

## DC/DC converters - QUINT-PS/24DC/48DC/ 5 - 2320128

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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



### Key Commercial Data

|                                      |   |
|--------------------------------------|---|
| Packing unit                         | 1 pc  |
| GTIN                                 | <br>4 046356 481908 |
| GTIN                                 | 4046356481908   |
| Weight per Piece (excluding packing) | 900.000 g   |
| Custom tariff number                 | 85044030  |
| Country of origin                    | China   |

### Technical data

#### Dimensions

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

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#### Dimensions

|                                  |        |
|----------------------------------|--------|
| Width with alternative assembly  | 122 mm |
| Height with alternative assembly | 130 mm |
| Depth with alternative assembly  | 51 mm  |

#### 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 (start-up type tested)     | -40 °C  |
| Ambient temperature (storage/transport)        | -40 °C ... 85 °C  |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing)   |
| Climatic class                                 | 3K3 (in acc. with EN 60721)   |
| Degree of pollution                            | 2   |

#### Input data

|   |                                     |
|---|-------------------------------------|
| 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)      |
| Current consumption                       | 14 A (24 V, I <sub>BOOST</sub> )    |
| Inrush current                            | < 15 A (typical)                    |
| Mains buffering time                      | > 12 ms (24 V DC)                   |
| Input fuse                                | 25 A (internal (device protection)) |
| Type of protection                        | Transient surge protection          |
| Protective circuit/component              | Varistor                            |

#### Output data

|   |   |
|---|---|
| Nominal output voltage                                  | 48 V DC ±1 %  |
| Setting range of the output voltage (U <sub>Set</sub> ) | 30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)   |
| Nominal output current (I <sub>N</sub> )                | 5 A (-25 °C ... 60 °C)  |
| POWER BOOST (I <sub>Boost</sub> )                       | 6.25 A (-25 °C ... 40 °C permanent, U <sub>OUT</sub> = 48 V DC) |
| Selective Fuse Breaking (I <sub>SFB</sub> )             | 30 A (12 ms)  |
| Derating  | 60 °C ... 70 °C (2.5%/K)  |
| Connection in parallel                                  | Yes, for redundancy and increased capacity                      |
| Connection in series                                    | yes   |
| 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 <sub>PP</sub>   |
| Peak switching voltages nominal load                    | < 10 mV <sub>PP</sub> (20 MHz)                                  |

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### Technical data

#### Output data

|  |       |
|--|-------|
| Maximum power dissipation in no-load condition | 5.2 W |
| Power loss nominal load max.                   | 21 W  |

#### General

|                                 |   |
|---------------------------------|---|
| Net weight                      | 0.9 kg  |
| Efficiency                      | > 92.5 %  |
| Insulation voltage input/output | 1.5 kV (type test)<br>1 kV (routine test)   |
| Protection class                | III   |
| Degree of protection            | IP20  |
|                                 | > 761000 h (40 °C)  |
| Mounting position               | horizontal DIN rail NS 35, EN 60715   |
| Assembly instructions           | alignable: $P_N \geq 50\%$ , 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 |

#### Connection data, input

|                                       |                            |
|---------------------------------------|----------------------------|
| Connection method                     | Pluggable screw connection |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup>        |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup>        |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>        |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup>        |
| Conductor cross section AWG min.      | 24                         |
| Conductor cross section AWG max.      | 12                         |
| Stripping length                      | 8 mm                       |
| Screw thread                          | M3                         |

#### Connection data, output

|                                       |                            |
|---------------------------------------|----------------------------|
| Connection method                     | Pluggable screw connection |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup>        |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup>        |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>        |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup>        |
| Conductor cross section AWG min.      | 24                         |
| Conductor cross section AWG max.      | 12                         |
| Stripping length                      | 7 mm                       |
| Screw thread                          | M3                         |

#### Connection data for signaling

|                                       |                     |
|---------------------------------------|---------------------|
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |

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### Technical data

#### Connection data for signaling

|                                  |    |
|----------------------------------|----|
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Screw thread                     | M3 |

#### Standards

|  |                            |
|--|----------------------------|
| EMC requirements for noise immunity  | EN 61000-6-1               |
|  | EN 61000-6-2               |
| EMC requirements for noise emission  | EN 61000-6-3               |
|  | EN 61000-6-4               |
| Standard - Electrical safety   | EN 60950-1/VDE 0805 (SELV) |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV)   |
| Standard – Safety extra-low voltage  | EN 60950-1 (SELV)          |
|  | EN 60204 (PELV)            |
| Standard - Safe isolation  | DIN VDE 0100-410           |
| Rail applications  | EN 50121-4                 |

#### Conformance/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 (Hazardous Location) |
| Shipbuilding approval | DNV GL (EMC B)   |

#### EMC data

|                               |   |
|-------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Electrostatic discharge       | EN 61000-4-2                              |
| Contact discharge             | 8 kV (Test Level 4)                       |
| Discharge in air              | 15 kV (Test Level 4)                      |
| Electromagnetic HF field      | EN 61000-4-3                              |
| 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)       | EN 61000-4-4                              |
| 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)    | EN 61000-4-5                              |

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### Technical data

#### EMC data

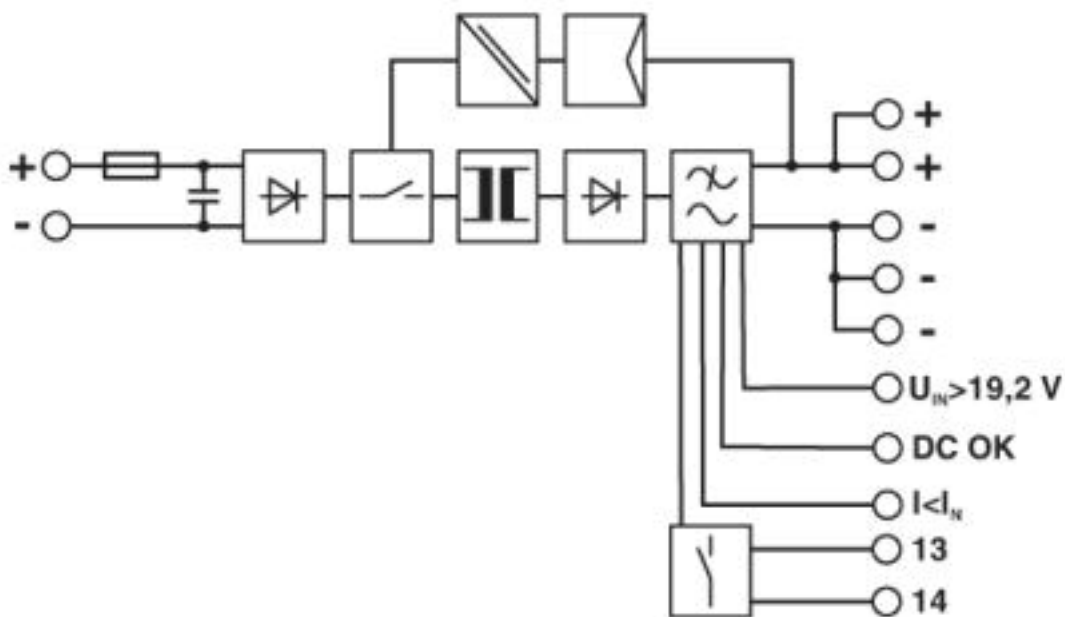
|                 |  |
|-----------------|--|
| Input           | 1 kV (Test Level 2 - symmetrical)  |
|                 | 2 kV (Test Level 3 - asymmetrical)   |
| Output          | 1 kV (Test Level 2 - symmetrical)  |
|                 | 2 kV (Test Level 3 - asymmetrical)   |
| Signal          | 1 kV (Test Level 2 - asymmetrical)   |
| Comments        | Criterion A  |
| I/O/S           | asymmetrical   |
| Frequency range | 0.15 MHz ... 80 MHz  |
| Voltage         | 10 V (Test Level 3)  |
| Comments        | Criterion A  |
| Criterion A     | Normal operating behavior within the specified limits.                               |
| Criterion B     | Temporary impairment to operational behavior that is corrected by the device itself. |

#### Environmental Product Compliance

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

### Drawings

Block diagram



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



## DC/DC converters - QUINT-PS/24DC/48DC/ 5 - 2320128

### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27210900 |
| eCl@ss 4.1 | 27210900 |
| eCl@ss 5.0 | 27210900 |
| eCl@ss 5.1 | 27210900 |
| eCl@ss 6.0 | 27210900 |
| eCl@ss 7.0 | 27210901 |
| eCl@ss 8.0 | 27210901 |
| eCl@ss 9.0 | 27210901 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002542 |
| ETIM 5.0 | EC002046 |
| ETIM 6.0 | EC002046 |
| ETIM 7.0 | EC002046 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211502 |
| UNSPSC 7.0901 | 39121004 |
| UNSPSC 11     | 39121004 |
| UNSPSC 12.01  | 39121004 |
| UNSPSC 13.2   | 39121041 |

### Approvals

#### Approvals

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BV / LR / NK / ABS / RINA / UL Listed / UL Recognized / cUL Recognized / IECCEB Scheme / cUL Listed / EAC / EAC / DNV GL / cULus Recognized / cULus Listed

#### Ex Approvals











UL Listed / cUL Listed / cULus Listed

#### Approval details

|    |   |   |             |
|----|---|---|-------------|
| BV |  | <a href="http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials">http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials</a> | 27662/B0 BV |
|----|---|---|-------------|

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## Approvals


|                 |   |   |                          |
|-----------------|---|---|--------------------------|
| LR              |    | <a href="http://www.lr.org/en">http://www.lr.org/en</a>   | 12/20030                 |
| NK              |    | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>   | 12A013                   |
| ABS             |   | <a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>   | 15-GD1363806-PDA         |
| RINA            |    | <a href="http://www.rina.org/en">http://www.rina.org/en</a>   | ELE112814XG              |
| UL Listed       |   | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528            |
| UL Recognized   |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944            |
| cUL Recognized  |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944            |
| IECEE CB Scheme |  | <a href="http://www.iecee.org/">http://www.iecee.org/</a>   | DK-5535-M1               |
| cUL Listed      |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528            |
| EAC             |  |   | EAC-Zulassung            |
| EAC             |  |   | RU C-<br>DE.A*30.B.01082 |


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### Approvals

|                            |   |   |            |
|----------------------------|---|---|------------|
| DNV GL                     |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | TAA000010E |
| Nominal voltage UN         |   | 750 V   |            |
| Nominal current IN         |   | 15 A  |            |
| mm <sup>2</sup> /AWG/kcmil |   | 4   |            |

|                  |   |
|------------------|---|
| cULus Recognized |  |
|------------------|---|

|              |   |
|--------------|---|
| cULus Listed |  |
|--------------|---|

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