Power supply unit - QUINT4-PS/1AC/12DC/2.5/PT

2904605

https://www.phoenixcontact.com/pc/products/2904605

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Primary-switched power supply unit QUINT POWER, Push-in connection, DIN rail mounting, input: 1-phase, output: 12 V DC / 2.5 A

Your advantages

- Starting of heavy loads with dynamic boost
- Preventive function monitoring indicates critical operating states before errors occur
- High efficiency and long service life, with low power dissipation and low heating
- Space savings in the control cabinet, thanks to a narrow, slim-line design
- Fast and easy startup, thanks to tool-free Push-in connection technology

Commercial Data

Item number	2904605
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	CMPI12
Catalog Page	Page 252 (C-4-2019)
GTIN	4055626255736
Weight per Piece (including packing)	251.4 g
Weight per Piece (excluding packing)	240.5 g
Customs tariff number	85044083
Country of origin	VN

Technical Data

Input data

AC operation

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/DC
Inrush current	typ. 11.3 A (at 25 °C)
Inrush current integral (I^2t)	< 0.1 A^2s
Inrush current limitation	< 11.3 A
Frequency range (f_N)	50 Hz ... 60 Hz -10 % ... +10 %
Mains buffering time	typ. 54 ms (120 V AC)
	typ. 54 ms (230 V AC)
Current consumption	0.44 A (100 V AC)
	0.35 A (120 V AC)
	0.19 A (230 V AC)
	0.2 A (240 V AC)
Nominal power consumption	32.8 VA
Protective circuit	Transient surge protection; Varistor
Typical response time	500 ms
Input fuse	3.15 A (slow-blow, internal)
Recommended breaker for input protection	6 A ... 16 A (Characteristic B, C or comparable)
Discharge current to PE	< 0.25 mA (264 V AC, 60 Hz)
	< 0.16 mA

DC operation

Input voltage range	110 V DC ... 250 V DC -20 % ... +40 %
Voltage type of supply voltage	AC/DC
Current consumption	0.4 A (110 V DC)
	0.17 A (250 V DC)

Output data

Efficiency	typ. 89.5 % (120 V AC)
	typ. 90.9 % (230 V AC)
Nominal output voltage	12 V DC
Setting range of the output voltage (U_{Set})	12 V DC ... 15 V DC (constant capacity)
Nominal output current (I_N)	2.5 A
Static Boost ($I_{Stat.Boost}$)	3.125 A (≤ 40 °C)
Dynamic Boost ($I_{Dyn.Boost}$)	4.5 A (≤ 60 °C (5 s))
Feedback voltage resistance	≤ 25 V DC
Protection against overvoltage at the output (OVP)	≤ 18 V DC

Control deviation	< 0.2 % (Static load change 10 % ... 90 %)
	< 2 % (Dynamic load change 10 % ... 90 %, (10 Hz))
	< 0.1 % (change in input voltage ±10 %)
Residual ripple	< 30 mV_{PP} (with nominal values)
Short-circuit-proof	yes
No-load proof	yes
Output power	30 W
	38 W
	54 W
Maximum no-load power dissipation	< 0.4 W (230 V AC)
	< 0.5 W (120 V AC)
Power loss nominal load max.	< 3.5 W (120 V AC)
	< 3 W (230 V AC)
Crest factor	typ. 1,89 (120 V AC)
	typ. 1,97 (230 V AC)
Rise time	50 ms (U_{Out} = 10 % ... 90 %)
Connection in parallel	yes, for redundancy and increased capacity
Connection in series	yes

Signal (configurable)

Digital	0 V DC 12 V DC 24 mA
Default	12 V DC 24 mA 12 V DC for U_{Out} > 0.9 x U_{Set}

Connection data

Input

Connection method	Push-in connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Single conductor/terminal point, stranded, with ferrule, min.	0.25 mm²
Single conductor/terminal point, stranded, with ferrule, max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	10 mm

Output

Connection method	Push-in connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Single conductor/terminal point, stranded, with ferrule, min.	0.25 mm²
Single conductor/terminal point, stranded, with ferrule, max.	2.5 mm²

Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	10 mm

Signal

Connection method	Push-in connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Single conductor/terminal point, stranded, with ferrule, min.	0.25 mm²
Single conductor/terminal point, stranded, with ferrule, max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	10 mm

LED 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}	> P_{Thr} (LED lights up yellow, output power > P_{Thr}, depending on the rotary selector switch setting)
U_{Out}	> 0.9 x U_{Set} (LED lights up green)

Electrical properties

Number of phases	1.00
Insulation voltage input/output	4 kV AC (type test)
	3 kV AC (routine test)
Switching frequency	4 kHz ... 70 kHz (Auxiliary converter stage)
	80 kHz ... 190 kHz (Main converter stage)
	30 kHz ... 150 kHz (PFC stage)

Product properties

Product type	Power supply
	QUINT POWER
MTBF (IEC 61709, SN 29500)	> 1848000 h (25 °C)
	> 1060000 h (40 °C)
	> 459000 h (60 °C)

Insulation characteristics

Protection class	II

Degree of pollution	2

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	40 °C
Time	149000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	40 °C
Time	211000 h
Additional text	230 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	25 °C
Time	424000 h
Additional text	120 V AC

Life expectancy (electrolytic capacitors)

Current	2.5 A
Temperature	25 °C
Time	609000 h
Additional text	230 V AC

Dimensions

Width	22.5 mm
Height	106 mm
Depth	90 mm

Installation dimensions

Installation distance right/left (active)	15 mm / 15 mm (P_{Out} ≥50%)
Installation distance right/left (passive)	5 mm / 5 mm (P_{Out} ≥50%)
Installation distance right/left (active, passive)	0 mm / 0 mm (P_{Out} ≤50 %)
Installation distance top/bottom (active)	30 mm / 30 mm (P_{Out} ≥50%)
Installation distance top/bottom (passive)	30 mm / 30 mm (P_{Out} ≥50%)
Installation distance top/bottom (active, passive)	30 mm / 30 mm (P_{Out} ≤50 %)

Mounting

Mounting type	DIN rail mounting
With protective coating	No

Material specifications

Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Plastic

Type of housing	Polycarbonate
Hood version	Polycarbonate

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
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)	< 15 Hz, ±2.5 mm amplitude; 15 Hz ... 100 Hz: 2.3 g 90 Min. (in accordance with IEC 60068-2-6)

Standards and regulations

Standard – Limitation of mains harmonic currents	EN 61000-3-2
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
	IEC 61010-2-201 (SELV)
Standard - Safety of transformers	EN 61558-2-16

Overvoltage category

EN 61010-1	II (≤ 5000 m)
EN 62477-1	III (≤ 2000 m)

Approval data

SIQ	CB-Scheme (IEC 61010-1, IEC 61010-2-201)
UL approvals	UL Listed UL 61010-1
	UL Listed UL 61010-2-201
	UL 1310 Class 2 Power Units
	ANSI/UL 121201 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

EMC data

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
EMC requirements, power plant	IEC 61850-3

	EN 61000-6-5
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)

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

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5
Input	2 kV (Test Level 4 - symmetrical)
	4 kV (Test Level 4 - asymmetrical)
Output	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Signal	0.5 kV (Test Level 2 - symmetrical)
	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	100 V AC
Frequency	60 Hz
Voltage dip	70 %
Number of periods	0.5 / 1 / 30 periods
Additional text	Test Level 2
Comments	Criterion A
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 B

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 (symmetrical)
	4 kV (asymmetrical)
Comments	Criterion A

Asymmetrical conducted disturbance variables

Standards/regulations	EN 61000-4-16
Test level 1	16.67 Hz 50 Hz 60 Hz 150 Hz 180 Hz (Test Level 3)
Voltage	30 V (10 s)
Test level 2	16.67 Hz 50 Hz 60 Hz (Test Level 2)
Voltage	300 V (1 s)
Comments	Criterion A

Attenuated oscillating wave

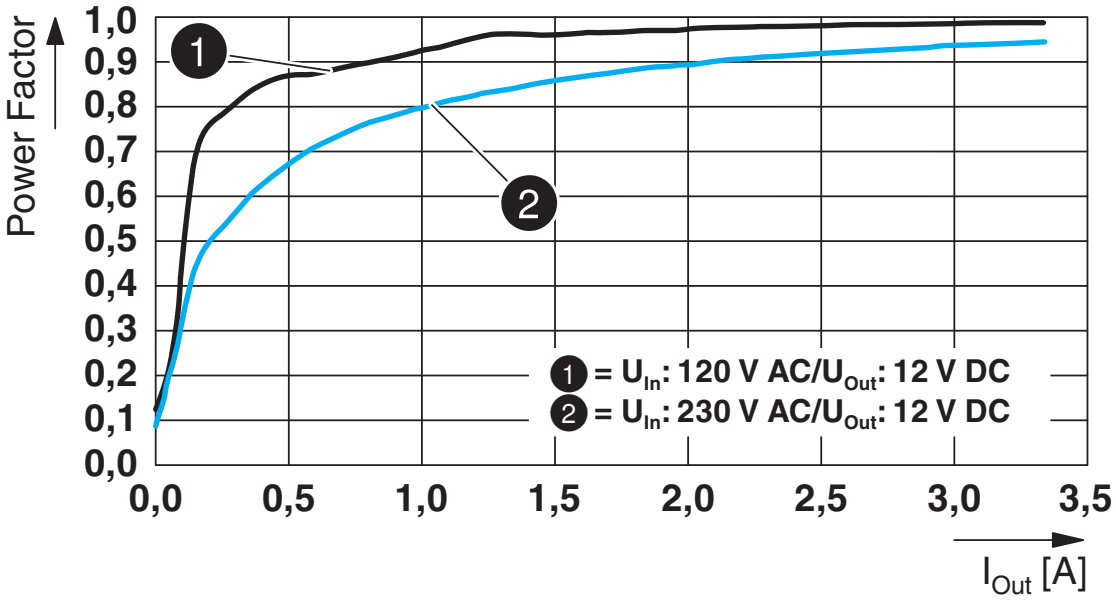
Standards/regulations	EN 61000-4-18
Voltage	1 kV (symmetrical)
	2.5 kV (asymmetrical)
	1 kV (symmetrical)
Comments	Criterion A

Criteria

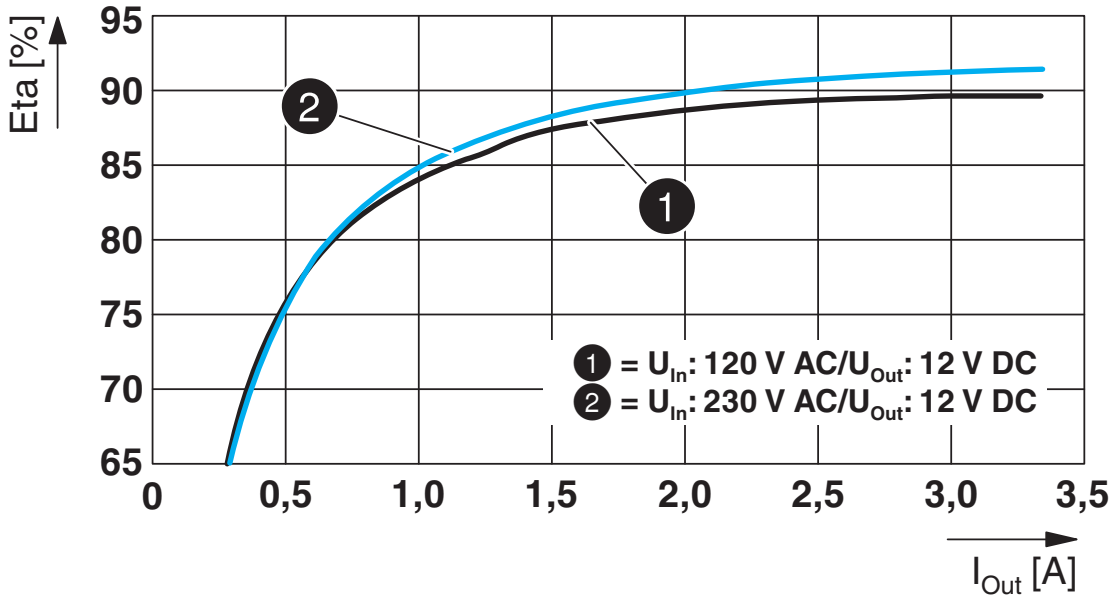
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating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

Drawings

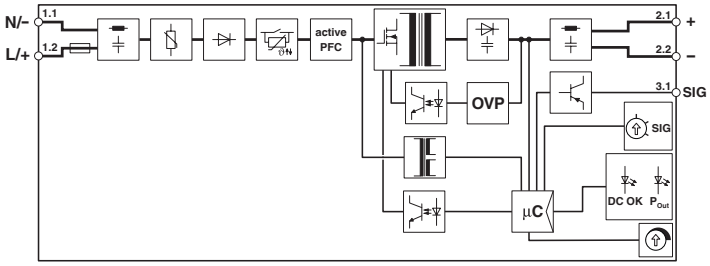
Diagram



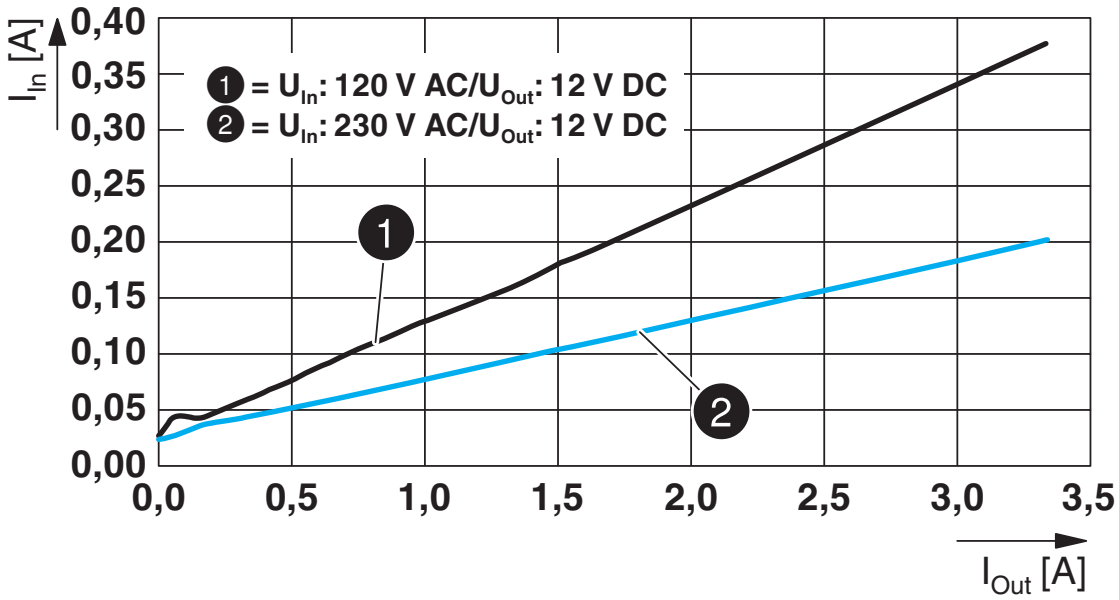
Diagram



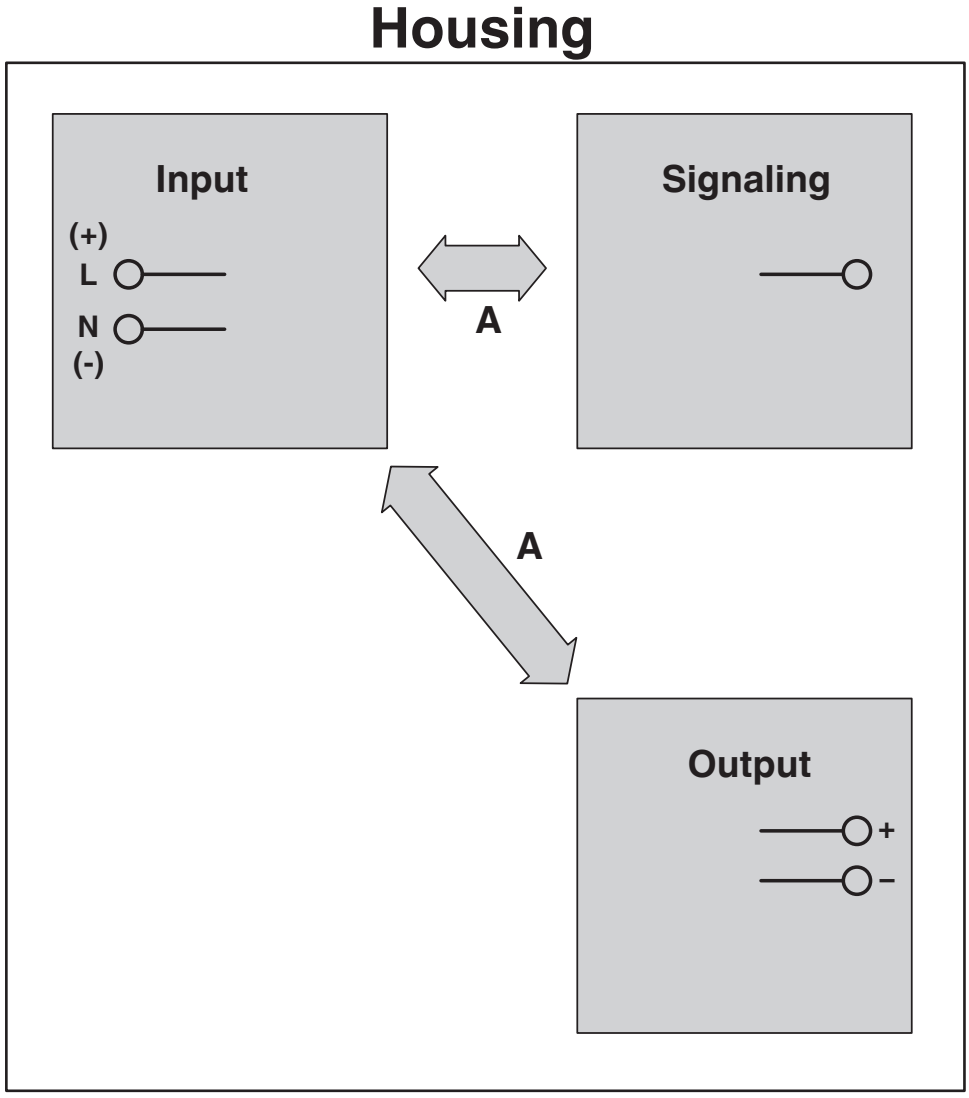
Block diagram



Diagram


0,40
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
I In [A]
1 = U In: 120 V AC/U Out: 12 V DC
2 = U In: 230 V AC/U Out: 12 V DC
1
2
0,0
0,5
1,0
1,5
2,0
2,5
3,0
3,5
I Out [A]

Schematic diagram



Approvals

IECEE CB Scheme
Approval ID: SI-6984

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

UL Listed
Approval ID: FILE E 123528

cUL Listed
Approval ID: FILE E 123528

EAC
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UL Listed
Approval ID: FILE E 123528

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

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

DNV
Approval ID: TAA00000BV

DNV
Approval ID: TAA00000BV

cUL Listed
Approval ID: FILE E 199827

UL Listed
Approval ID: FILE E 199827

UL Listed
Approval ID: FILE E 199827

cUL Listed
Approval ID: FILE E 199827

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

Accessories

Screwdriver

Screwdriver - SF-SL 0,4X2,0-60 - 1212546

https://www.phoenixcontact.com/pc/products/1212546

Screwdriver, flat bladed, size: 0.4 x 2.0 x 60 mm, 2-component grip, with non-slip grip

Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-230-FM-UT - 2907919

https://www.phoenixcontact.com/pc/products/2907919

Type 2/3 surge protection, consisting of protective plug and base element with screw connection. For single-phase power supply network with integrated status indicator and remote signaling. Nominal voltage: 230 V AC/DC

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

Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-230-FM-PT - 2907928

https://www.phoenixcontact.com/pc/products/2907928

Type 2/3 surge protection, consisting of protective plug and base element with Push-in connection. For single-phase power supply network with integrated status indicator and remote signaling. Nominal voltage: 230 V AC/DC

Type 3 surge protection device

Type 3 surge protection device - PLT-SEC-T3-24-FM-PT - 2907925

https://www.phoenixcontact.com/pc/products/2907925

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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