Power supply unit - QUINT4-PS/3AC/24DC/20/KONF1

1035480

https://www.phoenixcontact.com/pc/products/1035480

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Preconfigured version of the primary-switched QUINT POWER power supply for DIN rail mounting with free choice of output characteristic curve and SFB (Selective Fuse Breaking) Technology, 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	1035480
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to Order (non-returnable)
Product Key	CMPI33
GTIN	4055626541846
Weight per Piece (including packing)	1,516.8 g
Weight per Piece (excluding packing)	1,516.8 g
Customs tariff number	85044083
Country of origin	TH

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/DC
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	≥ 25 ms (3x 400 V AC)
	≥ 25 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
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	AC/DC
Current consumption	1.23 A (± 260 V DC)
	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)
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

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)

Default	24 V DC 20 mA 24 V DC for P_{Out} < 0,8 P_N and 3 AC OK

Signal relay 13/14 (configurable)

Default	closed (U_{out} > 0.9 U_{Set})
Digital	24 V DC 1 A
	30 V AC/DC 0.5 A

Connection data

Input

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	6 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	4 mm²
Conductor cross section AWG min.	30
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 solid min.	0.2 mm²
Conductor cross section solid max.	6 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	4 mm²
Conductor cross section AWG min.	30
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 solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

LED signaling

Signal output

P_{Out}	> 100 % (LED lights up yellow, output power > 480 W)
U_{Out}	> 0.9 x U_{Set} (LED lights up green)

Electrical properties

Number of phases	3.00
Insulation voltage input/output	4 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)
Insulation voltage input / PE	3.5 kV AC (type test)
	2.4 kV AC (routine test)
Switching frequency	90 kHz ... 110 kHz (Auxiliary converter stage)
	56 kHz ... 500 kHz (Main converter stage)
	25 kHz ... 500 kHz (PFC stage)

Product properties

Product type	Power supply
	QUINT POWER
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

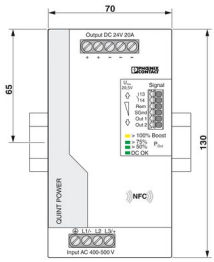
Life expectancy (electrolytic capacitors)

Current	20 A
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

Dimensional drawing	
Width	70 mm
Height	130 mm
Depth	125 mm

Installation dimensions

Installation distance right/left	0 mm / 0 mm
Installation distance top/bottom	30 mm / 30 mm

Alternative assembly

Width	122 mm
Height	130 mm
Depth	73 mm

Mounting

Mounting type	DIN rail mounting

Assembly instructions	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)
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) and EN 60204-1 (PELV)
Standard - Safe isolation	DIN VDE 0100-410
Standard - safety for equipment for measurement, control, and laboratory use	IEC 61010-1
Standard - Safety of power supply units up to 1100 V (insulation distances)	DIN EN 61558-2-16

Standard - Safety of transformers	EN 61558-2-16 (air clearances and creepage distances only)
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
EN 61010-1	II
EN 62477-1	III

Approval data

CSA	CAN/CSA-C22.2 No. 60950-1-07
	CSA-C22.2 No. 107.1-01
Shipbuilding approval	DNV GL, PRS, BV, LR, ABS
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

Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
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
Conducted noise emission	EN 55016
	EN 61000-6-3 (Class B)
Interference emission	Interference emission in accordance with EN 61000-6-3 (residential and commercial) and EN 61000-6-4 (industrial)
Noise emission	Additional basic standard EN 61000-6-5 (immunity in power station), IEC/EN 61850-3 (energy supply)
Noise emission	EN 55016
	EN 61000-6-3 (Class B)
Noise immunity	Immunity in accordance with EN 61000-6-1 (residential), EN 61000-6-2 (industrial), and EN 61000-6-5 (power station equipment zone), IEC/EN 61850-3 (power supply)
DNV GL conducted interference	Class A
Additional text	Area power distribution
DNV GL noise radiation	Class B
Additional text	Bridge and deck area

Harmonic currents

Frequency range	0 kHz ... 2 kHz

Flicker

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

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 3 - asymmetrical)
Signal	2 kV (Test Level 4 - asymmetrical)
Comments	Criterion A

Surge voltage load (surge)

Standards/regulations	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

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)

Power frequency magnetic field

Standards/regulations	EN 61000-4-8
Frequency	16.67 Hz
	50 Hz
	60 Hz
Test field strength	100 A/m
Additional text	60 s
Comments	Criterion A
Frequency	50 Hz
	60 Hz
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 periods
Additional text	Test Level 2
Comments	Criterion A: 0,5 / 1 period Criterion B: 5 / 50 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	50 Hz 60 Hz (Test Level 3)
Voltage	10 V (Permanent)
Test level 2	0 Hz 16.67 Hz 50 Hz 60 Hz (Test Level 2)
Voltage	100 V (1 s)
Comments	Criterion A

Attenuated oscillating wave

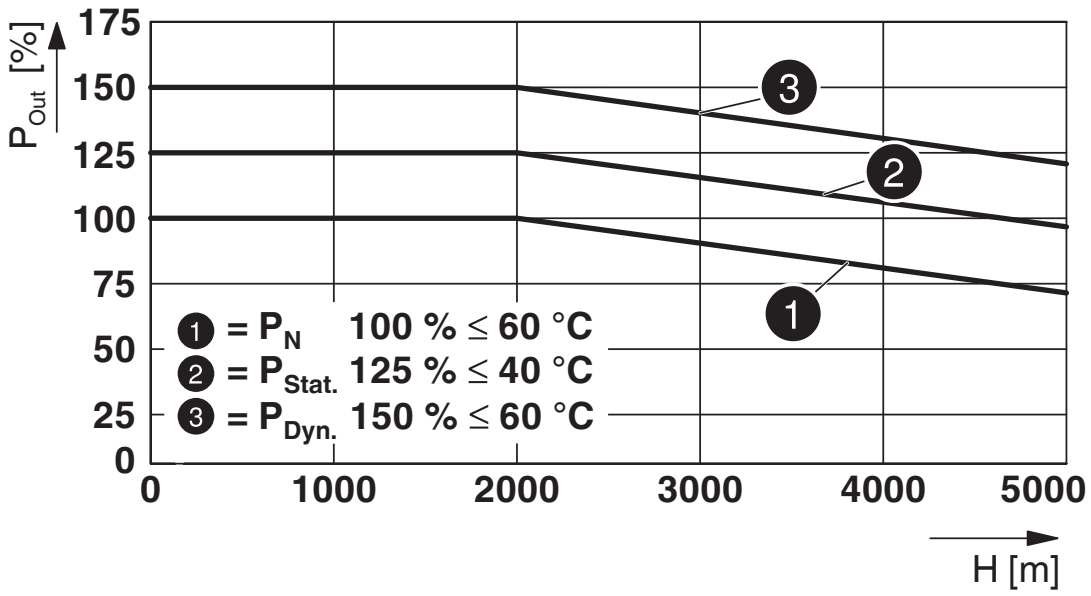
Standards/regulations	EN 61000-4-18
Input/Output/Signal	0.5 kV (Test Level 2 - symmetrical)
	1 kV (Test Level 2 - asymmetrical)
Comments	Criterion A

Criteria

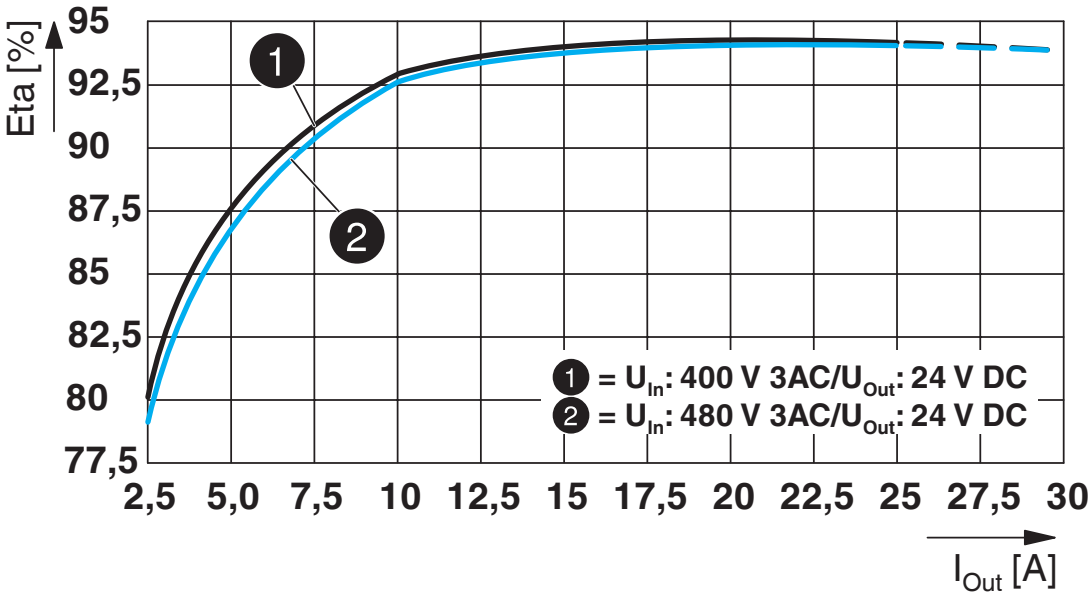
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating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

Drawings

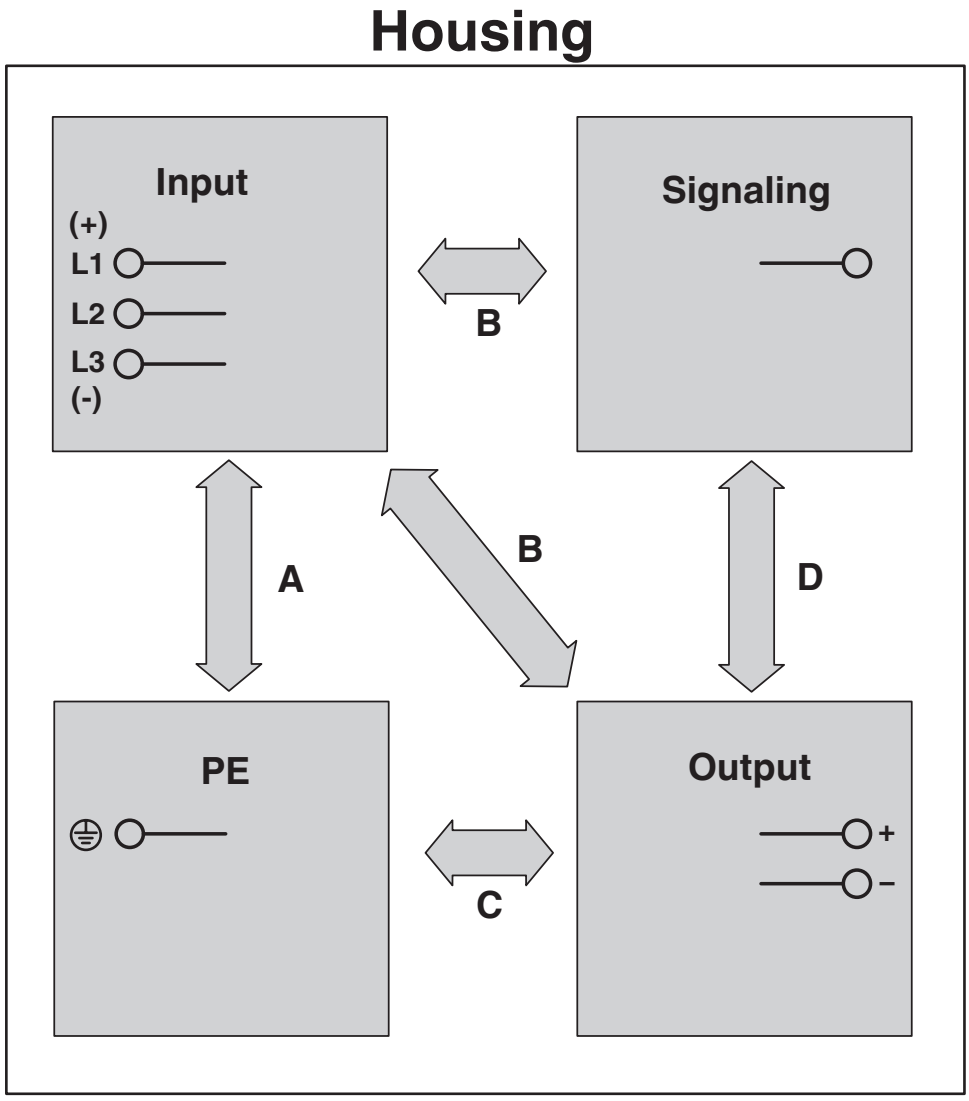
Diagram



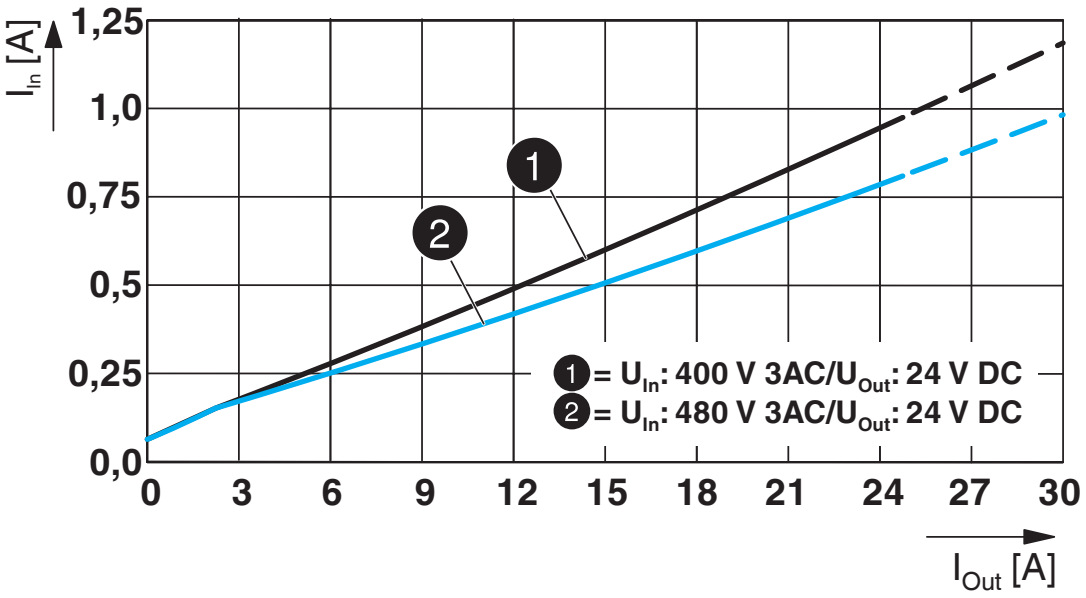
Diagram



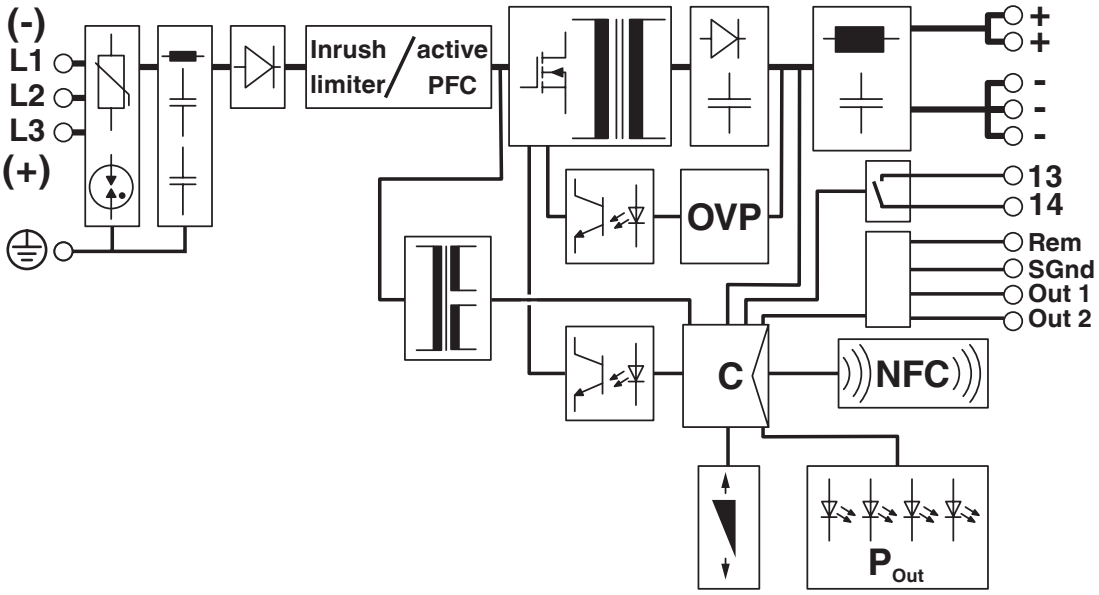
Schematic diagram



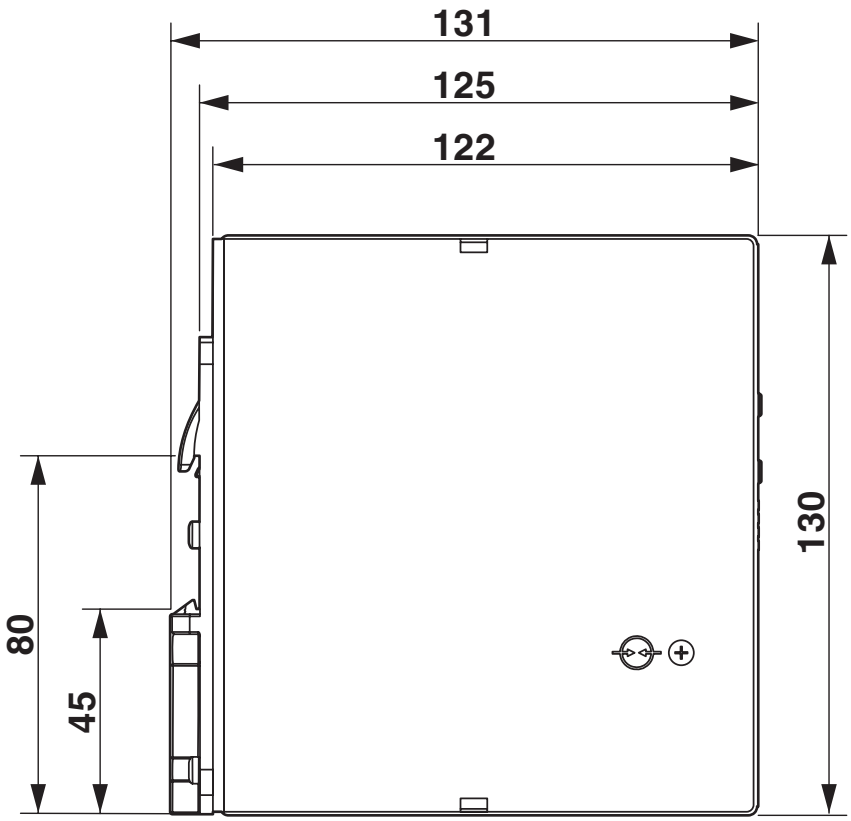
Diagram



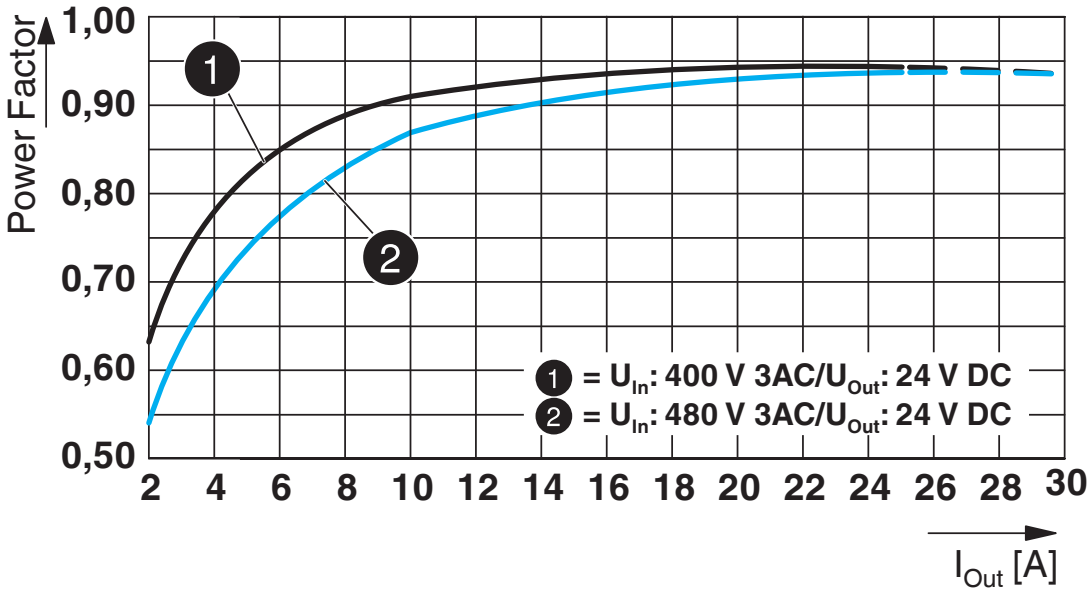
Block diagram



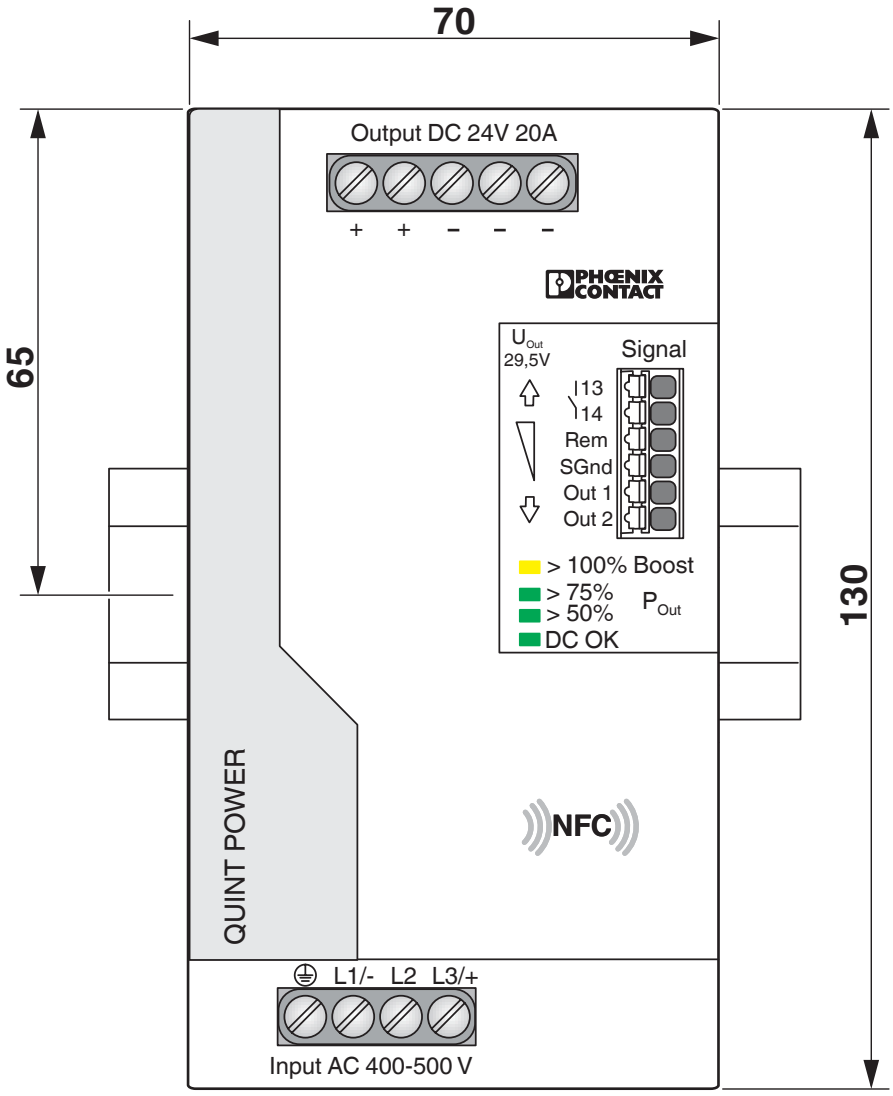
Dimensional drawing



Diagram



Dimensional drawing



Approvals

cUL Recognized
Approval ID: FILE E 211944

UL Recognized
Approval ID: FILE E 211944

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

LR
Approval ID: 17-20107-03

cUL Listed
Approval ID: FILE E 123528

ABS
Approval ID: 20-1973616-PDA

Type approved
Approval ID: SI-SIQ BG 005/031 A1

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	-	-

cUL Listed
Approval ID: FILE E 199827

UL Listed
Approval ID: FILE E 199827

cULus Recognized

cULus Listed

Classifications

ECLASS

ECLASS-9.0	27040701
ECLASS-10.0.1	27040701
ECLASS-11.0	27040701

ETIM

ETIM 8.0	EC002540

UNSPSC

UNSPSC 21.0	39121000

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”

Accessories

Mounting adapter

Mounting adapter - UWA 182/52 - 2938235

https://www.phoenixcontact.com/pc/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 - UWA 130 - 2901664

https://www.phoenixcontact.com/pc/products/2901664

2-piece universal wall adapter for securely mounting the device in the event of strong vibrations. The profiles that are screwed onto the side of the device are screwed directly onto the mounting surface. The universal wall adapter is attached on the left/right.

Mounting adapter

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

https://www.phoenixcontact.com/pc/products/2938196

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

Programming adapter

Programming adapter - TWN4 MIFARE NFC USB ADAPTER - 2909681

https://www.phoenixcontact.com/pc/products/2909681

Near Field Communication (NFC) programming adapter with USB interface for the wireless configuration of NFC-capable products from Phoenix Contact with software. A separate USB driver is not required.

Fuse

Fuse - FUSE 10,3X38 6A PV A - 3062778

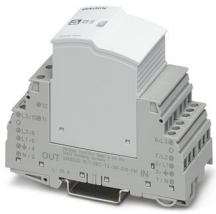
https://www.phoenixcontact.com/pc/products/3062778

Fuse, for the photovoltaics industry according to UL 2579, nominal current: 6 A, length: 38 mm, diameter: 10.3 mm, color: white

Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-3S-230-FM - 2905230

https://www.phoenixcontact.com/pc/products/2905230



Plug-in device protection, according to type 3/class III, for 3-phase power supply networks with separate N and PE (5-conductor system: L1, L2, L3, N, PE), with integrated surge-proof fuse and remote indication contact.

Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-24-FM-UT - 2907916

https://www.phoenixcontact.com/pc/products/2907916

Type 3 surge protection, consisting of protective plug and base element, with integrated status indicator and remote signaling for single-phase power supply networks. Nominal voltage: 24 V AC/DC

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