# QUINT-PS/1AC/24DC/20/CO - Power supply, with protective coating

2320898

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Primary-switched power supply unit QUINT POWER, Screw connection, DIN rail mounting, SFB Technology (Selective Fuse Breaking), input: 1-phase, output: 24 V DC / 20 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. In addition, the high system availability is ensured by preventive function monitoring which reports critical operating states before errors can occur.
Reliable starting of heavy loads takes place via the static power reserve POWER BOOST. Thanks to the adjustable voltage, all ranges between 18 V DC ... 29.5 V DC are covered.

## Your advantages

- For superior system availability
- 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
- Preventive function monitoring
- Optimum protection with dip coating for 100 % humidity

## Commercial data

| | |
|---|---|
| Item number | 2320898 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CMPQ13 |
| Product key | CMPQ13 |
| Catalog page | Page 247 (C-4-2019) |
| GTIN | 4046356520003 |
| Weight per piece (including packing) | 2,164.4 g |
| Weight per piece (excluding packing) | 1,622 g |
| Customs tariff number | 85044095 |
| Country of origin | TH |

## Technical data

### Input data

AC operation

| | |
|---|---|
| Nominal input voltage range | 100 V AC ... 240 V AC -15 % / +10 % |
| Input voltage range | 85 V AC ... 264 V AC |
| Derating $I_{Stat.\ Boost}$ | < 100 V AC (1 %/V) |
| Input voltage range AC | 85 V AC ... 264 V AC |
| Input voltage range DC | 90 V DC ... 410 V DC +5 % (UL 508: ≤ 250 V DC) |
| Electric strength, max. | 300 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | < 20 A |
| Inrush current integral ($I^2t$) | < 3.2 $A^2s$ |
| Inrush current limitation | 20 A |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Mains buffering time | typ. 32 ms (120 V AC) |
| | typ. 32 ms (230 V AC) |
| Current consumption | 7 A (100 V AC) |
| | 3.1 A (240 V AC) |
| Nominal power consumption | 569 VA |
| Protective circuit | Transient surge protection; Varistor, gas-filled surge arrester |
| Typical response time | < 0.6 s |
| Input fuse | 12 A (slow-blow, internal) |
| Permissible backup fuse | B10 B16 AC: |
| Permissible DC backup fuse | DC: Connect a suitable fuse upstream |
| Recommended breaker for input protection | 10 A ... 16 A (Characteristics B, C, D, K) |
| Discharge current to PE | < 3.5 mA |

DC operation

| | |
|---|---|
| Nominal input voltage range | 110 V DC ... 250 V DC (UL 508: ≤ 250 V DC) |
| Derating $I_{Stat.\ Boost}$ | < 110 V DC (1 %/V) |
| Current consumption | 6.3 A (110 V DC) |
| | 2.7 A (250 V DC) |

### Output data

| | |
|---|---|
| Efficiency | typ. 92 % (120 V AC) |
| | typ. 92.7 % (230 V AC) |
| Nominal output voltage | 24 V DC ±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 ($I_N$) | 20 A |
| POWER BOOST ($I_{Boost}$) | 26 A (-25 °C ... 40 °C permanent, $U_{OUT}$ = 24 V DC ) |

| | |
|---|---|
| Static Boost ($I_{Stat.Boost}$) | 26 A |
| Selective Fuse Breaking ($I_{SFB}$) | 120 A (12 ms) |
| Magnetic circuit breaker tripping | B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6 |
| Derating | 60 °C ... 70 °C (2.5 %/K) |
| Feedback voltage resistance | ≤ 35 V DC |
| Protection against overvoltage at the output (OVP) | < 32 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| | < 2 % (change in load, dynamic 10 % ... 90 %) |
| | < 0.1 % (change in input voltage ±10 %) |
| Residual ripple | < 30 $mV_{PP}$ (with nominal values) |
| Output power | 480 W |
| | 624 W |
| Maximum no-load power dissipation | 8 W |
| Power loss nominal load max. | 40 W |
| 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 x $U_N$: 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 x $U_N$: 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 |

## Connection data

Input

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm² |

| | |
|---|---|
| Conductor cross section, rigid max. | 6 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 4 mm² |
| Conductor cross section AWG min. | 18 |
| Conductor cross section AWG max. | 10 |
| Stripping length | 7 mm |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Output

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm² |
| Conductor cross section, rigid max. | 6 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 4 mm² |
| Conductor cross section AWG min. | 12 |
| Conductor cross section AWG max. | 10 |
| Stripping length | 7 mm |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Signal

| | |
|---|---|
| Conductor cross section, rigid min. | 0.2 mm² |
| Conductor cross section, rigid max. | 6 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 4 mm² |
| Conductor cross section AWG min. | 18 |
| Conductor cross section AWG max. | 10 |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

## Signaling

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

Signal output: DC OK active

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

| | |
|---|---|
| Note on status display | LED flashing |

Signal output: DC OK floating

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

Signal output: POWER BOOST, active

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

## 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) |

## Product properties

| | |
|---|---|
| Product type | Power supply |
| Product family | QUINT POWER |
| MTBF (IEC 61709, SN 29500) | > 900000 h (25 °C) |
| | > 520000 h (40 °C) |

Insulation characteristics

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

## Dimensions

| | |
|---|---|
| Width | 90 mm |
| Height | 130 mm |
| Depth | 125 mm |

Installation dimensions

| | |
|---|---|
| Installation distance right/left | 5 mm / 5 mm |
| Installation distance top/bottom | 50 mm / 50 mm |

Alternative assembly

| | |
|---|---|
| Width | 122 mm |
| Height | 130 mm |
| Depth | 93 mm |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | alignable: $P_N$ ≥50%, 5 mm horizontally, 15 mm next to active components, 50 mm vertically<br>alignable: $P_N$ <50%, 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |
| With protective coating | yes |

## Material specifications

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

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 70 °C (> 60 °C Derating: 2,5 %/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Maximum altitude | 6000 m |
| Climatic class | 3K3 (in acc. with EN 60721) |
| Max. permissible relative humidity (operation) | 100 % (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. |
| Temp code | T3C (-40 ... +60 °C) |

## 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) |
| Explosive atmosphere | EN 60079-15 (Zone 2) |
| Standard - Equipment safety | BG (design tested) |
| 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 |
| Noxious gas test | ISA-S71.04-1985 G3 Harsh Group A |
| 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 61010-1 | II (≤ 5000 m) |

Fire protection in rail vehicles

| | |
|---|---|
| Standard designation | Fire protection in rail vehicles |
| Standards/specifications | EN 45545-2 (HL3) |

## Approvals

| | |
|---|---|
| CSA | CAN/CSA-C22.2 No. 60950-1-07 |
| | CSA-C22.2 No. 107.1-01 |
| Shipbuilding approval | DNV GL (EMC B, only with upstream filter) |
| SIQ | BG (type approved) |
| UL approvals | UL/C-UL listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |
| | UL 121201 & CSA C22.2 No. 213-17 Class I, Division 2, Groups A, B, C, D T3C (Hazardous Location) |
| DeviceNet approval | DeviceNet™ Power Supply Conformance Tested |

Conformity/Approvals

| | |
|---|---|
| ATEX | Ⓔx II 3 G Ex ec ic nC IIC T4 Gc |
| | SIQ 14 ATEX 137 X |
| IECEx | Ex ec ic nC IIC T4 Gc |
| | IECEx SIQ 14.0001X |

## EMC data

| | |
|---|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| 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

| | |
|---|---|
| Standards/regulations | EN 55011 (EN 55022) |

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) |
| 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 |

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) |
| | 0.5 kV (Test Level 1 - asymmetrical) |
| Signal | 1 kV (Test Level 2 - asymmetrical) |
| Comments | Criterion B |

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) |

Emitted interference

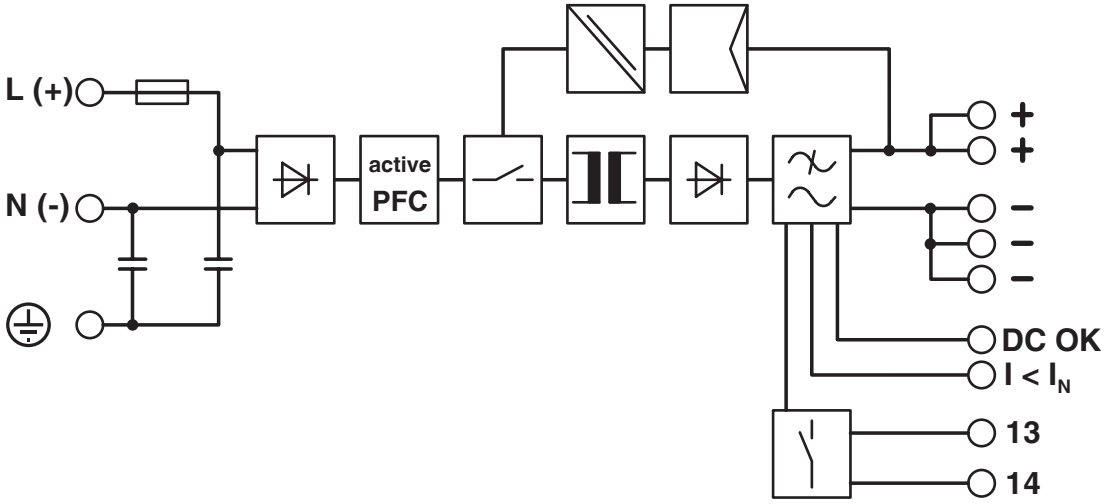
| | |
|---|---|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and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

## Drawings

Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/au/products/2320898

**cUL Recognized**
Approval ID: E211944

**UL Recognized**
Approval ID: E211944

**EAC**
Approval ID: EAC-Zulassung

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

**UL Listed**
Approval ID: E123528-20070724

**Type approved**
Approval ID: SI-SIQ BG 005/110 A1

**DNV**
Approval ID: TAA000030X

**cCSAus**
Approval ID: 1897790

**BIS Licence Document**
Approval ID: R-41268801

**IECEE CB Scheme**
Approval ID: SI-10293

**IECEE CB Scheme**
Approval ID: SI-10262

**EAC Ex**
Approval ID: RU C-DE.HB49.B.00004

**IECEx**
Approval ID: IECEx SIQ 14.0001X

**ATEX**
Approval ID: SIQ 14 ATEX 137 X

**NEPSI-EX**
Approval ID: GYJ20.1321X

**CCC**
Approval ID: 2020322303000835

**cULus Recognized**

**cULus Listed**

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## 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) |
| SCIP | f64384df-a5cc-4696-9ae7-8c0a0a7b0471 |

EF3.0 Climate Change

| | |
|---|---|
| CO2e kg | 66.848 kg CO2e |

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