

# QUINT-PS-3X400-500AC/24DC/40 - Power supply



2938646

<https://www.phoenixcontact.com/us/products/2938646>

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DIN rail power supply unit 24 V DC/40 A, primary-switched, 3-phase.  
Please use the following item in new systems: 2904623

## Product description

QUINT POWER power supply units for plant and special engineering reliably start heavy loads with high inrush currents using the POWER BOOST. Thanks to the wide-range input and extensive package of approvals, they can be used in all sectors of industry the world over. The switching output or floating relay contact are used for remote diagnostics.

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 2938646                        |
| Packing unit                         | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | CM11                           |
| Product key                          | CMPP33                         |
| Catalog page                         | Page 483 (IF-2007)             |
| GTIN                                 | 4017918910006                  |
| Weight per piece (including packing) | 3,871.4 g                      |
| Weight per piece (excluding packing) | 3,500 g                        |
| Customs tariff number                | 85044030                       |
| Country of origin                    | DE                             |

## Technical data

### Input data

#### AC operation

|                                          |                                                                          |
|------------------------------------------|--------------------------------------------------------------------------|
| Nominal input voltage range              | 3x 400 V AC ... 500 V AC                                                 |
| Input voltage range                      | 3x 320 V AC ... 575 V AC (for all three phases)<br>450 V DC ... 800 V DC |
| Input voltage range AC                   | 3x 320 V AC ... 575 V AC (for all three phases)                          |
| Input voltage range DC                   | 450 V DC ... 800 V DC                                                    |
| Voltage type of supply voltage           | AC/DC                                                                    |
| Inrush current                           | < 15 A (typical)                                                         |
| Inrush current integral ( $I^2t$ )       | 1 A <sup>2</sup> s                                                       |
| AC frequency range                       | 45 Hz ... 65 Hz                                                          |
| Frequency range DC                       | 0 Hz                                                                     |
| Mains buffering time                     | > 20 ms (400 V AC)<br>> 20 ms (480 V AC)                                 |
| Current consumption                      | approx. 3x 2.8 A (400 V AC)<br>approx. 3x 2.2 A (480 V AC)               |
| Nominal power consumption                | 1048 W                                                                   |
| Protective circuit                       | Transient surge protection; Varistor                                     |
| Typical response time                    | < 1 s                                                                    |
| Recommended breaker for input protection | 3x 6 A ... 16 A (Characteristics B, C, D, K)                             |
| Discharge current to PE                  | < 3.5 mA                                                                 |

### Output data

|                                                    |                                                                                                                                               |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency                                         | > 91 % (for 230 V AC and nominal values)                                                                                                      |
| Nominal output voltage                             | 24 V DC $\pm 1$ %                                                                                                                             |
| Setting range of the output voltage ( $U_{Set}$ )  | 22.5 V ... 28.5 V (> 24 V DC, constant capacity restricted)                                                                                   |
| Nominal output current ( $I_N$ )                   | 40 A (-25 °C ... 70 °C)                                                                                                                       |
| POWER BOOST ( $I_{Boost}$ )                        | 45 A (-25 °C ... 40 °C permanent)                                                                                                             |
| Derating                                           | 60 °C (2.5 %/K)                                                                                                                               |
| Feedback voltage resistance                        | 35 V DC                                                                                                                                       |
| Protection against overvoltage at the output (OVP) | $\leq 35$ V DC                                                                                                                                |
| Max. capacitive load                               | unlimited                                                                                                                                     |
| Active current limitation                          | Approx. $I_{BOOST} = 45$ A (for short-circuit)                                                                                                |
| Control deviation                                  | < 1 % (change in load, static 10 % ... 90 %)<br>< 2 % (change in load, dynamic 10 % ... 90 %)<br>< 0.1 % (change in input voltage $\pm 10$ %) |
| Residual ripple                                    | < 10 mV <sub>PP</sub> (with nominal values)                                                                                                   |
| Output power                                       | 960 W                                                                                                                                         |
| Peak switching voltages nominal load               | < 60 mV <sub>PP</sub> (20 MHz)                                                                                                                |
| Maximum no-load power dissipation                  | < 14 W                                                                                                                                        |
| Power loss nominal load max.                       | < 80 W                                                                                                                                        |

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|                        |                                            |
|------------------------|--------------------------------------------|
| Rise time              | < 2 ms ( $U_{OUT}$ (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 |
| Maximum switching voltage | $\leq 24$ V                              |
| Output voltage            | + 24 V DC (Signal)                       |
| Maximum inrush current    | $\leq 40$ mA                             |
| Continuous load current   | $\leq 40$ mA                             |

## Signal: DC OK floating

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

## Connection data

### Input

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section, rigid min.   | 0.2 mm <sup>2</sup> |
| Conductor cross section, rigid max.   | 6 mm <sup>2</sup>   |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 4 mm <sup>2</sup>   |
| Conductor cross section AWG min.      | 24                  |
| Conductor cross section AWG max.      | 10                  |
| Stripping length                      | 8 mm                |
| Screw thread                          | M3                  |
| Tightening torque, min                | 0.5 Nm              |
| Tightening torque max                 | 0.6 Nm              |

### Output

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section, rigid min.   | 0.5 mm <sup>2</sup> |
| Conductor cross section, rigid max.   | 16 mm <sup>2</sup>  |
| Conductor cross section flexible min. | 0.5 mm <sup>2</sup> |
| Conductor cross section flexible max. | 10 mm <sup>2</sup>  |
| Conductor cross section AWG min.      | 20                  |
| Conductor cross section AWG max.      | 6                   |
| Stripping length                      | 10 mm               |
| Screw thread                          | M4                  |
| Tightening torque, min                | 1.2 Nm              |
| Tightening torque max                 | 1.5 Nm              |

### Signal

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|                                       |                     |
|---------------------------------------|---------------------|
| Conductor cross section, rigid min.   | 0.5 mm <sup>2</sup> |
| Conductor cross section, rigid max.   | 16 mm <sup>2</sup>  |
| Conductor cross section flexible min. | 0.5 mm <sup>2</sup> |
| Conductor cross section flexible max. | 10 mm <sup>2</sup>  |
| Conductor cross section AWG min.      | 20                  |
| Conductor cross section AWG max.      | 6                   |
| Screw thread                          | M4                  |
| Tightening torque, min                | 1.2 Nm              |
| Tightening torque max                 | 1.5 Nm              |

## Signaling

|                           |                         |
|---------------------------|-------------------------|
| Types of signaling        | LED                     |
|                           | Active switching output |
|                           | Relay contact           |
| Operating voltage display | Green LED               |

### Signal output: DC OK active

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

### Signal output: DC OK floating

|                |                   |
|----------------|-------------------|
| Status display | "DC OK" LED green |
|----------------|-------------------|

## Electrical properties

|                                 |                         |
|---------------------------------|-------------------------|
| Number of phases                | 3                       |
| 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) | > 500000 h   |

### Insulation characteristics

|                     |                        |
|---------------------|------------------------|
| Protection class    | I (with PE connection) |
| Degree of pollution | 2                      |

## Dimensions

|        |        |
|--------|--------|
| Width  | 240 mm |
| Height | 130 mm |
| Depth  | 125 mm |

### Alternative assembly

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|        |        |
|--------|--------|
| Width  | 122 mm |
| Height | 130 mm |
| Depth  | 243 mm |

## Mounting

|                   |                                                |
|-------------------|------------------------------------------------|
| Assembly note     | alignable: horizontally 0 mm, vertically 50 mm |
| Mounting position | horizontal DIN rail NS 35, EN 60715            |

## Material specifications

|                  |                |
|------------------|----------------|
| Housing material | Metal          |
| Type of housing  | AluNox (AlMg1) |

## 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                                                                                |
| 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 $\pm 2.5$ mm (according to IEC 60068-2-6)<br>15 Hz ... 150 Hz, 2.3g, 90 min. |

## Standards and regulations

|                                                                                                                    |                    |
|--------------------------------------------------------------------------------------------------------------------|--------------------|
| Standard – Limitation of mains harmonic currents                                                                   | EN 61000-3-2       |
| Standard - Electrical safety                                                                                       | EN 62368-1         |
| Standard - Equipment safety                                                                                        | GS (tested safety) |
| Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment | EN 62368-1         |
| Standard – Safety extra-low voltage                                                                                | EN 62368-1 (SELV)  |
|                                                                                                                    | EN 60204 (PELV)    |
| Standard - Safe isolation                                                                                          | DIN VDE 0100-410   |

### Overvoltage category

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

## Approvals

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Shipbuilding approval | DNV GL (EMC A)                                                |
| UL approvals          | UL/C-UL listed UL 508                                         |
|                       | UL/C-UL Recognized UL 60950-1                                 |
|                       | UL/C-UL Listed UL 1604 Class I, Division 2, Groups A, B, C, D |

## EMC data

|                               |                                           |
|-------------------------------|-------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
|-------------------------------|-------------------------------------------|

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|                                     |                                                   |
|-------------------------------------|---------------------------------------------------|
| 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 |
| Housing               | Level 4      |

## Electrostatic discharge

|                   |             |
|-------------------|-------------|
| Contact discharge | 8 kV        |
| Discharge in air  | 15 kV       |
| Comments          | Criterion B |

## Electromagnetic HF field

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

## Electromagnetic HF field

|                     |                  |
|---------------------|------------------|
| Frequency range     | 80 MHz ... 2 GHz |
| Test field strength | 10 V/m           |
| Comments            | Criterion A      |

## Fast transients (burst)

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

## Fast transients (burst)

|          |                               |
|----------|-------------------------------|
| Input    | 4 kV (level 4 - asymmetrical) |
| Output   | 2 kV (Level 3 - asymmetrical) |
| Signal   | 1 kV (Level 2 - asymmetrical) |
| Comments | Criterion B                   |

## Surge voltage load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Surge voltage load (surge)

|          |                                                           |
|----------|-----------------------------------------------------------|
| Input    | 4 kV (inst. class 4 - asymmetrical: conductor to ground)  |
|          | 2 kV (inst. class 4 -symmetrical: conductor to conductor) |
| Output   | 0.5 kV (level 1 - asymmetrical: conductor to ground)      |
|          | 0.5 kV (level 1 - symmetrical: conductor to conductor)    |
| Signal   | 1 kV (level 2 - asymmetrical: conductor to ground)        |
| Comments | Criterion B                                               |

## Conducted interference

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

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## Conducted interference

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

## Voltage dips

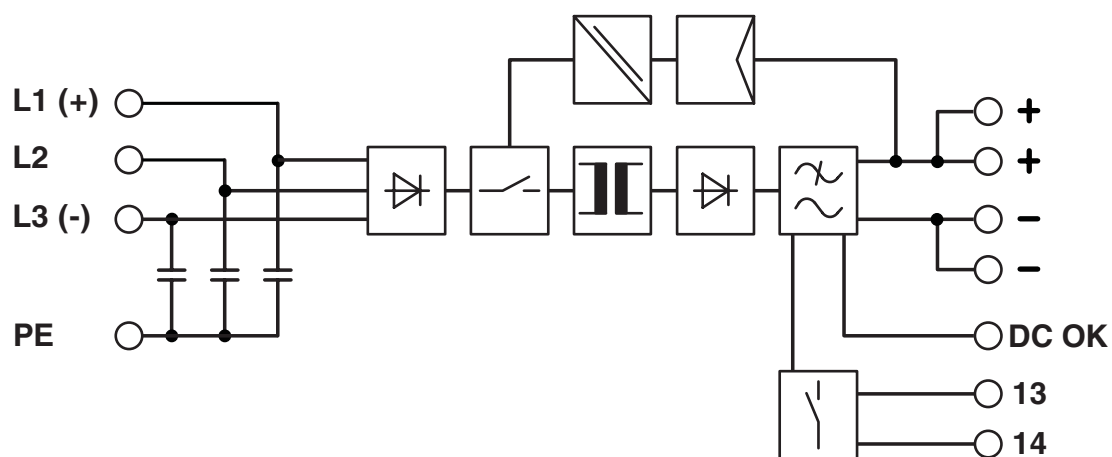
|                       |               |
|-----------------------|---------------|
| Standards/regulations | EN 61000-4-11 |
|-----------------------|---------------|

## 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 |

## Drawings

Block diagram





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## Classifications

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | 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-50                                                                                                                                                                                                                           |
|                                         | 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

### UWA 182/52 - Mounting adapter

2938235

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

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### UTA 107 - DIN rail adapter

2853983

<https://www.phoenixcontact.com/us/products/2853983>



Universal DIN rail adapter, for screwing on switchgear

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

2905230

<https://www.phoenixcontact.com/us/products/2905230>



Plug-in device protection, according to type 3/class III, for 3-phase power supply networks with separate N and PE (5-conductor system: L1, L2, L3, N, PE), with integrated surge-proof fuse and remote indication contact.

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## PLT-SEC-T3-24-FM-UT - Type 3 surge protection device

2907916

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