

Power supply unit - QUINT4-PS/1AC/24DC/5 - 2904600

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Primary-switched QUINT POWER power supply with free choice of output characteristic curve, SFB (selective fuse breaking) technology, and NFC interface, input: 1-phase, output: 24 V DC/5 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



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 985321
GTIN	4046356985321
Weight per Piece (excluding packing)	900.000 g
Custom tariff number	85044030
Country of origin	Thailand

Technical data

Dimensions

Width	36 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	39 mm

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)	≤ 95 % (at 25 °C, non-condensing)
Climatic class	3K3 (in acc. with EN 60721)
Degree of pollution	2
Installation height	≤ 5000 m (> 2000 m, observe derating)

Input data

Nominal input voltage range	100 V AC ... 240 V AC
	110 V DC ... 250 V DC
Input voltage range	100 V AC ... 240 V AC -15 % ... +10 %
	110 V DC ... 250 V DC -18 % ... +40 %
Dielectric strength maximum	300 V AC 60 s
AC frequency range	50 Hz ... 60 Hz -10 % ... +10 %
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %
	16.7 Hz (acc. to EN 50163)
Discharge current to PE	< 3.5 mA
Current consumption	1.7 A (100 V AC)
	1.5 A (120 V AC)
	0.9 A (230 V AC)
	0.8 A (240 V AC)
Nominal power consumption	163 VA
Inrush current	typ. 14 A (at 25 °C)
Mains buffering time	typ. 28 ms (120 V AC)
	typ. 38 ms (230 V AC)
Input fuse	6.3 A (slow-blow, internal)
Recommended breaker for input protection	6 A ... 16 A (Characteristic B, C, D, K or comparable)
Power factor (cos phi)	0.82
Type of protection	Transient surge protection
Protective circuit/component	Varistor, gas-filled surge arrester

Output data

Nominal output voltage	24 V DC
Setting range of the output voltage (U_{Set})	24 V DC ... 29.5 V DC (constant capacity)
Nominal output current (I_N)	5 A

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Output data

Static Boost ($I_{Stat.Boost}$)	6.25 A
Dynamic Boost ($I_{Dyn.Boost}$)	10 A (5 s)
Selective Fuse Breaking (I_{SFB})	30 A (15 ms)
Derating	> 60 °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)	≤ 32 V DC
Control deviation	< 0.5 % (Static load change 10 % ... 90 %)
	< 4 % (Dynamic load change 10 % ... 90 %, (10 Hz))
	< 0.25 % (change in input voltage ±10 %)
Residual ripple	< 30 mV _{PP} (with nominal values)
Output power	120 W
Typical response time	300 ms (from SLEEP MODE)
Maximum power dissipation in no-load condition	< 3 W (120 V AC)
	< 3 W (230 V AC)
Power loss nominal load max.	< 17 W (120 V AC)
	< 16 W (230 V AC)

General

Net weight	0.7 kg
Efficiency	typ. 88.8 % (120 V AC)
	typ. 89.2 % (230 V AC)
Insulation voltage input/output	4 kV AC (type test)
	2 kV AC (routine test)
Insulation voltage input / PE	3.5 kV AC (type test)
	2.4 kV AC (routine test)
Insulation voltage output / PE	0.5 kV DC (type test)
	0.5 kV DC (routine test)
Protection class	I
Degree of protection	IP20
MTBF (IEC 61709, SN 29500)	> 1532000 h (25 °C)
	> 930000 h (40 °C)
	> 431000 h (60 °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 alignable: $P_N < 50\%$, 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom

Connection data, input

Connection method	Screw connection
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Connection data, input

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.	14
Stripping length	6.5 mm

Connection data, output

Connection method	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.	14
Stripping length	6.5 mm

Connection data for signaling

Connection method	Push-in connection
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	1 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	1.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

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
EMC requirements, power plant	IEC 61850-3
	EN 61000-6-5
HART FSK Physical Layer Test Specification Compliance	Output voltage U _{Out} compliant
Standard - Safety of transformers	EN 61558-2-16 (air clearances and creepage distances only)
Standard - Electrical safety	IEC 60950-1/VDE 0805 (SELV)
Standard - safety for equipment for measurement, control, and laboratory use	IEC 61010-1
Standard - Safety extra-low voltage	IEC 60950-1 (SELV)
	EN 60204-1 (PELV)
Standard - power supply devices for low voltage with DC output	EN 61204-3

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Standards

Standard – Limitation of mains harmonic currents	EN 61000-3-2
Mains variation/undervoltage	SEMI F47-0706; EN 61000-4-11
Rail applications	EN 50121-3-2
	EN 50121-4
	EN 50121-5
	IEC 62236-3-2
	IEC 62236-4
	IEC 62236-5

Conformance/approvals

IECEX	Ex d IIC T4...T6
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)
CSA	CAN/CSA-C22.2 No. 60950-1-07
	CSA-C22.2 No. 107.1-01
SIQ	BG (type approved)
Shipbuilding approval	DNV GL, PRS, BV, LR, ABS

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
Conducted noise emission	EN 55016
	EN 61000-6-3 (Class B)
Noise emission	EN 55016
	EN 61000-6-3 (Class B)
Harmonic currents	EN 61000-3-2
	EN 61000-3-2 (Class A)
Flicker	EN 61000-3-3
	EN 61000-3-3
DNV GL conducted interference	Class A
Additional text	Area power distribution
DNV GL noise radiation	Class B
Additional text	Bridge and deck area
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 ... 6 GHz

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EMC data

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)	EN 61000-4-4
Input	4 kV (Test Level 4 - asymmetrical)
Output	4 kV (Test Level 4 - asymmetrical)
Signal	4 kV (Test Level 4 - asymmetrical)
Comments	Criterion A
Surge voltage load (surge)	EN 61000-4-5
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
I/O/S	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Voltage	10 V (Test Level 3)
Comments	Criterion A
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
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	EN 61000-4-11
Voltage	230 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 / 25 periods

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EMC data

Voltage dip	40 %
Number of periods	5 / 10 / 50 periods
Additional text	Test Level 2
Comments	Criterion A
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	EN 61000-4-9
Test field strength	1000 A/m
Comments	Criterion A
Damped oscillating magnetic field	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
Attenuated sinusoidal oscillations (ring wave)	EN 61000-4-12
Input	2 kV (Test Level 4 - symmetrical) 4 kV (Test Level 4 - asymmetrical)
Comments	Criterion A
Asymmetrical conducted disturbance variables	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)
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	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

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EMC data

Input, output (test level 1)	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
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.

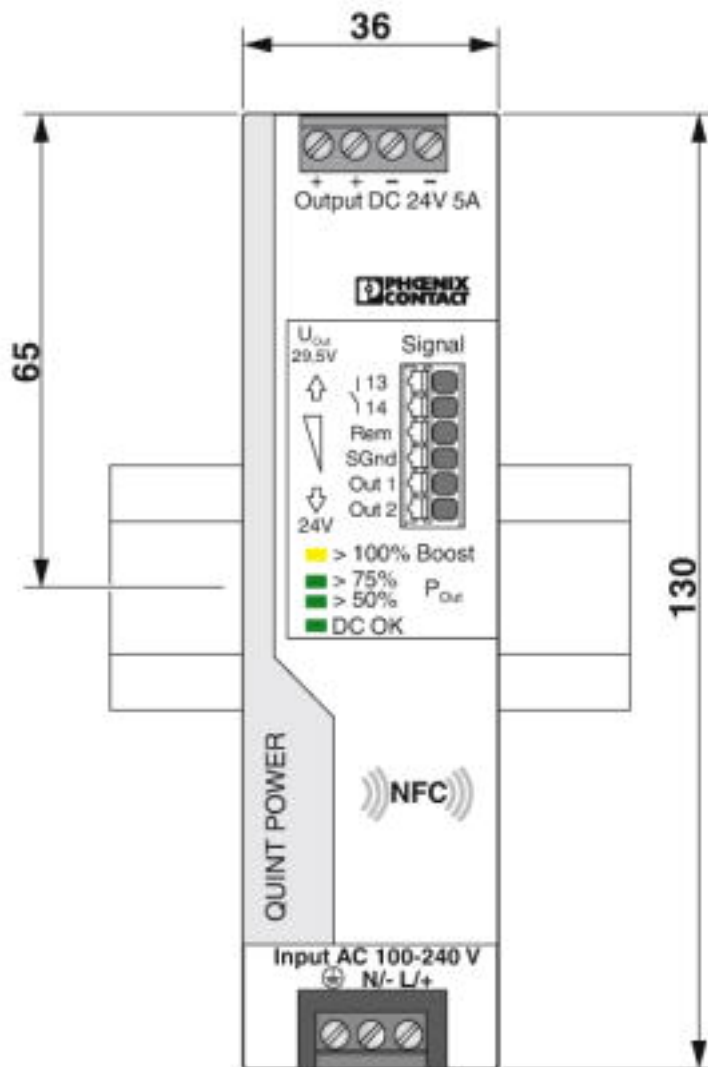
Environmental Product Compliance

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

Power supply unit - QUINT4-PS/1AC/24DC/5 - 2904600

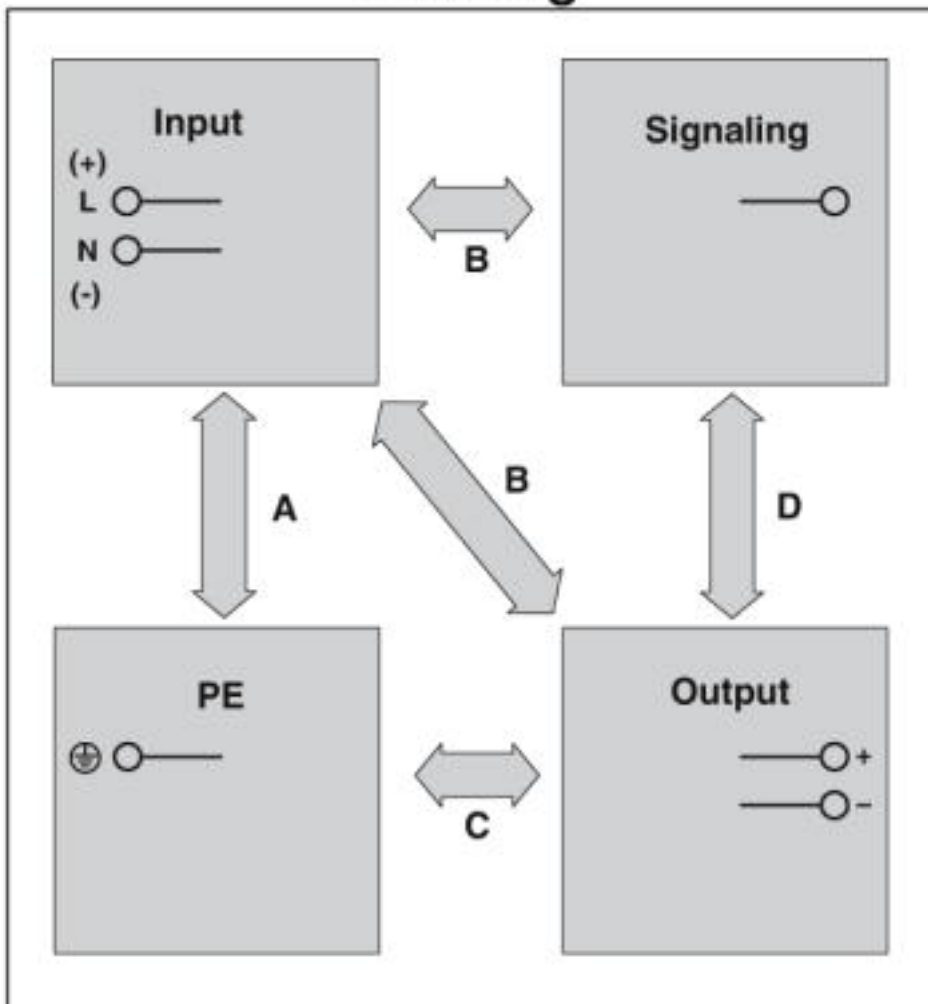
Dimensional drawing



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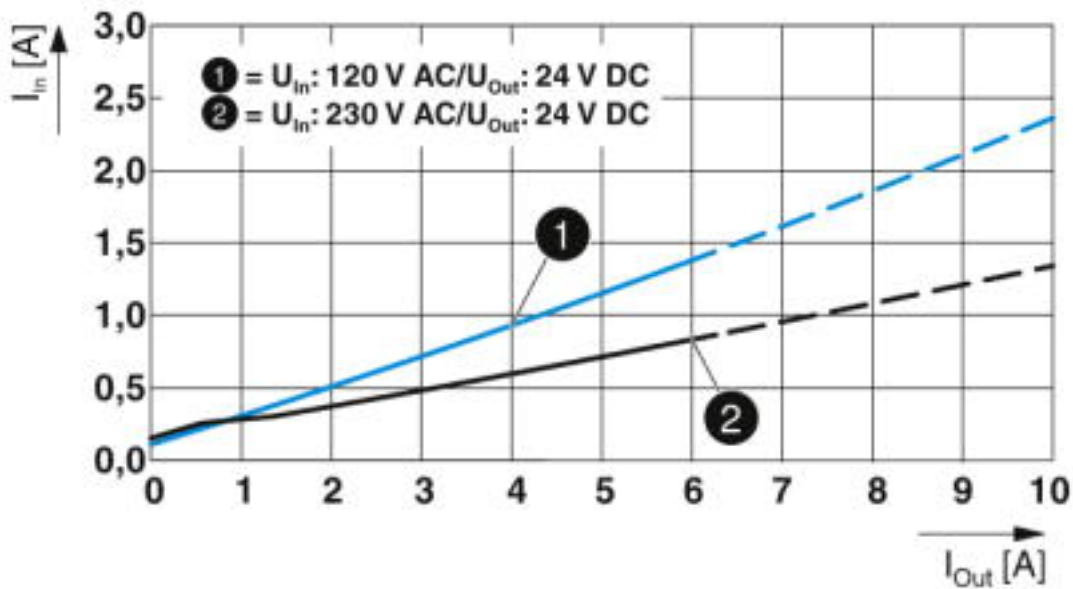
Schematic diagram

Housing

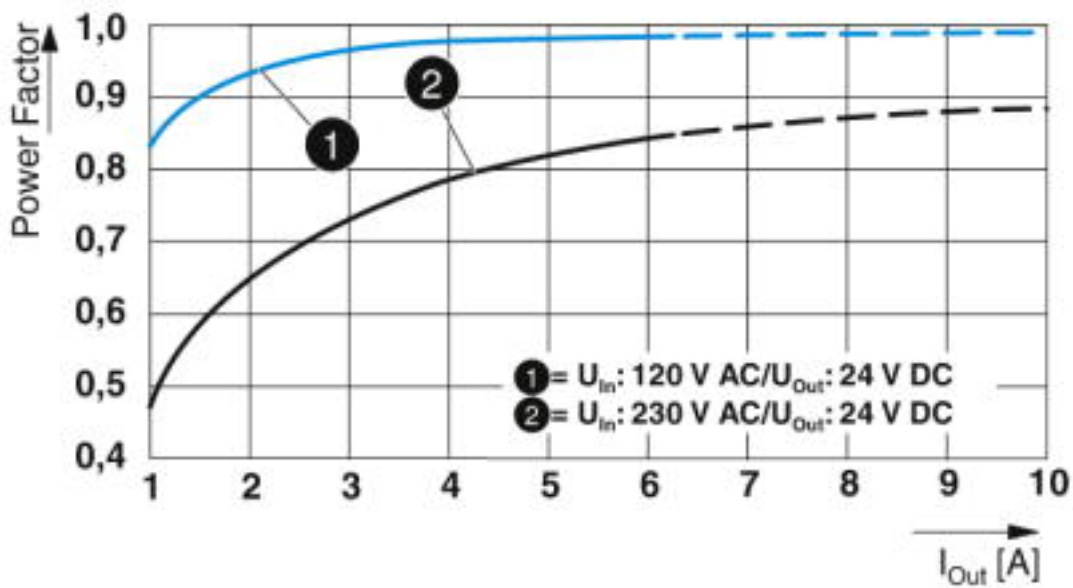


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Diagram

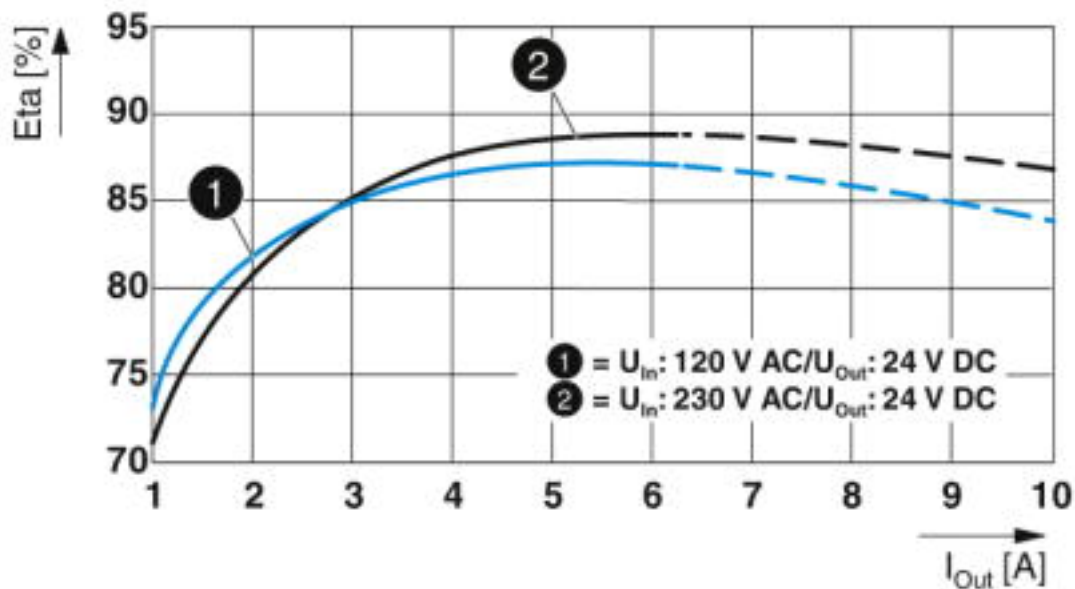


Diagram

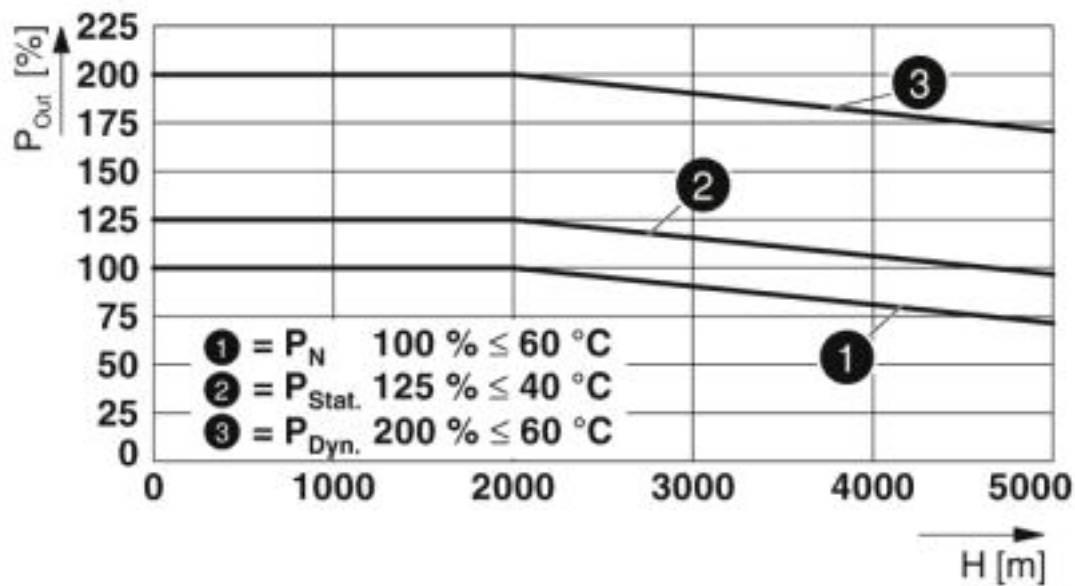


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Diagram

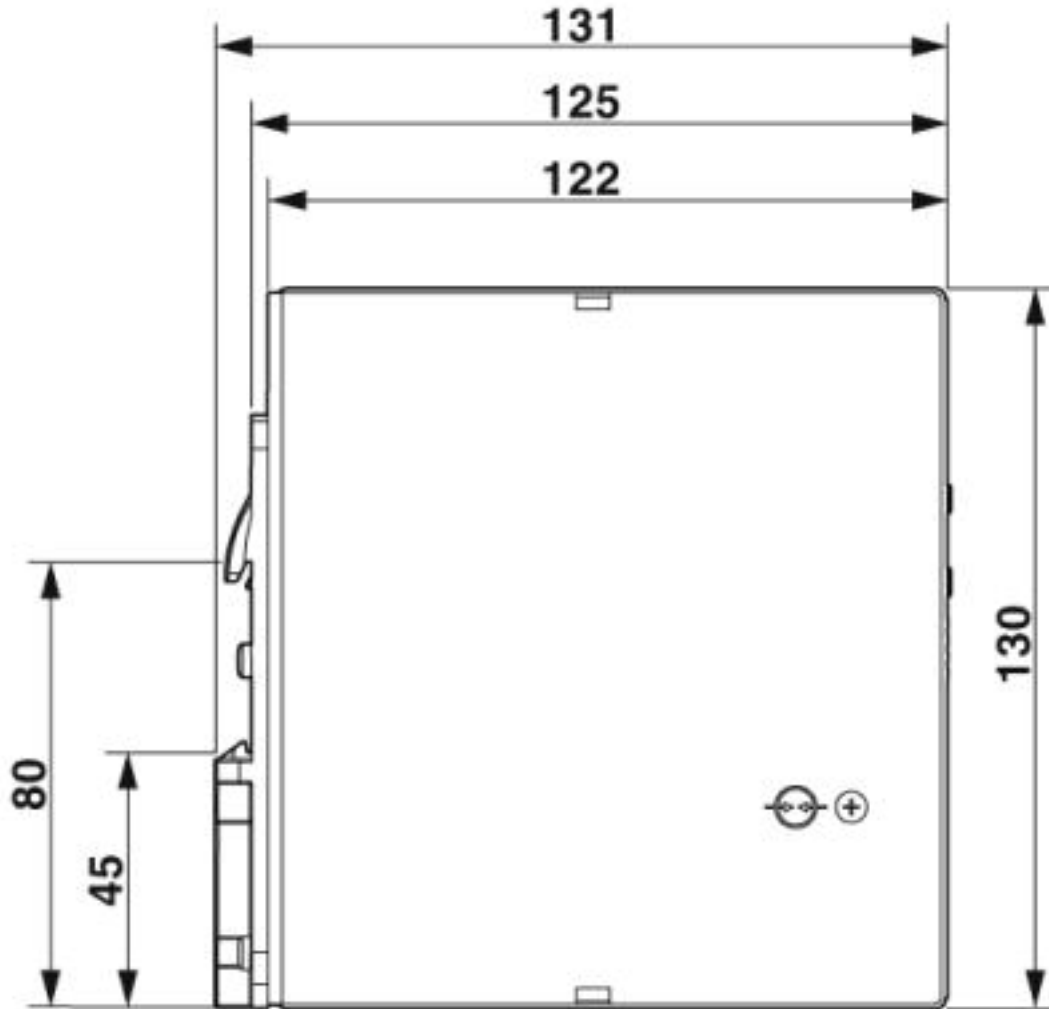


Diagram



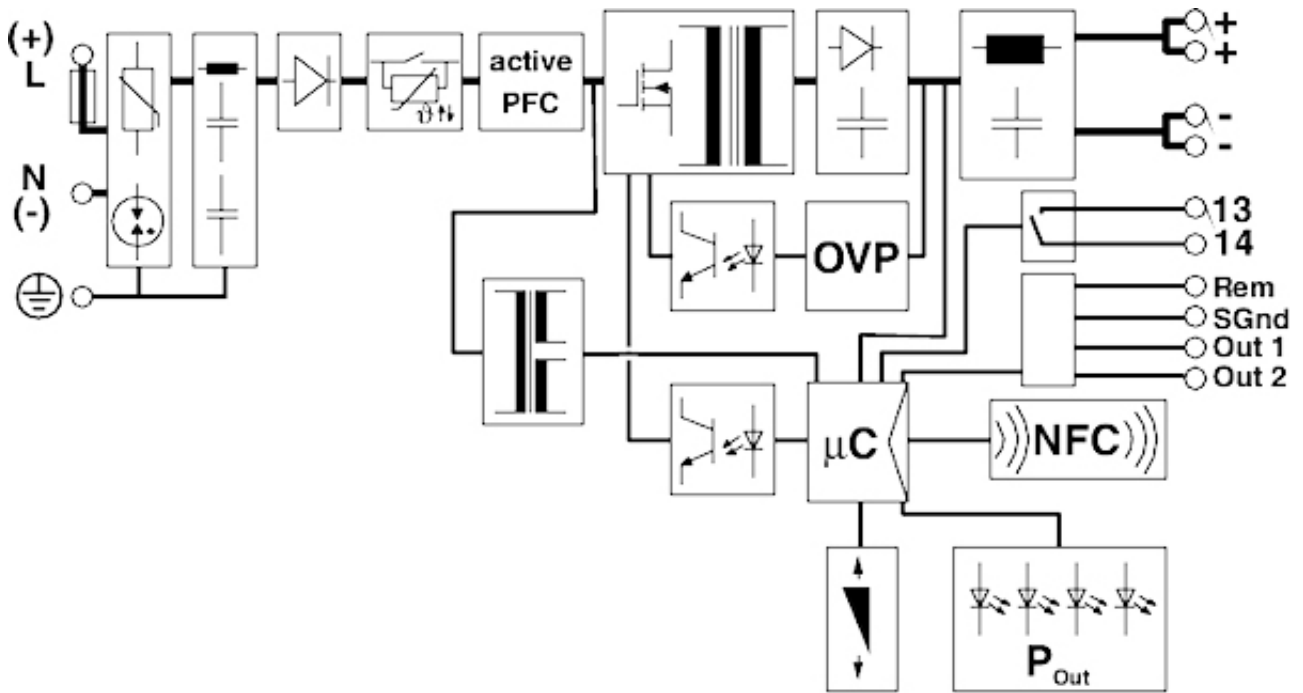
Power supply unit - QUINT4-PS/1AC/24DC/5 - 2904600

Dimensional drawing



Power supply unit - QUINT4-PS/1AC/24DC/5 - 2904600

Block diagram



Classifications

eCl@ss

eCl@ss 5.1	27242213
eCl@ss 6.0	27049005
eCl@ss 7.0	27049002
eCl@ss 8.0	27049002
eCl@ss 9.0	27040701

ETIM

ETIM 5.0	EC002540
ETIM 6.0	EC002540

UNSPSC

UNSPSC 13.2	39121004
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Approvals

Approvals

<https://www.phoenixcontact.com/gb/products/2904600>



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Approvals








Approvals

DNV GL / Type approved / CSA / PRS / BV / LR / ABS / UL Listed / UL Recognized / cUL Recognized / cUL Listed / EAC / IECCEB CB Scheme / CSAus / cULus Recognized / cULus Listed

Ex Approvals

UL Listed / cUL Listed / cULus Listed

Approval details






DNV GL		https://approvalfinder.dnvgl.com/	TAA00000BV
Type approved			SI-SIQ BG 005/038
CSA		http://www.csagroup.org/services-industries/product-listing/	70076170
PRS		http://www.prs.pl/	TE/2104/880590/16
BV		http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials	44621/A0 BV
LR		http://www.lr.org/en	17/20107
ABS		http://www.eagle.org/eagleExternalPortalWEB/	17- HG1649297-1-PDA
UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 123528

<https://www.phoenixcontact.com/gb/products/2904600>



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Approvals

UL Recognized		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 211944
cUL Recognized		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 211944
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 123528
EAC			RU C- DE.A*30.B.01082
IECEE CB Scheme		http://www.iecee.org/	SI-5330
CSAus		http://www.csagroup.org/services-industries/product-listing/	70076170
cULus Recognized			
cULus Listed			

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