values for harmonic currents | |
| Standard designation | Limit values for harmonic currents |
| Standards/specifications | EN 61000-3-2 |
| Degrees of protection provided by enclosures (IP code) | |
| Standard designation | Degrees of protection provided by enclosures (IP code) |
| Standards/specifications | EN/IEC 60529 |
| Mains variation/undervoltage | |
| Standard designation | Mains variation/undervoltage |
| Standards/specifications | SEMI F47 - 0706 |

Approvals

| | |
|----------------|----------------------------------|
| UL | |
| Identification | NEC Class 2 according to UL 1310 |
| UL | |
| Identification | UL/C-UL Listed UL 61010-1 |
| UL | |
| Identification | UL/C-UL Listed UL 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) |
| Noise immunity | Immunity in accordance with EN 61000-6-1 (residential), EN 61000-6-2 (industrial) |
| Conducted noise emission | |
| Standards/regulations | EN 55016 |
| | EN 61000-6-3 (Class B) |
| Noise emission | |
| Standards/regulations | EN 55011 (EN 55022) |

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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) |

Electrostatic discharge

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

Electrostatic discharge

| | |
|-------------------|---------------------|
| Contact discharge | 6 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 ... 2 GHz |
| Test field strength | 10 V/m (Test Level 3) |
| Frequency range | 2 GHz ... 6 GHz |
| Test field strength | 10 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 3 - 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 | 2 kV (Test Level 4 - symmetrical) |
| | 4 kV (Test Level 4 - asymmetrical) |
| Output | 1 kV (Test Level 3 - symmetrical) |
| | 2 kV (Test Level 3 - asymmetrical) |
| Comments | Criterion A |

Conducted interference

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-6 |
|-----------------------|--------------|

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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 B |
| Voltage dip | 0 % |
| Number of periods | 1 period |
| Comments | Criterion A |

Emitted interference

| | |
|--|--|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |

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. |

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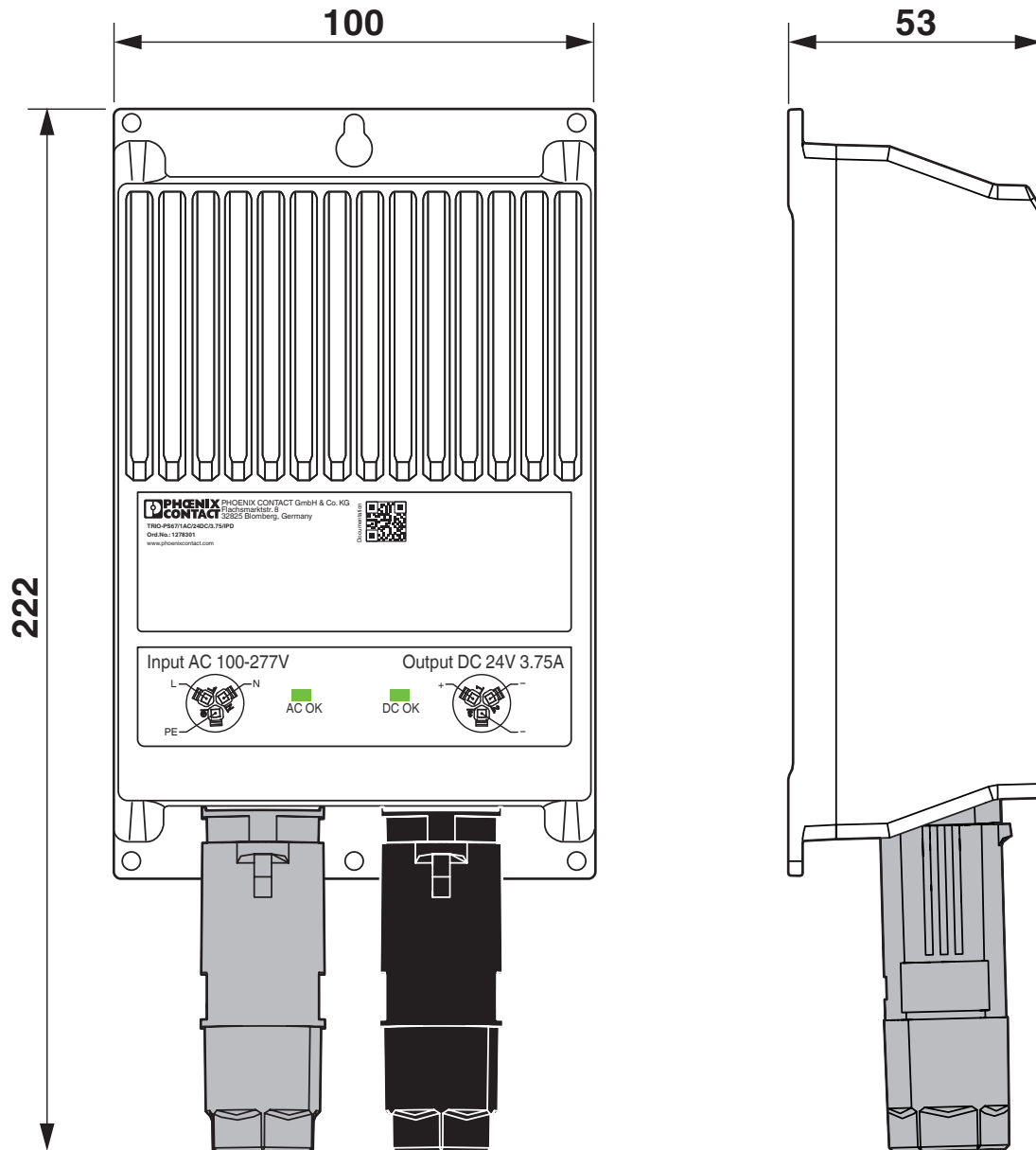


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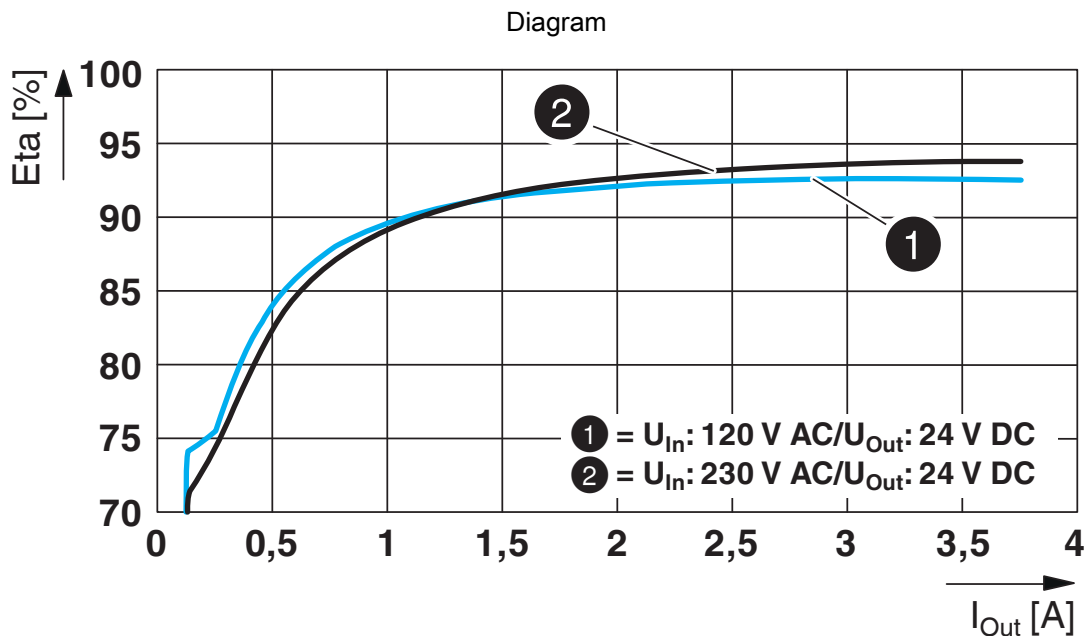
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Drawings

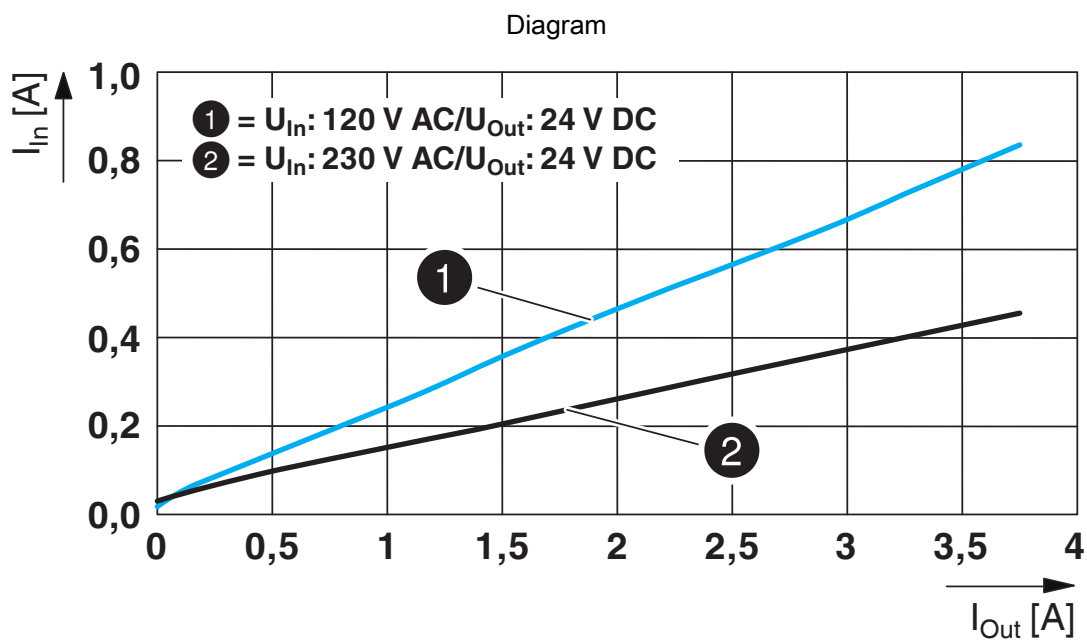
Dimensional drawing



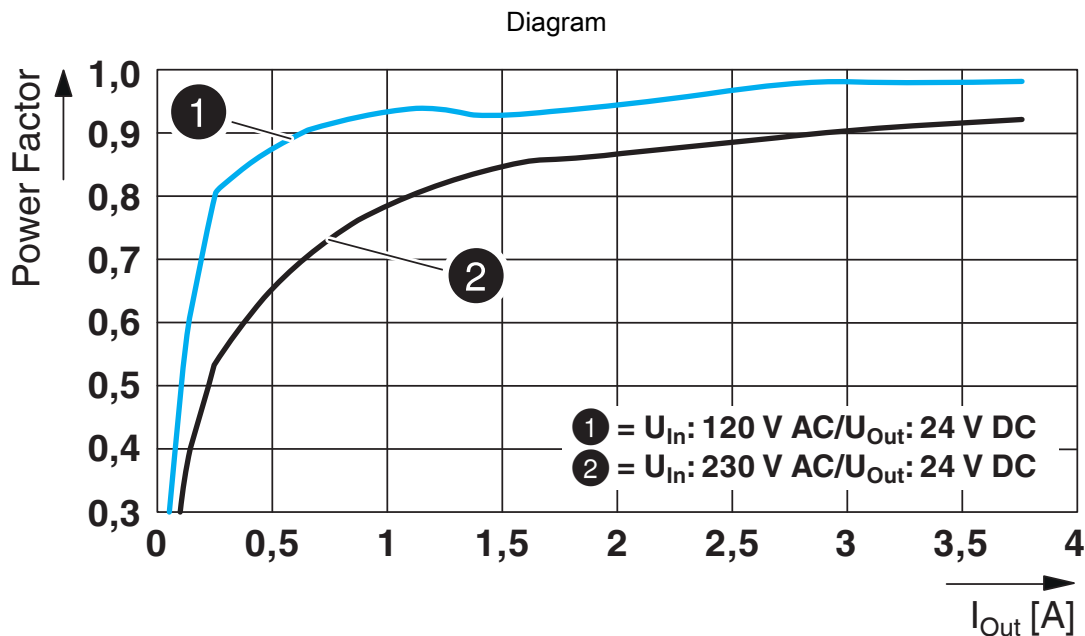
Device dimensions (dimensions in mm)



Efficiency



Input current/output current



Power factor



Output current/installation altitude

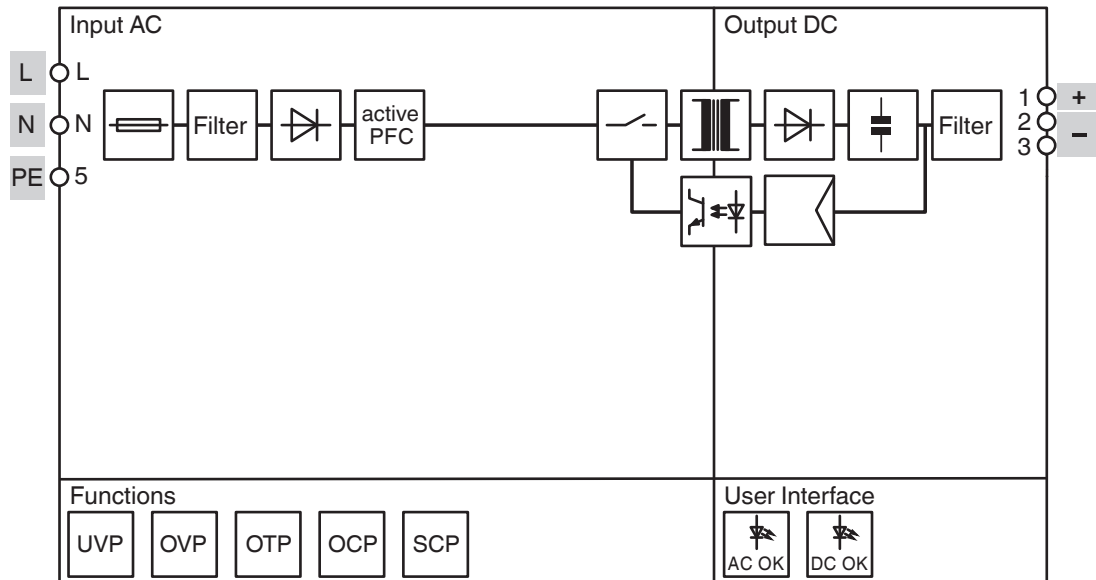
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Block diagram



Block diagram

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Approvals

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cULus Listed

Approval ID: FILE E 123528

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27040701 |
| ECLASS-15.0 | 27040701 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC002540 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121000 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 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 | 6db3951a-0b82-4b14-91a3-e26cbd796680 |

EF3.1 Climate Change

| | |
|---------|----------------|
| CO2e kg | 25.101 kg CO2e |
|---------|----------------|

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