

QUINT-PS/60-72DC/24DC/10/CO - DC/DC converter, protective coating



2905011

<https://www.phoenixcontact.com/us/products/2905011>

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Primary-switched QUINT DC/DC converter with wide range input for DIN rail mounting with SFB (Selective Fuse Breaking) technology, input: 60-72 V DC, output 24 V DC / 10 A

Product description

QUINT DC/DC converter with maximum functionality.

DC/DC converters alter the voltage level, regenerate the voltage at the end of long cables or enable the creation of independent supply systems by means of electrical isolation. QUINT DC/DC converters magnetically and therefore quickly trip circuit breakers with 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.

Your advantages

- Reliable starting of difficult loads, thanks to the static POWER BOOST power reserve with up to 125% nominal current permanently
- Preventive function monitoring indicates critical operating states before errors occur
- Constant voltage: output voltage regenerated even at the end of long cables
- Support conversion to various voltage levels
- Electrical isolation: for setting up independent supply systems
- Optimum protection with dip coating for 100 % humidity

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2905011 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CM05 |
| Product key | CMDQ43 |
| GTIN | 4046356908320 |
| Weight per piece (including packing) | 1,166 g |
| Weight per piece (excluding packing) | 1,190 g |
| Customs tariff number | 85044095 |
| Country of origin | CN |

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Technical data

Input data

DC operation

| | |
|------------------------------------|--|
| Nominal input voltage range | 60 V DC ... 72 V DC |
| Input voltage range | 42 V DC ... 96 V DC |
| Wide-range input | yes |
| Input voltage range DC | 42 V DC ... 96 V DC |
| Voltage type of supply voltage | DC |
| Inrush current | < 9 A (typical) |
| Inrush current integral (I^2t) | 0.64 A ² s |
| Mains buffering time | typ. 10 ms (60 V DC) |
| Current consumption | 5.6 A (60 V DC) 4.7 A (72 V DC) |
| Reverse polarity protection | , ≤ 30 V DC |
| Nominal power consumption | 268 VA |
| Protective circuit | Transient surge protection; Varistor |
| Input fuse | 10 A 150 V DC (internal (device protection)) |

Output data

| | |
|--|--|
| Efficiency | > 91 % (U_{IN} 60 V DC / U_{OUT} 24 V DC) > 91 % (U_{IN} 72 V DC / U_{OUT} 24 V DC) |
| Output characteristic | U/I |
| 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) | 10 A (-40 °C ... 60 °C) |
| POWER BOOST (I_{Boost}) | 12.5 A (-40 °C ... 40 °C permanent, U_{OUT} = 24 V DC) |
| Selective Fuse Breaking (I_{SFB}) | 60 A (12 ms) |
| Magnetic circuit breaker tripping | B2 / B4 / B6 |
| Derating | 60 °C ... 70 °C (2.5 %/K) |
| Feedback voltage resistance | 35 V DC |
| Protection against overvoltage at the output (OVP) | < 35 V DC |
| Max. capacitive load | unlimited |
| Active current limitation | 18 A |
| 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 | < 20 mV _{PP} |
| Short-circuit-proof | yes |
| Output power | 240 W |
| Peak switching voltages nominal load | < 10 mV _{PP} (20 MHz) |

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| | |
|-----------------------------------|--|
| Maximum no-load power dissipation | 4 W (U_{IN} 60 V DC) |
| Power loss nominal load max. | 24 W (U_{IN} 60 V DC) |
| Rise time | < 2 ms (U_{OUT} (10 % ... 90 %)) |
| Connection in parallel | yes, for redundancy and increased capacity |
| Connection in series | yes |
| Fuse protection (secondary side) | electronic |
| | thermal-magnetic |
| | thermal |

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) |

Signal: POWER BOOST, active

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

Signal: U_{IN} OK, active

| | |
|-------------------------|------------------------------------|
| Output description | $U_{IN} > 19.2$ V: High signal |
| Switching voltage range | 18 V DC ... 24 V DC |
| Maximum inrush current | ≤ 20 mA (short-circuit-proof) |

Signal: DC OK floating

| | |
|------------------------|-------------------|
| Output description | Relay |
| Output voltage | ≤ 30 V AC/DC |
| Maximum inrush current | ≤ 100 mA |

Connection data

Input

| | |
|---------------------------------------|---------------------|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.2 mm ² |
| Conductor cross-section, rigid 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. | 24 |
| Conductor cross-section AWG max. | 12 |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

Output

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| | |
|---------------------------------------|---------------------|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.2 mm ² |
| Conductor cross-section, rigid 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. | 24 |
| 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 |

Signal

| | |
|---------------------------------------|---------------------|
| Conductor cross-section, rigid min. | 0.2 mm ² |
| Conductor cross-section, rigid 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. | 24 |
| Conductor cross-section AWG max. | 12 |
| Screw thread | M3 |
| 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 | "DC OK" LED green |
| Color | green |

Signal output: POWER BOOST, active

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

Signal output: U_{IN} OK, active

| | |
|------------------------|---|
| Status display | LED " $U_{IN} < 0.8 \times U_N$ V" yellow/ $U_{IN} < 0.8 \times U_N$ V DC: LED on |
| Color | yellow |
| Note on status display | LED on |

Signal output: DC OK floating

| | |
|------------------------|---|
| Note on status display | $U_{OUT} > 0.9 \times U_N$: Contact closed |
|------------------------|---|

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Electrical properties

| | |
|---------------------------------|---------------------|
| Number of phases | 1 |
| Insulation voltage input/output | 1.5 kV (type test) |
| | 1 kV (routine test) |
| | 1 kV (type test) |

Product properties

| | |
|----------------------------|---------------------|
| Product type | DC/DC converters |
| Product family | QUINT POWER |
| MTBF (IEC 61709, SN 29500) | > 1349000 h (25 °C) |
| | > 765000 h (40 °C) |

Insulation characteristics

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

Dimensions

| | |
|--------|--------|
| Width | 48 mm |
| Height | 130 mm |
| Depth | 125 mm |

Installation dimensions

| | |
|---|-------------------------------|
| Installation distance right/left | 0 mm / 0 mm (≤ 70 °C) |
| Installation distance right/left (active) | 15 mm / 15 mm (≤ 70 °C) |
| Installation distance top/bottom | 50 mm / 50 mm (≤ 70 °C) |
| Installation distance top/bottom (active) | 50 mm / 50 mm (≤ 70 °C) |

Alternative assembly

| | |
|--------|--------|
| Width | 122 mm |
| Height | 130 mm |
| Depth | 51 mm |

Mounting

| | |
|-------------------------|---|
| Mounting type | DIN rail: 35 mm |
| Assembly note | 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 |
| With protective coating | yes |

Material specifications

| | |
|------------------|------------------|
| Housing material | Metal |
| Type of housing | Aluminum (AlMg3) |

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

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 |
| 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 | T4 (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K) |

Standards and regulations

| | |
|--|--------------------------------------|
| Rail applications | EN 50121-4 EN 50155 |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV) |
| Standard - Electrical safety | EN 60950-1/VDE 0805 (SELV) |
| Standard – Safety extra-low voltage | EN 60950-1 (SELV) EN 60204 (PELV) |
| Standard - Safe isolation | DIN VDE 0100-410 |
| Noxious gas test | ISA-S71.04-1985 G3 Harsh Group A |

Fire protection in rail vehicles

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

Approvals

| | |
|--------------|---|
| UL approvals | UL/C-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 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 |

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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 | 20 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 | 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 | 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 | 9 kHz ... 80 MHz |

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| | |
|----------|---------------------|
| 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. |

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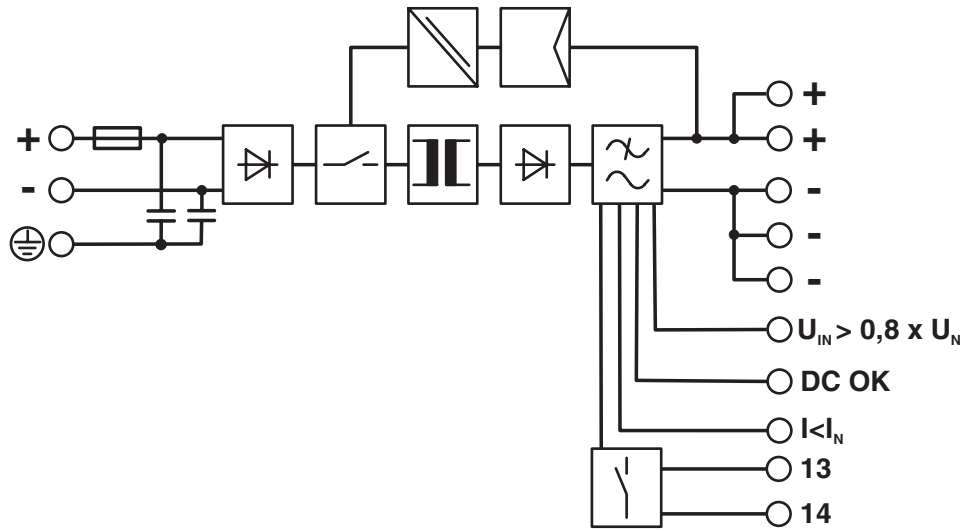


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Drawings

Block diagram



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Approvals

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cUL Recognized
Approval ID: E211944



UL Recognized
Approval ID: E211944



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

CoC / Compliance Statement

Approval ID: 18-050-00



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 |
| 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 | 2bdc56aa-32cf-4c1f-ab5f-724f8c2bb5e9 |

EF3.1 Climate Change

| | |
|---------|----------------|
| CO2e kg | 33.111 kg CO2e |
|---------|----------------|

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