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Primary-switched QUINT DC/DC converter for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 24 V DC, output: 48 V DC/5 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. The high level of system availability is additionally ensured, thanks to preventive function monitoring, as it reports critical operating states before errors 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

DC/DC converters - QUINT-PS/24DC/48DC/ 5



2320128

<https://www.phoenixcontact.com/il/products/2320128>

Commercial Data

| | |
|--------------------------------------|---------------------|
| Item number | 2320128 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Product Key | CMDQ44 |
| Catalog Page | Page 249 (C-4-2017) |
| GTIN | 4046356481908 |
| Weight per Piece (including packing) | 1,095.8 g |
| Weight per Piece (excluding packing) | 900 g |
| Customs tariff number | 85044030 |
| Country of origin | CN |

Technical Data

Input data

DC operation

| | |
|---|---|
| Nominal input voltage range | 24 V DC |
| Input voltage range | 18 V DC ... 32 V DC |
| Extended input voltage range in operation | 14 V DC ... 18 V DC (Derating) |
| Wide-range input | no |
| Input voltage range DC | 18 V DC ... 32 V DC 14 V DC ... 18 V DC (Consider derating during operation) |
| Inrush current | < 15 A (typical) |
| Inrush current integral (I^2t) | 3 A ² s |
| Mains buffering time | > 12 ms (24 V DC) |
| Current consumption | 14 A (24 V, I_{BOOST}) |
| Reverse polarity protection | ≤ yes 30 V DC |
| Protective circuit | Transient surge protection; Varistor |
| Input fuse | 25 A (internal (device protection)) |

Output data

| | |
|--|--|
| Efficiency | > 92.5 % |
| Output characteristic | U/I |
| Nominal output voltage | 48 V DC ±1 % |
| Setting range of the output voltage (U_{Set}) | 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted) |
| Nominal output current (I_N) | 5 A (-25 °C ... 60 °C) |
| POWER BOOST (I_{Boost}) | 6.25 A (-25 °C ... 40 °C permanent, $U_{OUT} = 48$ 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 | 60 V DC |
| Protection against overvoltage at the output (OVP) | < 60 V DC |
| Max. capacitive load | unlimited |
| Active current limitation | Approximately 7 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} |
| Output power | 240 W |
| Peak switching voltages nominal load | < 10 mV _{PP} (20 MHz) |
| Maximum no-load power dissipation | 5.2 W |
| Power loss nominal load max. | 21 W |
| Rise time | < 2 ms (U_{OUT} (10 % ... 90 %)) |
| Connection in parallel | yes, for redundancy and increased capacity |
| Connection in series | yes |

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Signal: DC OK active

| | |
|-------------------------|--|
| Output description | $U_{OUT} > 0.9 \times U_N$: High signal |
| Switching voltage range | 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 | 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 | 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 |

Signal: DC OK active

| | |
|-------------------------|--|
| Output description | $U_{OUT} > 0.9 \times U_N$: High signal |
| Switching voltage range | 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 | 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 | 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 |

Signal: DC OK active

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

Signal: POWER BOOST, active

| | |
|--------------------|-------------------------------|
| Output description | $I_{OUT} < I_N$: High signal |
|--------------------|-------------------------------|

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| | |
|-------------------------|-------------------------------|
| Switching voltage range | 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 | 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 |

Signal: DC OK active

| | |
|-------------------------|---|
| Output description | U _{OUT} > 0.9 x U _N : High signal |
| Switching voltage range | 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 | 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 | 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 | 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. | 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 |

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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. | 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 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. | 24 |
| Conductor cross section AWG max. | 12 |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

LED 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 " $U_{IN} < 19.2$ V" yellow/ $U_{IN} < 19.2$ 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 | 1.00 |
| Insulation voltage input/output | 1.5 kV (type test) |
| | 1 kV (routine test) |
| Insulation voltage input/output | 1 kV (type test) |

Product properties

| | |
|----------------------------|--------------------|
| Product type | DC/DC converters |
| MTBF (IEC 61709, SN 29500) | > 761000 h (40 °C) |

Insulation characteristics

| | |
|---------------------|-----|
| Protection class | III |
| 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 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 |
| With protective coating | No |

Material specifications

| | |
|------------------|---|
| Color | aluminium |
| Housing material | Metal |
| Type of housing | Aluminum (AlMg3) |
| 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, startup at -40°C type-tested) |
| 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) | ≤ 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. |

Standards and regulations

| | |
|--|--------------------------------------|
| Rail applications | EN 50121-4 |
| 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 |

Approval data

| | |
|-----------------------|--|
| Shipbuilding approval | DNV GL (EMC B) |
| 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 (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 |
| Noise immunity | EN 61000-6-2:2005 |

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 | 10 V/m |
| Frequency range | 1.4 GHz ... 2 GHz |
| Test field strength | 10 V/m |
| Frequency range | 2 GHz ... 3 GHz |
| Test field strength | 10 V/m |
| Comments | Criterion A |

Fast transients (burst)

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

Fast transients (burst)

| | |
|----------|------------------------------------|
| Input | 2 kV (Test Level 3 - 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 | 1 kV (Test Level 2 - symmetrical) |
| | 2 kV (Test Level 3 - 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

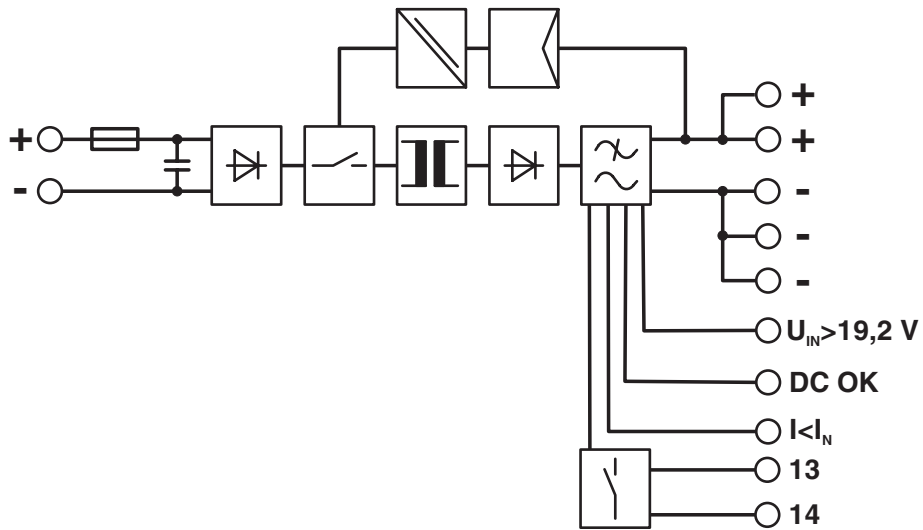
| | |
|--|--|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Criterion A | Normal operating behavior within the specified limits. |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

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Drawings

Block diagram



DC/DC converters - QUINT-PS/24DC/48DC/ 5



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Approvals



cUL Recognized
Approval ID: FILE E 211944



UL Recognized
Approval ID: FILE E 211944



IECEE CB Scheme
Approval ID: DK-5535-M1



EAC
Approval ID: EAC-Zulassung



DNV GL
Approval ID: TAA000030X



LR
Approval ID: 12/20030



NK
Approval ID: TA17341M



BV
Approval ID: 27662/B0 BV



EAC
Approval ID: EAC-Zulassung



UL Listed
Approval ID: FILE E 123528



cUL Listed
Approval ID: FILE E 123528



RINA
Approval ID: ELE194320XG

DC/DC converters - QUINT-PS/24DC/48DC/ 5



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ABS

Approval ID: 20-2022536-PDA



UL Recognized

Approval ID: FILE E 211944



IECEE CB Scheme

Approval ID: DK-5535-M1



cUL Recognized

Approval ID: FILE E 211944



cUL Listed

Approval ID: FILE E 123528



UL Listed

Approval ID: FILE E 123528

ABS

Approval ID: 20-2022536-PDA



BV

Approval ID: 27662/B0 BV



DNV GL

Approval ID: TAA000030X



NK

Approval ID: TA17341M



RINA

Approval ID: ELE194320XG



LR

Approval ID: 12/20030

DC/DC converters - QUINT-PS/24DC/48DC/ 5



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EAC

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



EAC

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



cUL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



cUL Listed

Approval ID: FILE E 199827

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Classifications

ECLASS

| | |
|---------------|----------|
| ECLASS-9.0 | 27210901 |
| ECLASS-10.0.1 | 27210901 |
| ECLASS-11.0 | 27210901 |

ETIM

| | |
|----------|----------|
| ETIM 8.0 | EC002046 |
|----------|----------|

UNSPSC

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

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<https://www.phoenixcontact.com/il/products/2320128>

Environmental Product Compliance

| | |
|------------|--|
| REACH SVHC | Lead 7439-92-1 |
| China RoHS | Environmentally Friendly Use Period = 25; |
| | For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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Accessories

Thermomagnetic device circuit breaker

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

<https://www.phoenixcontact.com/il/products/2800836>



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

Thermomagnetic device circuit breaker

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

<https://www.phoenixcontact.com/il/products/2800837>



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

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Thermomagnetic device circuit breaker

Thermomagnetic device circuit breaker - CB TM1 12A SFB P - 2800844

<https://www.phoenixcontact.com/il/products/2800844>



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

Thermomagnetic device circuit breaker

Thermomagnetic device circuit breaker - CB TM1 16A SFB P - 2800845

<https://www.phoenixcontact.com/il/products/2800845>



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

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Redundancy module

Redundancy module - TRIO-DIODE/48DC/2X10/1X20 - 2866527

<https://www.phoenixcontact.com/il/products/2866527>

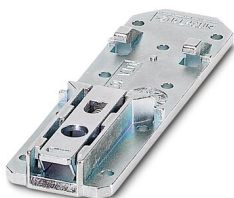


Redundancy module with function monitoring, 48 V DC, 2x 10 A, 1x 20 A

Mounting adapter

Mounting adapter - UTA 107/30 - 2320089

<https://www.phoenixcontact.com/il/products/2320089>



Universal DIN rail adapter

2320128

<https://www.phoenixcontact.com/il/products/2320128>

Mounting adapter

Mounting adapter - UWA 182/52 - 2938235

<https://www.phoenixcontact.com/il/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.

Mounting adapter

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

<https://www.phoenixcontact.com/il/products/2938196>



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

DC/DC converters - QUINT-PS/24DC/48DC/ 5



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Power supply unit

Power supply unit - QUINT-PS/1AC/24DC/20 - 2866776

<https://www.phoenixcontact.com/il/products/2866776>



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

Power supply unit

Power supply unit - QUINT-PS/3AC/24DC/20 - 2866792

<https://www.phoenixcontact.com/il/products/2866792>



Primary-switched power supply unit, QUINT POWER, Screw connection, SFB Technology (Selective Fuse Breaking), input: 3-phase, output: 24 V DC / 20 A

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