

## DC/DC converters - QUINT-PS/12DC/24DC/ 5 - 2320131

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Primary-switched QUINT DC/DC converter for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 12 V DC, output: 24 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	 4 046356 482240
GTIN	4046356482240

### Technical data

#### Dimensions

Width	32 mm
Height	130 mm
Depth	125 mm
Width with alternative assembly	122 mm
Height with alternative assembly	130 mm
Depth with alternative assembly	35 mm

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## Technical data

### Dimensions

Installation distance right/left	0 mm / 0 mm ( $\leq 70\text{ °C}$ )
Installation distance right/left (active)	15 mm / 15 mm ( $\leq 70\text{ °C}$ )
Installation distance top/bottom	50 mm / 50 mm ( $\leq 70\text{ °C}$ )
Installation distance top/bottom (active)	50 mm / 50 mm ( $\leq 70\text{ °C}$ )

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C Derating: 2.5 %/K)
Ambient temperature (start-up type tested)	-40 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	$\leq 95\%$ (at 25 °C, non-condensing)
Climatic class	3K3 (in acc. with EN 60721)
Degree of pollution	2

### Input data

Nominal input voltage range	12 V DC
Input voltage range	9 V DC ... 18 V DC
Current consumption	15 A (12 V, $I_{\text{BOOST}}$ )
Inrush current	< 15 A (typical)
Mains buffering time	typ. 3 ms (12 V DC)
Input fuse	25 A (internal (device protection))
Type of protection	Transient surge protection
Protective circuit/component	Varistor

### Output data

Nominal output voltage	24 V DC $\pm 1\%$
Setting range of the output voltage ( $U_{\text{Set}}$ )	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Nominal output current ( $I_{\text{N}}$ )	5 A (-25 °C ... 60 °C)
POWER BOOST ( $I_{\text{Boost}}$ )	6.25 A (-25 °C ... 40 °C permanent, $U_{\text{OUT}} = 24\text{ V DC}$ )
Selective Fuse Breaking ( $I_{\text{SFB}}$ )	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	35 V DC
Protection against overvoltage at the output (OVP)	< 35 V DC
Max. capacitive load	unlimited
Active current limitation	Approximately 6.9 A
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
	< 2 % (change in load, dynamic 10 % ... 90 %)
	< 0.1 % (change in input voltage $\pm 10\%$ )
Residual ripple	< 75 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	2 W
Power loss nominal load max.	13.5 W

#### General

Net weight	0.7 kg
Efficiency	> 90 %
MTBF (IEC 61709, SN 29500)	> 1005000 h (40 °C)
Insulation voltage input/output	1.5 kV (type test) 1 kV (routine test)
Degree of protection	IP20
Protection class	III
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 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.	18
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.	18
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 60204-1 (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)

### 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	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)	EN 61000-4-4
Input	2 kV (Test Level 3 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 4 - asymmetrical)
Comments	Criterion B
Surge voltage load (surge)	EN 61000-4-5
Input	1 kV (Test Level 2 - symmetrical)

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## Technical data

### EMC data

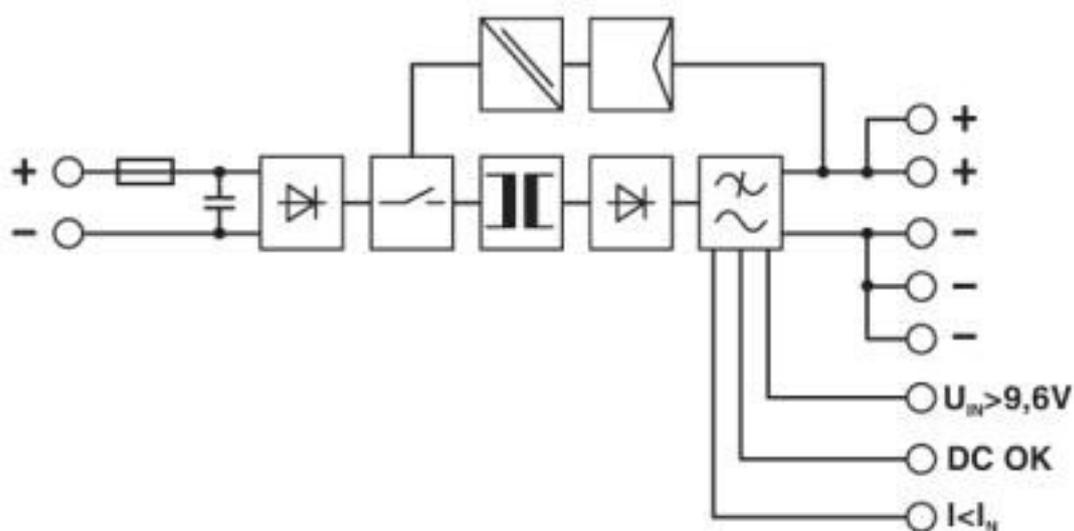
	2 kV (Test Level 3 - asymmetrical)
Output	1 kV (Test Level 2 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 2 - asymmetrical)
Comments	Criterion A
Conducted interference	EN 61000-4-6
I/O/S	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Voltage	10 V (Test Level 3)
Comments	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



## Classifications

eCl@ss

eCl@ss 10.0.1	27210901
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### 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	EC002540
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
UNSPSC 18.0	39121041
UNSPSC 19.0	39121041
UNSPSC 20.0	39121041
UNSPSC 21.0	39121041

### Approvals

#### Approvals

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##### Approvals

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

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##### Ex Approvals

UL Listed / cUL Listed / cULus Listed

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#### Approval details

# DC/DC converters - QUINT-PS/12DC/24DC/ 5 - 2320131

## Approvals

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
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

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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		

EAC		RU*DE*08.B.01873/19
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cULus Recognized	
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cULus Listed	
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## Accessories

### Accessories

#### Assembly adapter

Assembly adapters - UTA 107/30 - 2320089



Universal DIN rail adapter

Assembly adapters - UWA 182/52 - 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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### Accessories

Assembly adapters - QUINT-PS-ADAPTERS7/1 - 2938196



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

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### Power supply

Power supply unit - QUINT-PS/1AC/12DC/15 - 2866718



Primary-switched QUINT POWER power supply for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 1-phase, output: 12 V DC/15 A

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Power supply unit - QUINT-PS/1AC/12DC/20 - 2866721



Primary-switched QUINT POWER power supply for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 1-phase, output: 12 V DC/20 A

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### Redundancy module

Redundancy module, with protective coating - QUINT-ORING/24DC/2X10/1X20 - 2320173



Active QUINT redundancy module for DIN rail mounting with Auto Current Balancing ACB technology and monitoring functions, input: 24 V DC, output: 24 V DC/2 x 10 A or 1 x 20 A, including mounted UTA 107/30 universal DIN rail adapter

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### Thermomagnetic device circuit breakers

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



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

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## DC/DC converters - QUINT-PS/12DC/24DC/ 5 - 2320131

### Accessories

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



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

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



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

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



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

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