QUINT4-PS/1AC/24DC/40 - Power supply

2904603

https://www.phoenixcontact.com/fi/tuotteet/2904603

Huomioi, että tässä ilmoitetut tiedot ovat peräisin online-luettelosta. Täydelliset tiedot löydät käyttöohjeesta. Internet-latausten yleiset käyttöehdot ovat voimassa.

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/40 A

Tuotekuvaus

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.

Edut

- Most powerful output side: easy system expansion, reliable heavy load startup and miniature circuit breaker tripping
- Most robust input side: high noise immunity, thanks to integrated gas-filled surge arrester (up to 6 kV) and ≥ 20 ms mains failure buffer time
- Most comprehensive signaling: preventive function monitoring reports critical operating states before errors occur
- Available pre-configured: from a batch quantity of just 1

Tekniset tiedot

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	100 V AC ... 240 V AC
Input voltage range	100 V AC ... 240 V AC -15 % ... +10 %
Electric strength, max.	300 V AC 60 s
Typical national grid voltage	120 V AC
	230 V AC
Voltage type of supply voltage	AC
Inrush current	typ. 12 A (at 25 °C)
Inrush current integral (I^2t)	< 1 A^2s
Inrush current limitation	12 A (after 1 ms)
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %
	16.7 Hz (acc. to EN 50163)
Mains buffering time	typ. 29 ms (120 V AC)
	typ. 32 ms (230 V AC)
Current consumption	13.6 A (100 V AC)
	10 A (120 V AC)
	5.2 A (230 V AC)
	5.4 A (240 V AC)
Nominal power consumption	1064 VA
Input fuse	16 A (slow-blow, internal)
Recommended breaker for input protection	16 A ... 20 A (Characteristic B, C, D, K or comparable)
Discharge current to PE	< 3.5 mA
	1.7 mA (264 V AC, 60 Hz)

DC operation

Nominal input voltage range	110 V DC ... 250 V DC
Input voltage range	110 V DC ... 250 V DC -18 % ... +40 %
Voltage type of supply voltage	DC
Current consumption	12 A (110 V DC)
	5 A (250 V DC)

Output data

Efficiency	typ. 94.8 % (120 V AC)
	typ. 95.9 % (230 V AC)
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)	40 A
Static Boost ($I_{Stat.Boost}$)	45 A
Dynamic Boost ($I_{Dyn.Boost}$)	60 A (5 s)
Selective Fuse Breaking (I_{SFB})	215 A (15 ms)
Magnetic circuit breaker tripping	A1...A40 / B2...B25 / C1...C13 / Z1...Z16
Derating	> 60 °C ... 70 °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 %)
	< 1 % (Dynamic load change 10 % ... 90 %, (10 Hz))
	< 0.25 % (change in input voltage ±10 %)
Residual ripple	< 50 mV_{PP} (with nominal values)
Short-circuit-proof	yes
No-load proof	yes
Output power	960 W
	1080 W
	1440 W
Maximum no-load power dissipation	< 4 W (120 V AC)
	< 4 W (230 V AC)
Power loss nominal load max.	< 50 W (120 V AC)
	< 50 W (230 V AC)
Power dissipation SLEEP MODE	< 3 W (120 V AC)
	< 3 W (230 V AC)
Crest factor	typ. 1.5 (120 V AC)
	typ. 1.6 (230 V AC)
Connection in parallel	yes, for redundancy and increased capacity
Connection in series	yes
Fuse protection (secondary side)	electronic
	thermal-magnetic
	thermal

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)

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 P_{Out} < P_N

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, 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.	0.5 mm²
Conductor cross-section, rigid max.	16 mm²
Conductor cross-section flexible min.	0.5 mm²
Conductor cross-section flexible max.	16 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.5 mm²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	16 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.5 mm²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	16 mm²
Conductor cross-section AWG min.	20
Conductor cross-section AWG max.	6
Stripping length	10 mm
Tightening torque, min	1.2 Nm
Tightening torque max	1.5 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

Signal option	Output current
	Output voltage
	Output power
	U_{IN} input voltage OK
	Operating hours
	Early warning of high temperatures
	OVP voltage limitation active
P_{Out}	> 100 % (LED lights up yellow, output power > 960 W)
	> 75 % (LED lights up green, output power > 720 W)
	> 50 % (LED lights up green, output power > 480 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	1
Insulation voltage input/output	4 kV AC (type test)
	2 kV AC (routine test)
Insulation voltage output / PE	0.5 kV DC (type test)
	0.5 kV DC (routine test)
Insulation voltage input / PE	2.5 kV AC (type test)
	2.4 kV AC (routine test)
Switching frequency	85.00 kHz ... 107.00 kHz (Auxiliary converter stage)
	45.00 kHz ... 200.00 kHz (Main converter stage)

	50.00 kHz ... 500.00 kHz (PFC stage)

Product properties

Product type	Power supply
Product family	QUINT POWER
MTBF (IEC 61709, SN 29500)	> 934000 h (25 °C)
	> 555000 h (40 °C)
	> 249000 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	20 A
Temperature	40 °C
Time	394000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	20 A
Temperature	40 °C
Time	452000 h
Additional text	230 V AC

Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	25 °C
Time	320000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	25 °C
Time	422000 h
Additional text	230 V AC

Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	40 °C
Time	113000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	40 °C
Time	149000 h
Additional text	230 V AC

Dimensions

Width	120 mm
Height	130 mm
Depth	140 mm

Installation dimensions

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

Mounting

Mounting type	DIN rail: 35 mm
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	11 ms, 15 g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	5 Hz ... 100 Hz resonance search 0.7g, 90 min., resonance frequency 0.7g, 90 min. (in accordance with DNV GL Class A)
Temp code	T4 (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K)

Standards and regulations

Rail applications	EN 50121-3-2
	EN 50121-4
	EN 50121-5

	EN 50163
	IEC 62236-3-2
	IEC 62236-4
	IEC 62236-5
HART FSK Physical Layer Test Specification Compliance	Output voltage U_{Out} compliant
Standard – Limitation of mains harmonic currents	EN 61000-3-2
Standard - Electrical safety	IEC 61010-2-201 (SELV)
Standard – Safety extra-low voltage	IEC 61010-1 (SELV)
	IEC 61010-2-201 (PELV)
Standard - Safe isolation	IEC 61558-2-16
	IEC 61010-2-201
Standard - safety for equipment for measurement, control, and laboratory use	IEC 61010-1
Standard - Safety of transformers	EN 61558-2-16
Battery charging	DIN 41773-1
Approval - requirement of the semiconductor industry with regard to mains voltage dips	SEMI F47-0706, EN 61000-4-11

Approvals

CSA	CAN/CSA-C22.2 No. 60950-1-07
	CSA-C22.2 No. 107.1-01
Shipbuilding approval	DNV GL
SIQ	BG (type approved)
UL approvals	UL Listed UL 508
	UL 121201 & CSA C22.2 No. 213-17 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
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 for power supply	IEC 61850-3 (G,H)
	EN 61000-6-5 (switching devices)

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

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)
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	4 kV (Test Level 4 - asymmetrical)
Comments	Criterion A

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5

Surge voltage load (surge)

Input	typ. 3 kV (Test Level 4 - symmetrical)
	typ. 6 kV (Test Level 4 - asymmetrical)
Output	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Signal	4 kV (Test Level 4 - 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
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	230 V AC
Frequency	50 Hz
Voltage dip	70 %
Number of periods	0.5 / 1 / 25 / 30 periods
Additional text	Test Level 2
Comments	Criterion A: 0.5 / 1 / 25 / 30 periods
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

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)
Voltage	30 V
Test level 5	16.7 Hz 50 Hz 60 Hz (Test Level 4)
Voltage	30 V (Permanent)
Test level 6	150 Hz 180 Hz (Test Level 4)
Voltage	30 V (Permanent)
Test level 7	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

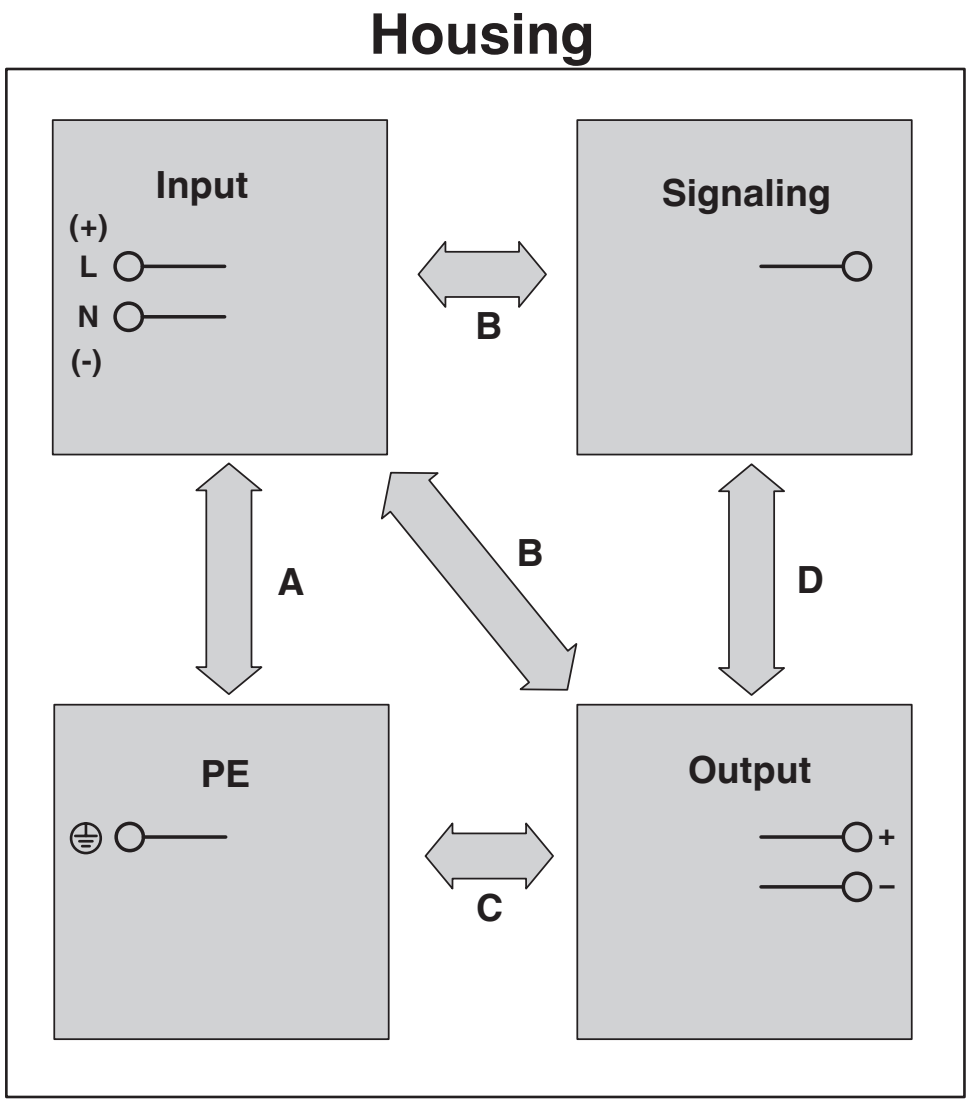
Standards/regulations	EN 61000-4-10
Test field strength	110 A/m
Test level 1	100 kHz
Test field strength	110 A/m
Test level 2	1 MHz
Comments	Criterion A

Criteria

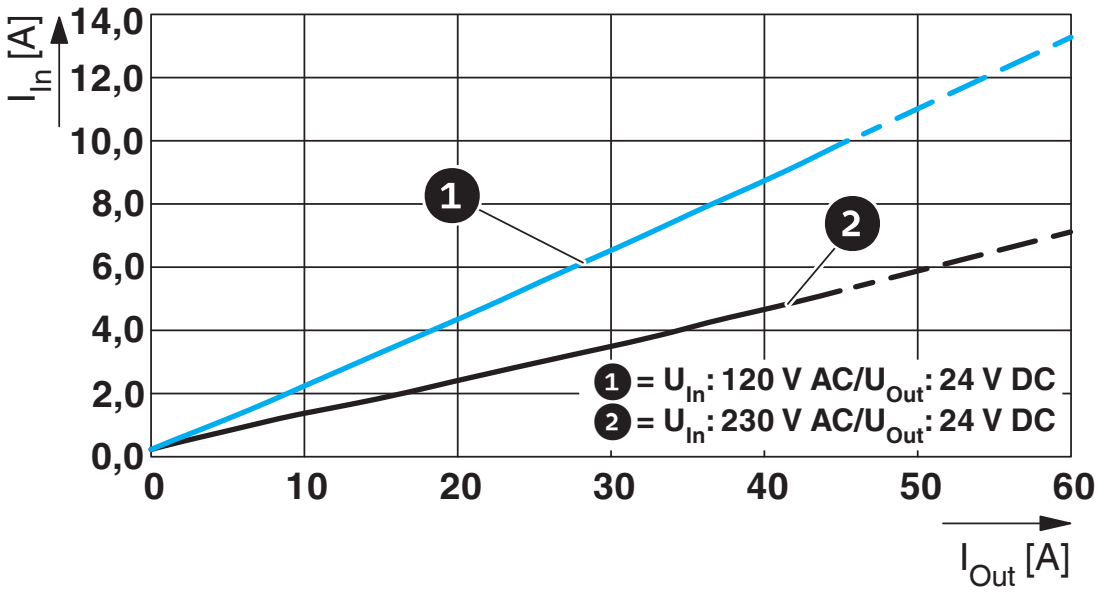
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating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

Piirustukset

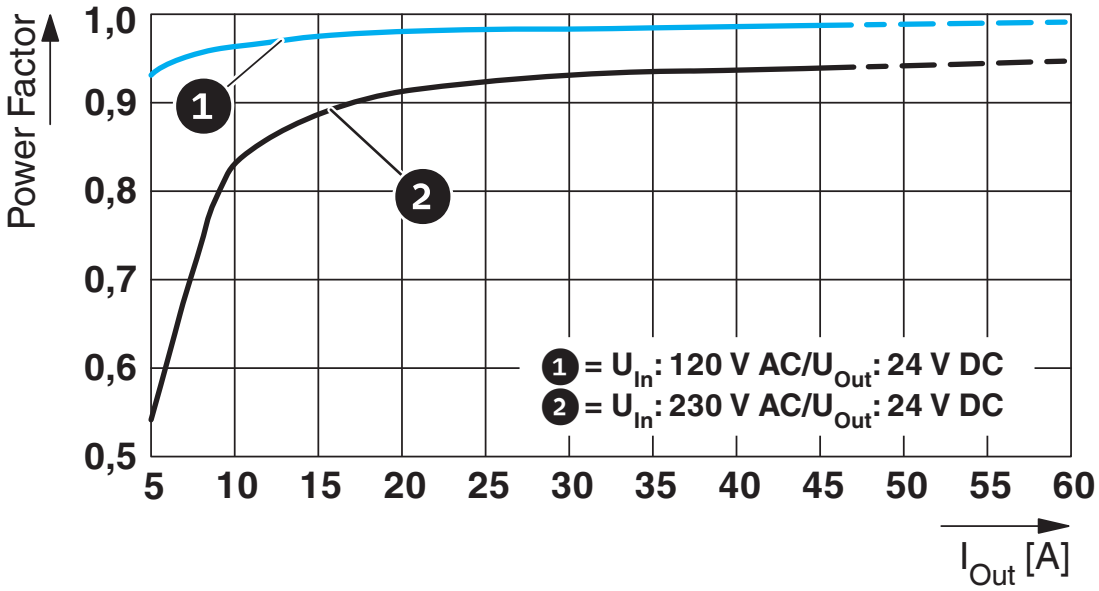
Schematic diagram



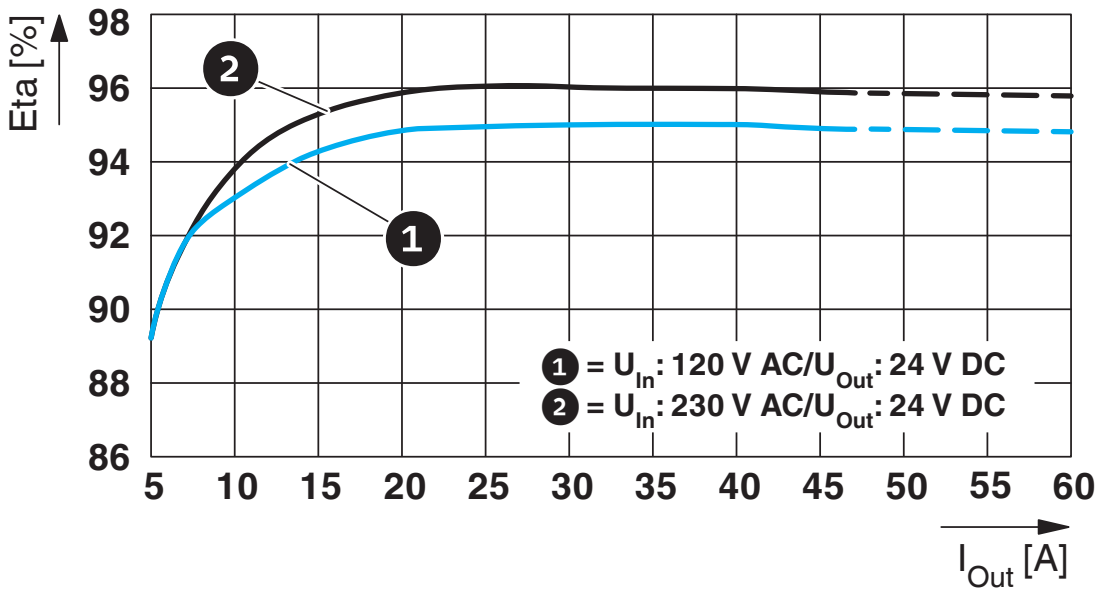
Diagram



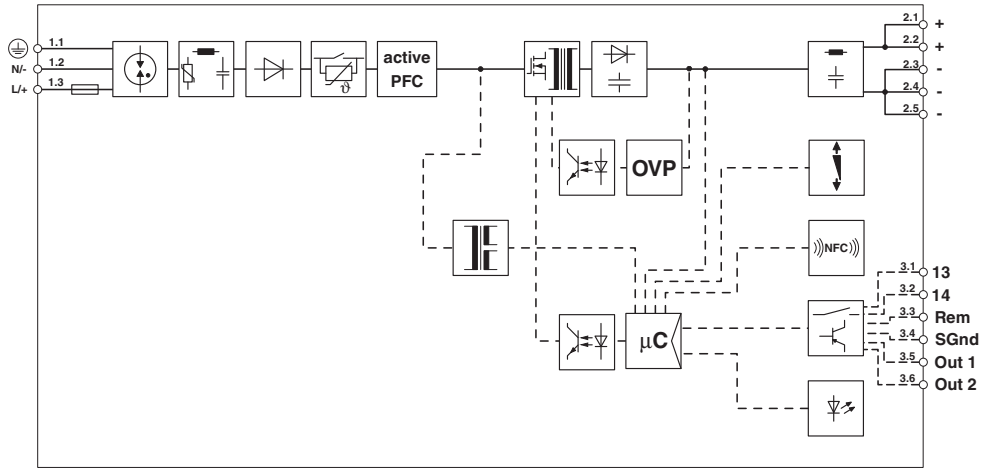
Diagram



Diagram



Block diagram



Hyväksynnät

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cUL Recognized
Hyväksyntätunnus: FILE E 211944

UL Recognized
Hyväksyntätunnus: FILE E 211944

IECEE CB Scheme
Hyväksyntätunnus: SI-7434

LR
Hyväksyntätunnus: LR22472797TA

NK
Hyväksyntätunnus: TA21182M

ABS
Hyväksyntätunnus: 26-0442641-PDA

cULus Listed
Hyväksyntätunnus: FILE E 123528

DNV
Hyväksyntätunnus: TAA00001YD

BV
Hyväksyntätunnus: 44621/B1 BV

cCSAus
Hyväksyntätunnus: 80017552

SEMI F47
Hyväksyntätunnus: SEMI F47

cCSAus
Hyväksyntätunnus: 80105395

cUL Listed
Hyväksyntätunnus: FILE E 199827

UL Listed
Hyväksyntätunnus: FILE E 199827

Luokitukset

ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	27040701

ETIM

ETIM 10.0	EC002540

UNSPSC

UNSPSC 21.0	39121000

Environmental product compliance

EU RoHS

Täyttää RoHS-direktiivin vaatimukset	Kyllä
poikkeussäännökset siltä osin kuin ne ovat tiedossa	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-25
	Löydät tuotekohtaisen Kiinan RoHS-ilmoitusluettelon kunkin tuotteen latausalueelta Valmistajan ilmoitus -kohdasta. EFUP-E-merkinnän sisältäville tuotteille ei tarvita Kiinan RoHS-ilmoitusluetteloa, eikä sitä tarvitse siksi laatia.

EU REACH SVHC

Huomautus REACH-kandidaattiaineesta (CAS-nro)	Lead(CAS-nro: 7439-92-1)
SCIP	4654ca05-2cdc-49da-8da0-92691aa78cca

EF3.1 Ilmastonmuutos

CO2e kg	63,176 kg CO2e

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