

Power supply - QUINT-PS/1AC/24DC/ 5



2866750

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Primary-switched power supply unit, QUINT POWER, Pluggable screw connection, DIN rail mounting, SFB Technology (Selective Fuse Breaking), input: 1-phase, output: 24 V DC / 5 A

Product Description

QUINT POWER power supplies with maximum functionality

QUINT POWER circuit breakers magnetically and therefore quickly trip at six times the nominal current, for selective and therefore cost-effective system protection. The high level of system availability is additionally ensured, thanks to preventive function monitoring, as it reports critical operating states before errors occur.

Reliable starting of heavy loads takes place via the static power reserve POWER BOOST. Thanks to the adjustable voltage, all ranges between 5 V DC ... 56 V DC are covered.

Your advantages

- Reliable starting of difficult loads with the static POWER BOOST power reserve with up to 1.5 times the nominal current permanently
- Fast tripping of standard circuit breakers with dynamic power reserve SFB (selective fuse breaking) technology with up to 6 times the nominal current for 12 ms
- For superior system availability
- Preventive function monitoring

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Commercial Data

| | |
|--------------------------------------|---------------------|
| Order Key | 2866750 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | CMP |
| Catalog Page | Page 158 (C-6-2015) |
| GTIN | 4046356113786 |
| Weight per Piece (including packing) | 1,026.2 GRM |
| Weight per Piece (excluding packing) | 1,022.0 GRM |
| Customs tariff number | 85044030 |
| Country of origin | TH |

Technical Data

Product properties

| | |
|----------------------------|---------------------|
| MTBF (IEC 61709, SN 29500) | > 1134000 h (25 °C) |
| | > 635000 h (40 °C) |
| | > 270000 h (60 °C) |

Insulation characteristics

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

Mounting

| | |
|-----------------------|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | alignable: $P_N \geq 50\%$, 5 mm horizontally, 15 mm next to active components, 50 mm vertically alignable: $P_N < 50\%$, 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |

Material specifications

| | |
|----------------------|---|
| Hood version | Galvanized sheet steel, free from chrome (VI) |
| Side element version | Aluminum |

Connection data

Input

| | |
|---------------------------------------|----------------------------|
| Connection method | Pluggable screw connection |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 20 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Output

| | |
|---------------------------------------|----------------------------|
| Connection method | Pluggable screw connection |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 20 |
| Conductor cross section AWG max. | 12 |

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| | |
|------------------------|--------|
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Signal

| | |
|---------------------------------------|----------------------------|
| Connection method | Pluggable screw connection |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 20 |
| Conductor cross section AWG max. | 12 |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Dimensions

| | |
|--------|--------|
| Width | 40 mm |
| Height | 130 mm |
| Depth | 125 mm |

Alternative assembly

| | |
|--------|--------|
| Width | 122 mm |
| Height | 130 mm |
| Depth | 43 mm |

LED signaling

| | |
|--------------------|-------------------------|
| Types of signaling | LED |
| | Active switching output |
| | Relay contact |

Signal output: DC OK active

| | |
|------------------------|---|
| Status display | $U_{OUT} > 0.9 \times U_N$: "DC OK" LED green |
| Note on status display | $U_{OUT} < 0.9 \times U_N$: Flashing "DC OK" LED |
| | $I_{OUT} < I_N$: LED ON |

Signal output: DC OK floating

| | |
|------------------------|---|
| Status display | $U_{OUT} > 0.9 \times U_N$: "DC OK" LED green |
| Note on status display | $U_{OUT} < 0.9 \times U_N$: Flashing "DC OK" LED |

Signal output: POWER BOOST, active

| | |
|----------------|--------------------------------------|
| Status display | $I_{OUT} > I_N$: LED "BOOST" yellow |
|----------------|--------------------------------------|

Input data

AC operation

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| | |
|--|---|
| Nominal input voltage range | 100 V AC ... 240 V AC |
| Input voltage range | 85 V AC ... 264 V AC |
| | 90 V DC ... 350 V DC |
| Electric strength, max. | 300 V AC |
| Voltage type of supply voltage | AC/DC |
| Inrush current | < 15 A |
| Inrush current integral (I^2t) | < 1 A ² s |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Mains buffering time | > 55 ms (120 V AC) |
| | > 55 ms (230 V AC) |
| Current consumption | 1.2 A (120 V AC) |
| | 0.6 A (230 V AC) |
| | 1.3 A (110 V DC) |
| | 0.6 A (220 V DC) |
| Nominal power consumption | 145 VA |
| Protective circuit | Transient surge protection; Varistor |
| Power factor (cos phi) | 0.94 |
| Typical response time | < 0.15 s |
| Input fuse | 5 A (slow-blow, internal) |
| Permissible backup fuse | B6 B10 B16 AC: |
| Permissible DC backup fuse | DC: Connect a suitable fuse upstream |
| Recommended breaker for input protection | 6 A ... 16 A (AC: Characteristics B, C, D, K) |
| Discharge current to PE | < 3.5 mA |

Output data

| | |
|--|---|
| Efficiency | > 90 % (for 230 V AC and nominal values) |
| Output characteristic | U/I |
| Nominal output voltage | 24 V DC \pm 1 % |
| Setting range of the output voltage (U_{Set}) | 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted) |
| Nominal output current (I_N) | 5 A (-25 °C ... 60 °C, $U_{OUT} = 24$ V DC) |
| POWER BOOST (I_{Boost}) | 7.5 A (-25 °C ... 40 °C permanent, $U_{OUT} = 24$ V DC) |
| Selective Fuse Breaking (I_{SFB}) | 30 A (12 ms) |
| Magnetic circuit breaker tripping | B2 / B4 / C2 |
| Derating | 60 °C ... 70 °C (2.5%/K) |
| Feedback voltage resistance | max. 35 V DC |
| Protection against overvoltage at the output (OVP) | < 35 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| | < 2 % (change in load, dynamic 10 % ... 90 %) |
| | < 0.1 % (change in input voltage \pm 10 %) |
| Residual ripple | < 40 mV _{PP} (with nominal values) |
| Output power | 120 W |
| Maximum power dissipation in no-load condition | 3 W |
| Power loss nominal load max. | 15 W |

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| | |
|------------------------|--|
| Rise time | < 0.1 s (U_{OUT} (10 % ... 90 %)) |
| Connection in parallel | Yes, for redundancy and increased capacity |
| Connection in series | yes |

Signal: DC OK active

| | |
|-------------------------|--|
| Output description | $U_{OUT} > 0.9 \times U_N$: High signal |
| Switching voltage range | 18 V DC ... 24 V DC |
| Maximum inrush current | ≤ 20 mA (short-circuit-proof) |
| Continuous load current | ≤ 20 mA |

Signal: DC OK floating

| | |
|---------------------------|--|
| Output description | Relay contact, $U_{OUT} > 0.9 \times U_N$: Contact closed |
| Maximum switching voltage | 30 V AC |
| | 24 V DC |
| Maximum inrush current | 0.5 A |
| | 1 A |
| Continuous load current | ≤ 1 A |

Signal: POWER BOOST, active

| | |
|-------------------------|-------------------------------|
| Output description | $I_{OUT} < I_N$: High signal |
| Switching voltage range | 18 V DC ... 24 V DC |
| Output voltage | + 24 V DC |
| Maximum inrush current | 20 mA (short-circuit-proof) |
| Continuous load current | ≤ 20 mA |

Approval data

| | |
|-----------------------|--|
| CSA | CAN/CSA-C22.2 No. 60950-1-07 |
| | CSA-C22.2 No. 107.1-01 |
| Shipbuilding approval | DNV GL (EMC A), ABS, LR, RINA, NK, BV |
| SIQ | BG (type approved) |
| UL approvals | UL Listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |
| | UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) |
| DeviceNet approval | DeviceNet™ Power Supply Conformance Tested |

Conformity/Approvals

| | |
|----------------------------------|---|
| SIL in accordance with IEC 61508 | 0 |
|----------------------------------|---|

Electrical properties

| | |
|---------------------------------|-------------------------|
| Number of phases | 1.00 |
| Insulation voltage input/output | 4 kV AC (type test) |
| | 2 kV AC (routine test) |
| Insulation voltage output / PE | 500 V DC (routine test) |
| Insulation voltage input / PE | 3.5 kV AC (type test) |
| | 2 kV AC (routine test) |

Standards and regulations

| | |
|--|--|
| Rail applications | EN 50121-4 |
| | EN 50121-3-2 |
| HART FSK Physical Layer Test Specification Compliance | Output voltage U_{Out} compliant |
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | IEC 61010-2-201 (SELV) |
| Standard - Equipment safety | BG (design tested) |
| Standard - Approval for medical use | IEC 60601-1, 2 x MOOP |
| Standard – Safety extra-low voltage | IEC 61010-1 (SELV) |
| | IEC 61010-2-201 (PELV) |
| Standard - Safe isolation | IEC 61010-2-201 |
| Standard - safety for equipment for measurement, control, and laboratory use | IEC 61010-1 |
| Approval - requirement of the semiconductor industry with regard to mains voltage dips | SEMI F47-0706 Compliance Certificate |
| DeviceNet approval | DeviceNet™ Power Supply Conformance Tested |

Overvoltage category

| | |
|------------|-----|
| EN 62477-1 | III |
|------------|-----|

EMC data

| | |
|-------------------------------------|---|
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| 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 |
| Noise emission | EN 55011 (EN 55022) |
| Noise immunity | EN 61000-6-2 |

Electrostatic discharge

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

Electrostatic discharge

| | |
|-------------------|----------------------|
| Contact discharge | 8 kV (Test Level 4) |
| Discharge in air | 15 kV (Test Level 4) |
| Comments | Criterion A |

Electromagnetic HF field

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

Electromagnetic HF field

| | |
|---------------------|-----------------------|
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 20 V/m (Test Level 3) |
| Frequency range | 1 GHz ... 2 GHz |
| Test field strength | 10 V/m (Test Level 3) |

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| | |
|---------------------|-----------------------|
| Frequency range | 2 GHz ... 3 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 | 2 kV (Test Level 3 - asymmetrical) |
| Signal | 2 kV (Test Level 4 - asymmetrical) |
| Comments | Criterion A |

Surge voltage load (surge)

| | |
|-----------------------|------------------------------------|
| Standards/regulations | EN 61000-4-5 |
| Input | 2 kV (Test Level 3 - symmetrical) |
| | 4 kV (Test Level 4 - asymmetrical) |
| Output | 1 kV (Test Level 2 - symmetrical) |
| | 2 kV (Test Level 3 - asymmetrical) |
| Signal | 1 kV (Test Level 2 - asymmetrical) |
| Comments | Criterion A |

Conducted interference

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

Conducted interference

| | |
|-----------------|---------------------|
| I/O/S | asymmetrical |
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V (Test Level 3) |

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

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 |

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| | |
|--|---|
| Maximum altitude | 5000 m |
| 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, amplitude ±2.5 mm (according to IEC 60068-2-6) |
| | 15 Hz ... 150 Hz, 2.3g, 90 min. |

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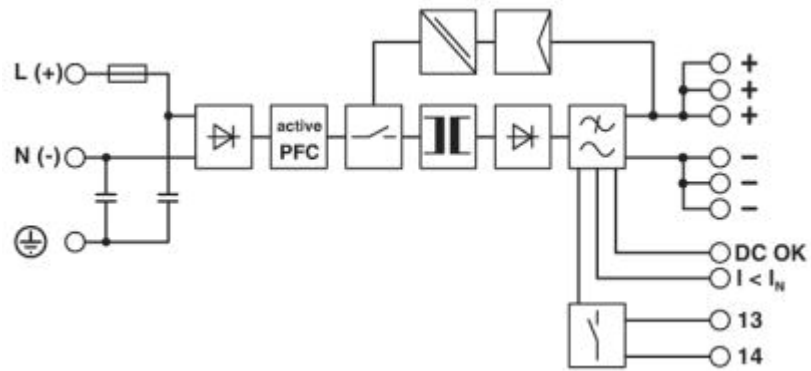


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Drawings

Block diagram




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Approvals

DNV GL 


CSA 

BV 


LR 


NK **ClassNK**


ABS

RINA 

UL Listed 

UL Recognized 


cUL Recognized 

IECEE CB Scheme 

SEMI F47

DeviceNet **DeviceNet**

EAC 

Type approved 

EAC 

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cULus Recognized

cULus Listed

UL Listed 

cUL Listed 

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Environmental Product Compliance

| | |
|------------|---|
| REACH SVHC | Lead 7439-92-1 |
| China RoHS | Environmentally Friendly Use Period = 25; |
| China RoHS | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

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Accessories

Device protection

Device protection - PLT-SEC-T3-230-FM-UT - 2907919



Type 2/3 surge protection, consisting of protective plug and base element with screw connection. For single-phase power supply network with integrated status indicator and remote signaling. Nominal voltage: 230 V AC/DC

Device protection

Device protection - PLT-SEC-T3-24-FM-UT - 2907916



Type 3 surge protection, consisting of protective plug and base element, with integrated status indicator and remote signaling for single-phase power supply networks. Nominal voltage: 24 V AC/DC

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Fan

Fan - QUINT-PS/FAN/4 - 2320076



The fan for QUINT-PS/1AC and .../3AC can be mounted without the need for tools or other accessories. By using the fan, optimum cooling is ensured at high ambient temperatures or if the mounting position is rotated.

Thermomagnetic device circuit breakers

Thermomagnetic device circuit breakers - CB TM1 1A SFB P - 2800836



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

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Thermomagnetic device circuit breakers

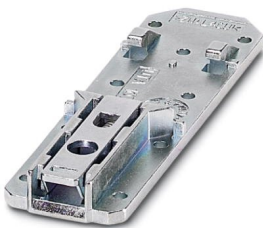
Thermomagnetic device circuit breakers - CB TM1 2A SFB P - 2800837



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

Assembly adapter

Assembly adapter - UTA 107/30 - 2320089



Universal DIN rail adapter

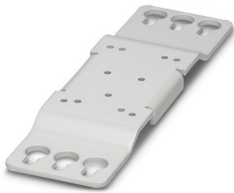
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Assembly adapter

Assembly adapter - UWA 182/52 - 2938235



Universal wall adapter for securely mounting the device in the event of strong vibrations. The device is screwed directly onto the mounting surface. The universal wall adapter is attached on the top/bottom.

Assembly adapter

Assembly adapter - QUINT-PS-ADAPTERS7/1 - 2938196



Assembly adapter for QUINT-PS... power supply on S7-300 rail

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Redundancy module

Redundancy module - QUINT-DIODE/12-24DC/2X20/1X40 - 2320157



DIN rail diode module 12-24 V DC/2x20 A or 1x40 A. Uniform redundancy up to the consumer.

Redundancy module

Redundancy module - QUINT-ORING/24DC/2X10/1X20 - 2320173



Active QUINT redundancy module for DIN rail mounting with Auto Current Balancing ACB technology and monitoring functions, input: 24 V DC, output: 24 V DC/2 x 10 A or 1 x 20 A, including mounted UTA 107/30 universal DIN rail adapter

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Redundancy module

Redundancy module - TRIO-DIODE/12-24DC/2X10/1X20 - 2866514



Redundancy module with function monitoring, 12 ... 24 V DC, 2x 10 A, 1x 20 A

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