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QUINT4-PS/3AC/24DC/20/VASS - Power supply unit

1168602

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Preconfigured and read-only version of the primary-switched QUINT POWER power supply with set output voltage and adjusted signaling, input: 3-phase, output: 24 V DC / 20 A

Product description

The fourth generation of the high-performance QUINT POWER power supplies ensures superior system availability by means of new functions. Signaling thresholds and characteristic curves can be individually adjusted via the NFC interface.
The unique SFB technology and preventive function monitoring of the QUINT POWER power supply increase the availability of your application.

Your advantages

- SFB technology trips standard circuit breakers selectively, loads that are connected in parallel continue working
- Preventive function monitoring indicates critical operating states before errors occur
- Signaling thresholds and characteristic curves that can be adjusted via NFC maximize system availability
- Easy system extension thanks to static boost; starting of difficult loads thanks to dynamic boost
- High degree of immunity, thanks to integrated gas-filled surge arrester and mains failure bridging time of more than 20 milliseconds
- Robust design thanks to metal housing and wide temperature range from -40°C to +70°C
- Worldwide use thanks to the wide range input and international approval package

Commercial data

Item number	1168602
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to order (non-returnable)
Product key	CMPI33
GTIN	4063151186142
Weight per piece (including packing)	1,166 g
Weight per piece (excluding packing)	1,203 g
Customs tariff number	85044095
Country of origin	TH

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Technical data

Input data

Control input (configurable) Rem	Output power ON/OFF (SLEEP MODE)
Default	Output power ON (>40 kΩ/24 V DC/open bridge between Rem and SGnd)

AC operation

Network type	Star network
Nominal input voltage range	3x 400 V AC ... 500 V AC
	2x 400 V AC ... 500 V AC
Input voltage range	3x 400 V AC ... 500 V AC -20 % ... +10 %
	2x 400 V AC ... 500 V AC -10 % ... +10 %
Typical national grid voltage	400 V AC
	480 V AC
Voltage type of supply voltage	AC
Inrush current	typ. 2 A (at 25 °C)
Inrush current integral (I^2t)	< 0.1 A^2s
Inrush current limitation	3 A (after 1 ms)
AC frequency range	50 Hz ... 60 Hz -10 % ... +10 %
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %
Mains buffering time	typ. 33 ms (3x 400 V AC)
	typ. 33 ms (3x 480 V AC)
Current consumption	3x 0.99 A (400 V AC)
	3x 0.81 A (480 V AC)
	2x 1.62 A (400 V AC)
	2x 1.37 A (480 V AC)
	3x 0.8 A (500 V AC)
	2x 1.23 A (500 V AC)
Nominal power consumption	541 VA
Protective circuit	Transient surge protection; Varistor, gas-filled surge arrester
Power factor (cos phi)	0.94
Switch-on time	< 1 s
Typical response time	300 ms (from SLEEP MODE)
Recommended breaker for input protection	3x 4 A ... 20 A (Characteristic B, C or comparable)
Recommended fuse for input protection	≥ 300 V AC
Discharge current to PE	< 3.5 mA
	1.7 mA (550 V AC, 60 Hz)

DC operation

Nominal input voltage range	± 260 V DC ... 300 V DC
Input voltage range	± 260 V DC ... 300 V DC -13 % ... +30 %
Voltage type of supply voltage	DC
Current consumption	1.23 A (± 260 V DC)

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	1.06 A (±300 V DC)
Recommended breaker for input protection	1x 6 A (10 x 38 mm, 30 kA L/R = 2 ms)
Recommended fuse for input protection	≥ 1000 V DC

Output data

Efficiency	typ. 93.9 % (400 V AC)
	typ. 93.8 % (480 V AC)
Output characteristic	U/I Advanced
	Smart HICCUP
	FUSE MODE
Nominal output voltage	26 V DC
Setting range of the output voltage (U_{Set})	24 V DC ... 29.5 V DC (constant capacity)
Nominal output current (I_N)	20 A
Static Boost ($I_{Stat.Boost}$)	25 A
Dynamic Boost ($I_{Dyn.Boost}$)	30 A (5 s)
Selective Fuse Breaking (I_{SFB})	120 A (15 ms)
Magnetic circuit breaker tripping	A1...A16 / B2...B13 / C1...C6 / Z1...Z16
Derating	> 60 °C (2.5 %/K)
Feedback voltage resistance	≤ 35 V DC
Protection against overvoltage at the output (OVP)	≤ 32 V DC
Control deviation	< 0.5 % (Static load change 10 % ... 90 %)
	< 3 % (Dynamic load change 10 % ... 90 %, (10 Hz))
	< 0.25 % (change in input voltage ±10 %)
Residual ripple	< 60 mV_{PP} (with nominal values)
Short-circuit-proof	yes
No-load proof	yes
Output power	480 W
	600 W
	720 W
Apparent power	686 VA (400 V, U_{OUT} = 24 V, I_{OUT} = stat. Boost)
	698 VA (480 V, U_{OUT} = 24 V, I_{OUT} = stat. Boost)
Maximum no-load power dissipation	< 7 W (400 V AC)
	< 7 W (480 V AC)
Power loss nominal load max.	< 32 W (400 V AC)
	< 33 W (480 V AC)
Power dissipation SLEEP MODE	< 5 W (400 V AC)
	< 5 W (480 V AC)
Crest factor	typ. 1.78 (400 V AC)
	typ. 2.1 (480 V AC)
Rise time	< 80 ms (U_{Out} = 10 % ... 90 %)
Connection in parallel	yes, for redundancy and increased capacity
Connection in series	yes

Signal

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Signal ground SGnd	Reference potential for Out1, Out2, and Rem

Signal Out 1 (configurable)

Digital	24 V DC 20 mA
Default	24 V DC 20 mA 24 V DC for U_{Out} > 0.9 x U_{Set}

Signal Out 2 (configurable)

Digital	24 V DC 20 mA
Analog	4 mA ... 20 mA ±5 % (Load ≤400 Ω)
Default	24 V DC 20 mA 24 V DC for 3AC OK (phase monitoring)

Signal relay 13/14 (configurable)

Default	closed (U_{Out} >0.9 x U_{set} and P_{Out} <0.9 x P_N)
Digital	24 V DC 1 A
	30 V AC/DC 0.5 A

Connection data

Input

Connection method	Screw connection
Conductor cross section, rigid min.	0.2 mm²
Conductor cross section, rigid max.	6 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	4 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.25 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	4 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.25 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	4 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	10
Stripping length	8 mm
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

Output

Connection method	Screw connection
Conductor cross section, rigid min.	0.2 mm²
Conductor cross section, rigid max.	6 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	4 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.25 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	4 mm²

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Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.25 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	4 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	10
Stripping length	8 mm
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

Signal

Connection method	Push-in connection
Conductor cross section, rigid min.	0.2 mm²
Conductor cross section, rigid max.	1 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	1.5 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.2 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	0.75 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.2 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

Signaling

Types of signaling	LED
	Floating signal contact
	Active signal output Out1 (digital, configurable)
	Active signal output Out2 (analog, configurable)
	Remote contact
	Signal ground SGnd

Signal output

P_{Out}	> 100 % (LED lights up yellow, output power > 480 W)
	> 75 % (LED lights up green, output power > 360 W)
	> 50 % (LED lights up green, output power > 240 W)
U_{Out}	> 0.9 x U_{Set} (LED lights up green)
	< 0.9 x U_{Set} (LED flashes green)

Electrical properties

Number of phases	3.00
Insulation voltage input/output	4 kV AC (type test)
	2.4 kV AC (routine test)

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Insulation voltage output / PE	0.5 kV DC (type test)
	0.5 kV DC (routine test)
Insulation voltage input / PE	3.5 kV AC (type test)
	2.4 kV AC (routine test)
Switching frequency	90.00 kHz ... 110.00 kHz (Auxiliary converter stage)
	56.00 kHz ... 500.00 kHz (Main converter stage)
	25.00 kHz ... 500.00 kHz (PFC stage)

Product properties

Product type	Power supply
MTBF (IEC 61709, SN 29500)	> 985000 h (25 °C)
	> 638000 h (40 °C)
	> 311000 h (60 °C)
Environmental protection directive	RoHS Directive 2011/65/EU
	WEEE
	Reach

Insulation characteristics

Protection class	I
Degree of pollution	2

Life expectancy (electrolytic capacitors)

Current	10 A
Temperature	40 °C
Time	344000 h
Additional text	400 V AC

Life expectancy (electrolytic capacitors)

Current	10 A
Temperature	40 °C
Time	320000 h
Additional text	480 V AC

Life expectancy (electrolytic capacitors)

Current	20 A
Temperature	25 °C
Time	445000 h
Additional text	400 V AC

Life expectancy (electrolytic capacitors)

Current	20 A
Temperature	25 °C
Time	432000 h
Additional text	480 V AC

Life expectancy (electrolytic capacitors)

Current	20 A

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Temperature	40 °C
Time	157000 h
Additional text	400 V AC

Life expectancy (electrolytic capacitors)

Current	20 A
Temperature	40 °C
Time	152000 h
Additional text	480 V AC

Dimensions

Width	70 mm
Height	130 mm
Depth	125 mm

Installation dimensions

Installation distance right/left	5 mm / 5 mm
Installation distance top/bottom	50 mm / 50 mm

Alternative assembly

Width	122 mm
Height	130 mm
Depth	73 mm

Mounting

Mounting type	DIN rail mounting
Assembly note	alignable: P_N ≥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

Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Metal
Hood version	Stainless steel X6Cr17
Side element version	Aluminum

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
Maximum altitude	≤ 5000 m (> 2000 m, observe derating)

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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)	5 Hz ... 100 Hz resonance search 2.3g, 90 min., resonance frequency 2.3g, 90 min. (according to DNV GL Class C)

Standards and regulations

Rail applications	EN 50121-3-2
	EN 50121-4
	EN 50121-5
	IEC 62236-3-2
	IEC 62236-4
	IEC 62236-5
HART FSK Physical Layer Test Specification Compliance	Output voltage U_{Out} compliant
Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)
Standard – Limitation of mains harmonic currents	EN 61000-3-2
Standard - Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Standard – Safety extra-low voltage	IEC 60950-1 (SELV)
	EN 60204-1 (PELV)
Standard - safety for equipment for measurement, control, and laboratory use	IEC 61010-1
Standard - Safety of transformers	EN 61558-2-16
Standard - power supply devices for low voltage with DC output	EN 61204-3
Approval - requirement of the semiconductor industry with regard to mains voltage dips	SEMI F47-0706, EN 61000-4-11

Overvoltage category

EN 60950-1	II (≤ 2000 m)
EN 61010-1	II (≤ 2000 m)
EN 62477-1	III (≤ 2000 m)

Approvals

CSA	CAN/CSA-C22.2 No. 60950-1-07
	CSA-C22.2 No. 107.1-01
Shipbuilding approval	DNV GL, PRS, BV, LR, ABS
SIQ	BG (type approved)
UL approvals	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
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC

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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
EMC requirements, power plant	IEC 61850-3
	EN 61000-6-5

Conducted noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

Noise emission

Standards/regulations	Additional basic standard EN 61000-6-5 (immunity in switching devices), IEC/EN 61850-3 (power supply)

Noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

DNV GL conducted noise emissions

DNV	Class A
Additional text	Area power distribution

DNV GL noise radiation

DNV	Class B
Additional text	Bridge and deck area

Harmonic currents

Standards/regulations	EN 61000-3-2
	EN 61000-3-2 (Class A)
Frequency range	0 kHz ... 2 kHz

Flicker

Standards/regulations	EN 61000-3-3
	EN 61000-3-3
Frequency range	0 kHz ... 2 kHz

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

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Frequency range	80 MHz ... 1 GHz
Test field strength	20 V/m (Test Level 3)
Frequency range	1 GHz ... 6 GHz
Test field strength	10 V/m (Test Level 3)
Frequency range	1 GHz ... 6 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	4 kV (Test Level 4 - 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	3 kV (Test Level 4 - symmetrical)
	6 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	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V (Test Level 3)

Power frequency magnetic field

Standards/regulations	EN 61000-4-8
Frequency	16.7 Hz
	50 Hz
	60 Hz
Test field strength	100 A/m
Additional text	60 s
Comments	Criterion A
Frequency	50 Hz
	60 Hz

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Frequency range	50 Hz ... 60 Hz
Test field strength	1 kA/m
Additional text	3 s
Frequency	0 Hz
Test field strength	300 A/m
Additional text	DC, 60 s

Voltage dips

Standards/regulations	EN 61000-4-11
Voltage	400 V AC
Frequency	50 Hz
Voltage dip	70 %
Number of periods	0.5 / 1 / 25 periods
Additional text	Test Level 2
Comments	Criterion A: 0.5 / 1 period Criterion B: 25 periods
Voltage dip	40 %
Number of periods	5 / 10 / 50 periods
Additional text	Test Level 2
Comments	Criterion B
Voltage dip	0 %
Number of periods	0,5 / 1 / 5 / 50 / 250 periods
Additional text	Test Level 2
Comments	Criterion A: 0.5 / 1 period Criterion B: 5 / 50 / 250 periods

Pulse-shape magnetic field

Standards/regulations	EN 61000-4-9
Test field strength	1000 A/m
Comments	Criterion A

Attenuated sinusoidal oscillations (ring wave)

Standards/regulations	EN 61000-4-12
Input	2 kV (Test Level 4 - symmetrical)
	4 kV (Test Level 4 - asymmetrical)
Comments	Criterion A

Asymmetrical conducted disturbance variables

Standards/regulations	EN 61000-4-16
Test level 1	15 Hz 150 Hz (Test Level 4)
Voltage	30 V 3 V
Test level 2	150 Hz 1.5 kHz (Test Level 4)
Voltage	3 V
Test level 3	1.5 kHz 15 kHz (Test Level 4)
Voltage	3 V 30 V
Test level 4	15 kHz 150 kHz (Test Level 4)

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Voltage	30 V
Test level 5	16.7 Hz 50 Hz 60 Hz (Test Level 4)
Voltage	30 V (Permanent)
Test level 6	16.7 Hz 50 Hz 60 Hz (Test Level 4)
Voltage	300 V (1 s)
Comments	Criterion A

Attenuated oscillating wave

Standards/regulations	EN 61000-4-18
Input, output (test level 1)	100 kHz 1 MHz (Test Level 3 - symmetrical)
Voltage	1 kV
Input, output (test level 2)	10 MHz
Voltage	1 kV
Input, output (test level 3)	100 kHz 1 MHz (Test Level 3 - asymmetrical)
Voltage	2.5 kV
Signals (test level 1)	100 kHz 1 MHz (Test Level 3 - symmetrical)
Voltage	1 kV
Signals (test level 2)	100 kHz 1 MHz (Test Level 3 - asymmetrical)
Voltage	2.5 kV
Comments	Criterion A

Attenuated oscillating magnetic field

Standards/regulations	EN 61000-4-10
Test field strength	110 A/m
Test level 1	100 kHz
Test field strength	110 A/m
Test level 2	1 MHz
Comments	Criterion A

Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements.

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Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/pc/products/1168602

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

LR
Approval ID: LR22472797TA

BV
Approval ID: 44621/B0 BV

ABS
Approval ID: 20-1973616-PDA

Type approved
Approval ID: SI-SIQ BG 005/112

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

DNV
Approval ID: TAA00000BV

cCSAus
Approval ID: 70098201

	Nominal voltage U_N	Nominal current I_N	Cross section AWG	Cross section mm^2
	125 V	1 A	-	-

IECEE CB Scheme
Approval ID: SI-11355

IECEE CB Scheme
Approval ID: SI-11358

cULus Recognized
Approval ID: E211944-A86-UL

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cULus Listed
Approval ID: E123528-20160812

cULus Listed
Approval ID: E199827-20170227

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Classifications

ECLASS

ECLASS-12.0	27040701
ECLASS-13.0	27040701

ETIM

ETIM 9.0	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	666b0e1d-25aa-4828-a979-b827383524c2

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