

QUINT4-PS/1AC/24DC/3.8/SC - Power supply



2904599

<https://www.phoenixcontact.com/us/products/2904599>

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Primary-switched power supply unit QUINT POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 3.8 A, adjustable from 24 V DC ... 28 V DC

Product description

In the power range of up to 100 W, QUINT POWER provides superior system availability in the smallest size. Preventative function monitoring and exceptional power reserves are available for applications in the low-power range.

Your advantages

- Starting of heavy loads with dynamic boost
- Preventive function monitoring indicates critical operating states before errors occur
- High efficiency and long service life, with low power dissipation and low heating
- Space savings in the control cabinet, thanks to a narrow, slim-line design
- Free selection between Push-in and screw connection

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2904599 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM10 |
| Product key | CMPI13 |
| GTIN | 4055626156057 |
| Weight per piece (including packing) | 370 g |
| Weight per piece (excluding packing) | 380 g |
| Customs tariff number | 85044095 |
| Country of origin | VN |

Technical data

Input data

AC operation

| | |
|--|--|
| Input voltage range | 100 V AC ... 240 V AC -15 % ... +10 % |
| Electric strength, max. | 300 V AC 30 s |
| Typical national grid voltage | 120 V AC |
| | 230 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | typ. 13 A (at 25 °C) |
| Inrush current integral (I^2t) | < 0.18 A ² s |
| Inrush current limitation | 6.4 A (after 1 ms) |
| | < 13 A |
| Frequency range (f_N) | 50 Hz ... 60 Hz -10 % ... +10 % |
| Mains buffering time | typ. 35 ms (120 V AC) |
| | typ. 35 ms (230 V AC) |
| Current consumption | 1 A (100 V AC) |
| | 0.83 A (120 V AC) |
| | 0.46 A (230 V AC) |
| | 0.44 A (240 V AC) |
| Nominal power consumption | 104 VA |
| Protective circuit | Transient surge protection; Varistor |
| Typical response time | 500 ms |
| Input fuse | 3.15 A (slow-blow, internal) |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristic B, C or comparable) |
| Discharge current to PE | < 0.25 mA (264 V AC, 60 Hz) |
| | 0.18 mA (264 V AC, 60 Hz) |

DC operation

| | |
|--------------------------------|---------------------------------------|
| Input voltage range | 110 V DC ... 250 V DC -20 % ... +40 % |
| Voltage type of supply voltage | DC |
| Current consumption | 0.91 A (110 V DC) |
| | 0.4 A (250 V DC) |

Output data

| | |
|---|---|
| Efficiency | typ. 92.8 % (120 V AC) |
| | typ. 93.7 % (230 V AC) |
| Output characteristic | U/I Advanced |
| Nominal output voltage | 24 V DC |
| Setting range of the output voltage (U_{Set}) | 24 V DC ... 28 V DC (constant capacity) |
| Nominal output current (I_N) | 3.8 A |
| Dynamic Boost ($I_{Dyn.Boost}$) | 7 A (≤ 60 °C (5 s)) |
| Derating | > 60 °C (2.5 %/K) |

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| | |
|--|---|
| Feedback voltage resistance | ≤ 35 V DC |
| Protection against overvoltage at the output (OVP) | ≤ 32 V DC |
| Control deviation | < 0.5 % (Static load change 10 % ... 90 %) |
| | < 3 % (Dynamic load change 10 % ... 90 %, (10 Hz)) |
| | < 0.2 % (change in input voltage ±10 %) |
| Residual ripple | < 45 mV _{PP} (with nominal values) |
| Short-circuit-proof | yes |
| No-load proof | yes |
| Output power | 90 W |
| | 170 W |
| Maximum no-load power dissipation | < 1 W (120 V AC) |
| | < 1 W (230 V AC) |
| Power loss nominal load max. | < 7 W (120 V AC) |
| | < 6 W (230 V AC) |
| Crest factor | typ. 1.57 (120 V AC) |
| | typ. 1,7 (230 V AC) |
| Rise time | 50 ms (U _{Out} = 10 % ... 90 %) |
| Connection in parallel | yes, for redundancy and increased capacity |
| Connection in series | yes |
| Signal (configurable) | |
| Digital | 0 V DC 24 V DC 30 mA |
| Default | 24 V DC 30 mA 24 V DC for U _{Out} > 0.9 x U _{Set} |

Connection data

Input

| | |
|---|----------------------|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.14 mm ² |
| Conductor cross-section, rigid max. | 2.5 mm ² |
| Conductor cross-section flexible min. | 0.14 mm ² |
| Conductor cross-section flexible max. | 2.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.25 mm ² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm ² |
| Conductor cross-section AWG min. | 26 |
| Conductor cross-section AWG max. | 14 |
| Stripping length | 8 mm |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Output

| | |
|---------------------------------------|----------------------|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.14 mm ² |
| Conductor cross-section, rigid max. | 2.5 mm ² |
| Conductor cross-section flexible min. | 0.14 mm ² |

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| | |
|---|----------------------|
| Conductor cross-section flexible max. | 2.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.25 mm ² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm ² |
| Conductor cross-section AWG min. | 26 |
| Conductor cross-section AWG max. | 14 |
| Stripping length | 8 mm |
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| Tightening torque max | 0.6 Nm |

Signal

| | |
|---|----------------------|
| Connection method | Screw connection |
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| Conductor cross-section, rigid max. | 2.5 mm ² |
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| Conductor cross-section flexible max. | 2.5 mm ² |
| Single conductor/terminal point, stranded, with ferrule, min. | 0.25 mm ² |
| Single conductor/terminal point, stranded, with ferrule, max. | 2.5 mm ² |
| Conductor cross-section AWG min. | 26 |
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| Stripping length | 8 mm |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Signaling

| | |
|--------------------|-----|
| Types of signaling | LED |
|--------------------|-----|

Signal output

| | |
|-----------|--|
| P_{Out} | $> P_{Thr}$ (LED lights up yellow, output power $> P_{Thr}$, depending on the rotary selector switch setting) |
| U_{Out} | $> 0.9 \times U_{Set}$ (LED lights up green) |
| | $< 0.9 \times U_{Set}$ (LED flashes green) |

Electrical properties

| | |
|---------------------------------|--|
| Number of phases | 1 |
| Insulation voltage input/output | 4 kV AC (type test) |
| | 3 kV AC (routine test) |
| Switching frequency | 5.00 kHz ... 65.00 kHz (Auxiliary converter stage) |
| | 30.00 kHz ... 150.00 kHz (PFC stage) |
| | 80.00 kHz ... 150.00 kHz (Main converter stage) |

Product properties

| | |
|----------------------------|-----------------------|
| Product type | Power supply |
| Product family | QUINT POWER |
| MTBF (IEC 61709, SN 29500) | > 1272000 h (25 °C) |
| | > 690000 h (40 °C) |

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| | |
|------------------------------------|---------------------------|
| | > 271000 h (60 °C) |
| Environmental protection directive | RoHS Directive 2011/65/EU |
| | WEEE |
| | Reach |

Insulation characteristics

| | |
|-----------------------------------|----------------------|
| Protection class | II |
| Overvoltage category (EN 61010-1) | II (≤ 5000 m) |
| Overvoltage category (EN 62477-1) | III (≤ 2000 m) |
| Degree of pollution | 2 |

Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 3.8 A |
| Temperature | 40 °C |
| Time | 57000 h |
| Additional text | 120 V AC |

Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 3.8 A |
| Temperature | 40 °C |
| Time | 61000 h |
| Additional text | 230 V AC |

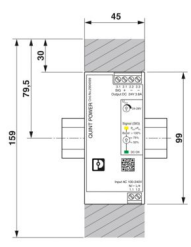
Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 3.8 A |
| Temperature | 25 °C |
| Time | 162000 h |
| Additional text | 120 V AC |

Life expectancy (electrolytic capacitors)

| | |
|-----------------|----------|
| Current | 3.8 A |
| Temperature | 25 °C |
| Time | 173000 h |
| Additional text | 230 V AC |

Dimensions

| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 45 mm |
| Height | 99 mm |

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| | |
|-------|-------|
| Depth | 90 mm |
|-------|-------|

Installation dimensions

| | |
|--|---------------------------------------|
| Installation distance right/left (active) | 15 mm / 15 mm ($P_{Out} \geq 50\%$) |
| Installation distance right/left (passive) | 5 mm / 5 mm ($P_{Out} \geq 50\%$) |
| Installation distance top/bottom (active) | 30 mm / 30 mm ($P_{Out} \geq 50\%$) |
| Installation distance top/bottom (passive) | 30 mm / 30 mm ($P_{Out} \geq 50\%$) |
| Installation distance top/bottom (active, passive) | 30 mm / 30 mm ($P_{Out} \leq 50\%$) |

Mounting

| | |
|-------------------------|-------------------|
| Mounting type | DIN rail mounting |
| Assembly note | DIN rail mounting |
| With protective coating | no |

Material specifications

| | |
|--|---------------|
| Flammability rating according to UL 94 (housing / terminal blocks) | V0 |
| Housing material | Plastic |
| Type of housing | Polycarbonate |
| Hood version | Polycarbonate |

Environmental and real-life conditions

Ambient conditions

| | |
|--|--|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 70 °C (> 60 °C Derating: 2,5 %/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Ambient temperature (start-up type tested) | -40 °C |
| Maximum altitude | ≤ 5000 m (> 2000 m, observe derating) |
| Climatic class | 3K3 (in acc. with EN 60721) |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing) |
| Shock | 18 ms, 30g, in each space direction (according to IEC 60068-2-27) |
| Vibration (operation) | < 15 Hz, ±2.5 mm amplitude; 15 Hz ... 100 Hz: 2.3 g 90 Min. (in accordance with IEC 60068-2-6) |
| Temp code | T4A (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K) |

Standards and regulations

| | |
|--|--|
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | IEC 61010-2-201 (SELV) |
| Standard – Safety extra-low voltage | IEC 61010-1 (SELV) IEC 61010-2-201 (PELV) |
| Standard - Safe isolation | IEC 61558-2-16 IEC 61010-2-201 |
| Standard - safety for equipment for measurement, control, and laboratory use | IEC 61010-1 |
| Standard - Safety of transformers | EN 61558-2-16 |

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| | |
|--|------------|
| Standard - power supply devices for low voltage with DC output | EN 61204-3 |
|--|------------|

Approvals

| | |
|--------------|---|
| SIQ | CB-Scheme (IEC 61010-1, IEC 61010-2-201) |
| UL approvals | UL Listed UL 61010-1 |
| | UL Listed UL 61010-2-201 |
| | UL 1310 Class 2 Power Units |
| | UL 121201 & CSA C22.2 No. 213-17 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location) |

EMC data

| | |
|-------------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| EMC requirements for noise emission | EN 61000-6-3 |
| | EN 61000-6-4 |
| EMC requirements for noise immunity | EN 61000-6-1 |
| | EN 61000-6-2 |
| EMC requirements for power supply | IEC 61850-3 (G,H) |
| | EN 61000-6-5 (switching devices) |

Conducted noise emission

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

Noise emission

| | |
|-----------------------|---|
| Standards/regulations | Additional basic standard EN 61000-6-5 (immunity in switching devices), IEC/EN 61850-3 (power supply) |
|-----------------------|---|

Noise emission

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

Harmonic currents

| | |
|-----------------|-----------------|
| Frequency range | 0 kHz ... 2 kHz |
|-----------------|-----------------|

Flicker

| | |
|-----------------|-----------------|
| Frequency range | 0 kHz ... 2 kHz |
|-----------------|-----------------|

Electrostatic discharge

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

Electrostatic discharge

| | |
|-------------------|---------------------|
| Contact discharge | 8 kV (Test Level 4) |
| Discharge in air | 8 kV (Test Level 3) |
| Comments | Criterion A |

Electromagnetic HF field

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-3 |
|-----------------------|--------------|

Electromagnetic HF field

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| | |
|---------------------|-----------------------|
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 20 V/m (Test Level X) |
| Frequency range | 1 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 4 - asymmetrical) |
| Output | 4 kV (Test Level 4 - asymmetrical) |
| Signal | 4 kV (Test Level 4 - 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) |
| Signal | 0.5 kV (Test Level 2 - symmetrical) |
| | 1 kV (Test Level 2 - asymmetrical) |
| Comments | Criterion A |

Conducted interference

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

Conducted interference

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

Power frequency magnetic field

| | |
|-----------------------|-----------------|
| Standards/regulations | EN 61000-4-8 |
| Frequency | 16.67 Hz |
| | 50 Hz |
| | 60 Hz |
| Test field strength | 100 A/m |
| Additional text | 60 s |
| Comments | Criterion A |
| Frequency | 50 Hz |
| | 60 Hz |
| Frequency range | 50 Hz ... 60 Hz |

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| | |
|---------------------|----------|
| Test field strength | 1 kA/m |
| Additional text | 3 s |
| Frequency | 0 Hz |
| Test field strength | 300 A/m |
| Additional text | DC, 60 s |

Voltage dips

| | |
|-----------------------|--------------------------|
| Standards/regulations | EN 61000-4-11 |
| Voltage | 100 V AC |
| Frequency | 60 Hz |
| Voltage dip | 70 % |
| Number of periods | 0.5 / 1 / 30 periods |
| Additional text | Test Level 2 |
| Comments | Criterion A |
| Voltage dip | 40 % |
| Number of periods | 5 / 10 / 50 periods |
| Additional text | Test Level 2 |
| Comments | Criterion B |
| Voltage dip | 0 % |
| Number of periods | 0.5 / 1 / 5 / 50 periods |
| Additional text | Test Level 2 |
| Comments | Criterion B |

Pulse-shape magnetic field

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-9 |
| Test field strength | 1000 A/m |
| Comments | Criterion A |

Attenuated sinusoidal oscillations (ring wave)

| | |
|-----------------------|---|
| Standards/regulations | EN 61000-4-12 |
| Input | 2 kV (symmetrical) 4 kV (asymmetrical) |
| Comments | Criterion A |

Asymmetrical conducted disturbance variables

| | |
|--------------|-------------------------------------|
| Test level 1 | 16.67 Hz 50 Hz 60 Hz (Test Level 3) |
| Voltage | 30 V (Permanent) |
| Test level 2 | 16.67 Hz 50 Hz 60 Hz (Test Level 4) |
| Voltage | 300 V (1 s) |
| Comments | Criterion A |

Attenuated oscillating wave

| | |
|-----------------------|---|
| Standards/regulations | EN 61000-4-18 |
| Input/Output/Signal | 1 kV (symmetrical) 2.5 kV (asymmetrical) |
| Comments | Criterion B |

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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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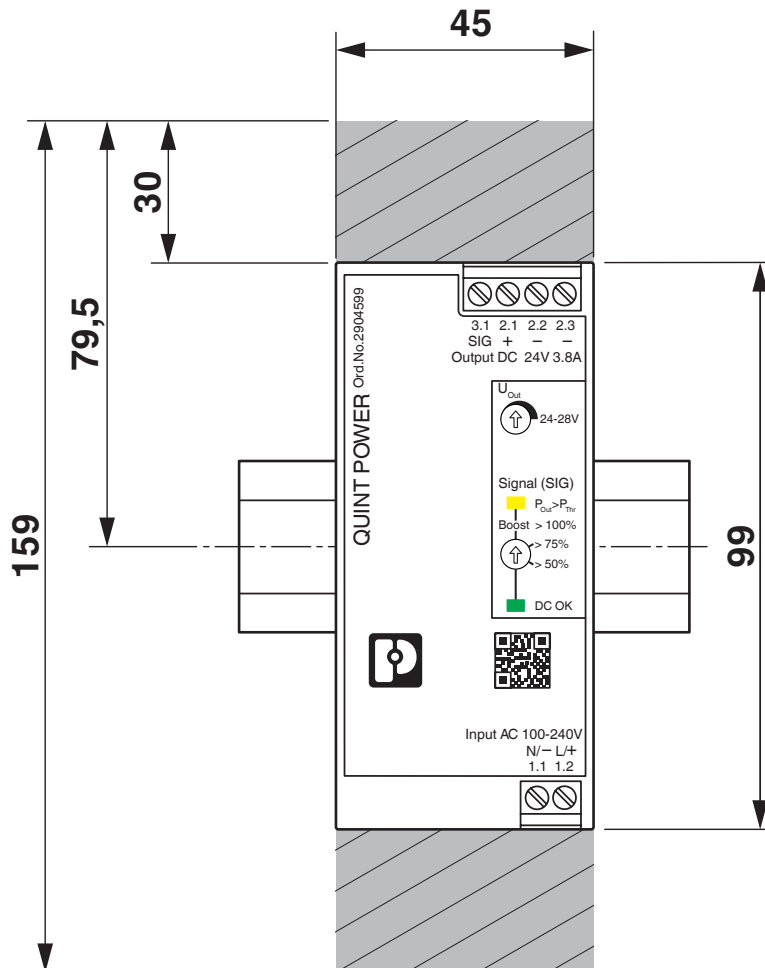
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Drawings

Dimensional drawing

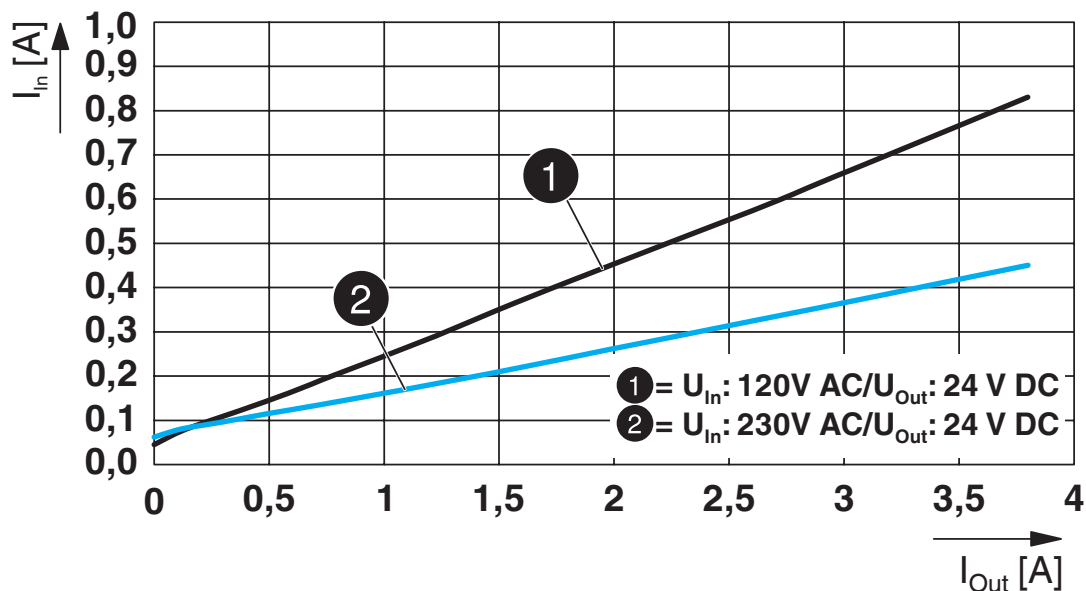


Schematic diagram

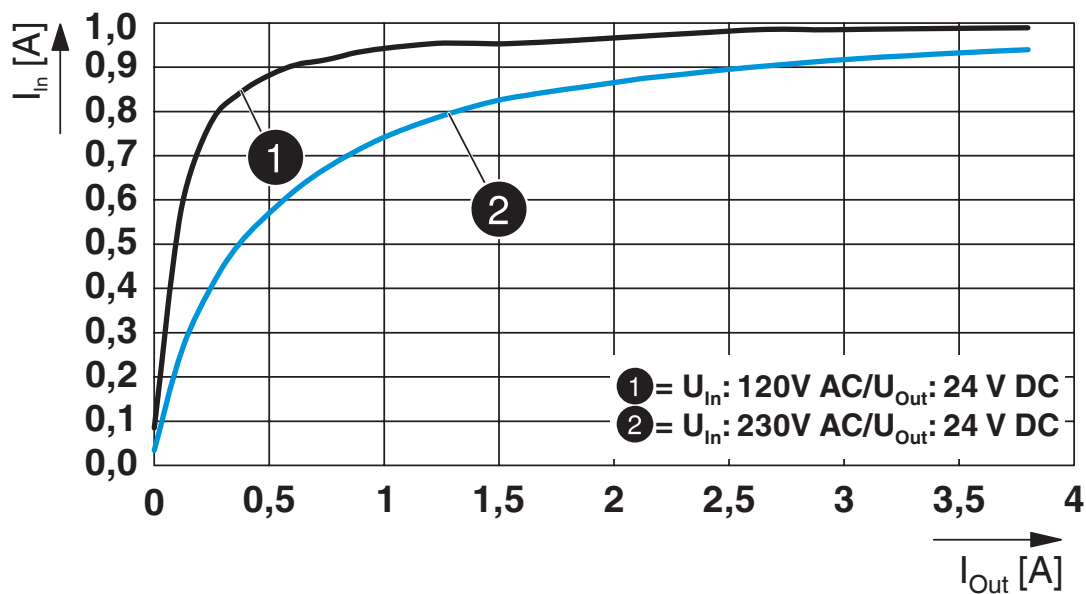
Housing



Diagram



Diagram



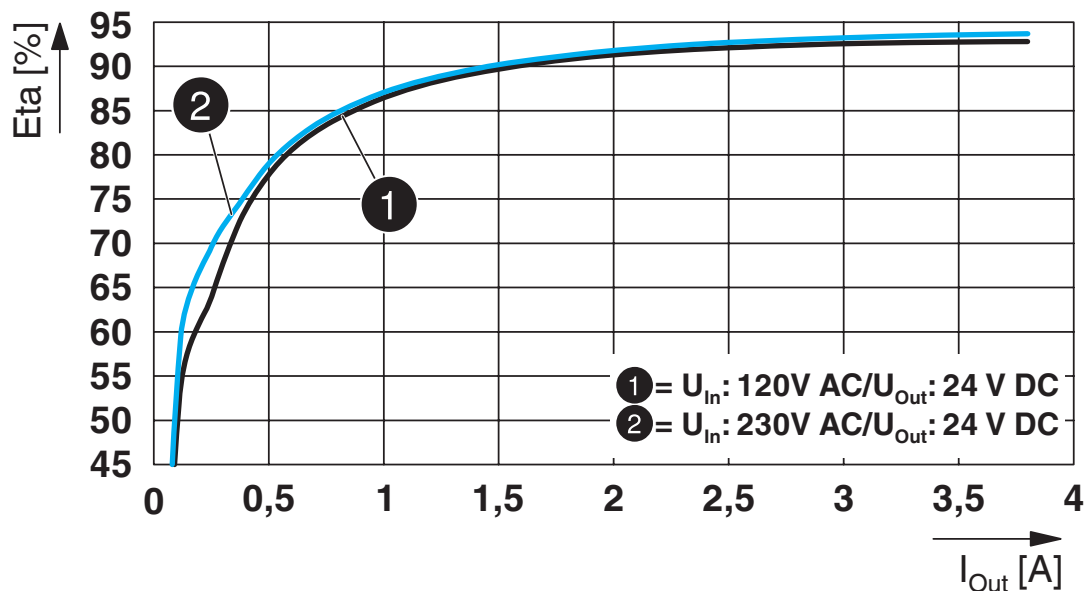
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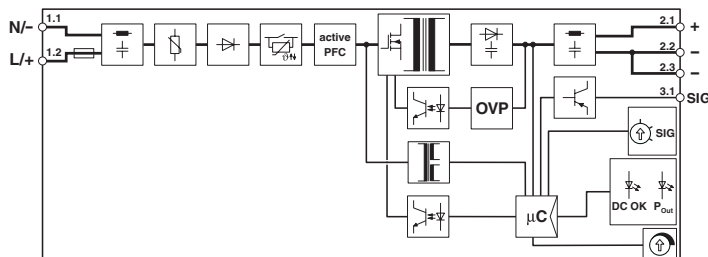
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Diagram



Block diagram



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Approvals

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IECEE CB Scheme

Approval ID: SI-8859



EAC

Approval ID: RU S-DE.BL08.W.00764



UL Listed

Approval ID: E123528



cUL Listed

Approval ID: E123528



EAC

Approval ID: RU S-DE.BL08.W.00764

DNV

Approval ID: TAA00001YD



BV

Approval ID: 44621/B1 BV



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827

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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, No exemptions |
|---|--------------------|

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.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

EF3.1 Climate Change

| | |
|---------|---------------|
| CO2e kg | 7.844 kg CO2e |
|---------|---------------|

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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com