QUINT4-PS/3AC/24DC/20/IOL - Power supply

1151048

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Primary-switched power supply unit QUINT POWER, Screw connection, DIN rail mounting, input: 3-phase, output: 24 V DC / 20 A, adjustable from 24 V DC ... 29.5 V DC

Product description

The fourth generation of the high-performance QUINT POWER power supplies ensures superior system availability by means of new functions. Use in all industrial networks with integrated IO-Link interface and direct connection to the QUINT UPS or the CAPAROC circuit breaker system with system integration.
The unique SFB technology and preventive function monitoring of the QUINT POWER power supply increase the availability of your application.

Your advantages

- 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
- Communicative: Use in all industrial networks with integrated IO-Link interface and direct connection to the QUINT UPS or the CAPAROC circuit breaker system with the system integration

Commercial data

Item number	1151048
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CMPI33
Product key	CMPI33
GTIN	4063151147549
Weight per piece (including packing)	1,544 g
Weight per piece (excluding packing)	1,531.7 g
Customs tariff number	85044095
Country of origin	TH

Technical data

Input data

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	2 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)
Reverse polarity protection	yes
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 %
	520 V DC ... 600 V DC -13 % ... +30 % (mid-point earthed)
Voltage type of supply voltage	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. 94.1 % (400 V AC)
	typ. 94.9 % (480 V AC)
Output characteristic	U/I Advanced
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)	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 ... 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 %)
	< 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	< 6 W (400 V AC)
	< 6 W (480 V AC)
Power loss nominal load max.	< 30 W (400 V AC)
	< 30 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
Fuse protection (secondary side)	electronic
	thermal-magnetic
	thermal

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.	0.2 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

Signal

Connection method	Push-in connection

Conductor cross-section, rigid min.	0.2 mm²
Conductor cross-section, rigid max.	1.5 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

Interfaces

IO-Link

Reverse polarity protection	yes

IO-Link

Specification	V1.1
Interface	IO-Link
Connection method	3-conductor port class A
Connection marking	3.3 (L+)
	3.4 (
	3.5 (L-)
Transmission speed	230 kbps (COM3)
Cycle time	2 ms
Electrical isolation	yes
Amount of process data	6 Byte (Input data)
Device ID	262657_{dec}/ $0x040201_{hex}$
Vendor ID	$00B0_{hex}$ / 176_{dez}

System communication

Interface	System communication
Connection method	2-conductor
Connection marking	3.6 (
	3.5 (L-/Sgnd)
Electrical isolation	yes

Signaling

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
	Phase monitoring
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)
IO-Link-Master connected	IO-Link master connected (LED lights up green)
IO-Link communication active	IO-Link communication active (LED flashes green)

Electrical properties

Number of phases	3
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	90.00 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
Product family	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
Overvoltage category (EN 61010-1)	II (≤ 5000 m)
Overvoltage category (EN 62477-1)	III (≤ 2000 m)
Overvoltage category (EN 61558-2-16)	II (≤ 5000 m)
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

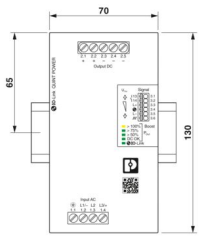
Life expectancy (electrolytic capacitors)

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

Mounting

Mounting type	DIN rail mounting
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	3K22 (in accordance with EN 60721-3-3)
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)
Temp code	T4 (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K)

Standards and regulations

Rail applications	EN 50121-3-2
	EN 50121-5
	IEC 62236-3-2
	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 – 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

Standard - power supply devices for low voltage with DC output	EN 61204-3
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. 61010-1-12
	CAN/CSA-C22.2 No. 61010-2-201
SIQ	CB-Scheme (IEC 61010-1, IEC 61010-2-201)
UL approvals	UL Listed UL 61010-1
	UL Listed UL 61010-2-201
	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)

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

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5

Surge voltage load (surge)

Input	2 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 B

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
	16.7 Hz

Frequency	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 / 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 3)
Voltage	10 V 1 V
Test level 2	150 Hz 1.5 kHz (Test Level 3)
Voltage	1 V
Test level 3	1.5 kHz 15 kHz (Test Level 3)
Voltage	1 V 10 V
Test level 4	15 kHz 150 kHz (Test Level 3)
Voltage	10 V
Test level 5	50 Hz 60 Hz (Test Level 3)
Voltage	10 V (Permanent)
Test level 6	50 Hz 60 Hz (Test Level 3)
Voltage	100 V (1 s)
Comments	Criterion A

Attenuated oscillating magnetic field

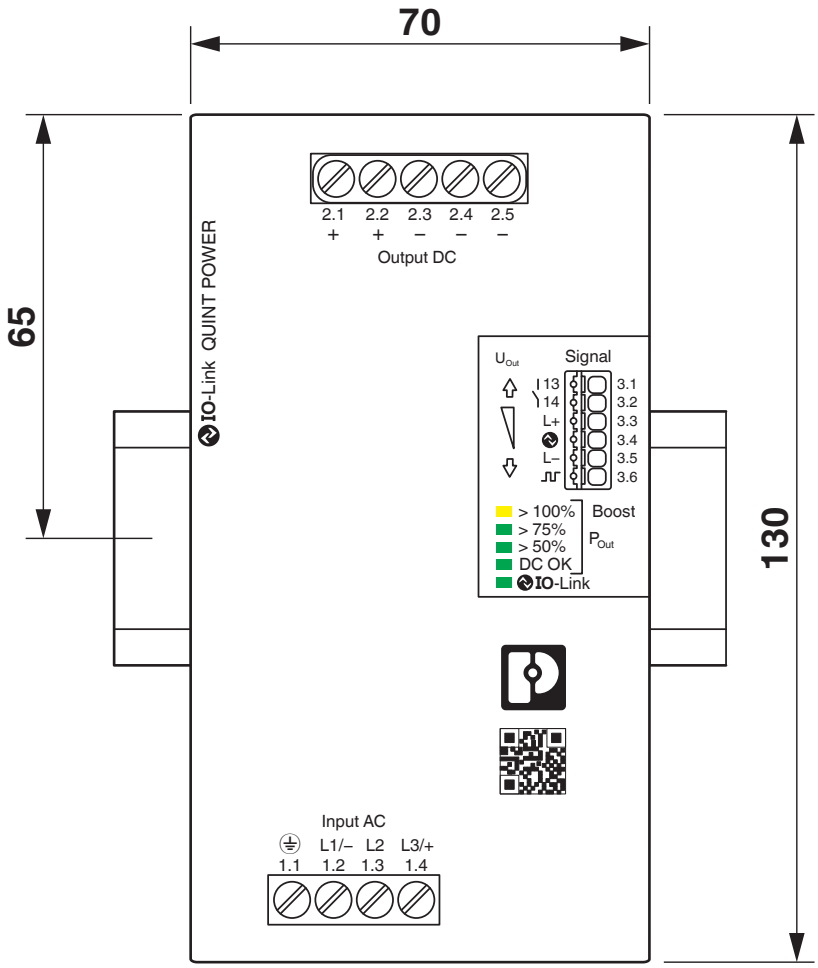
Standards/regulations	EN 61000-4-10
Test field strength	100 A/m
Test level 1	100 kHz
Test field strength	100 A/m
Test level 2	1 MHz
Comments	Criterion A

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.

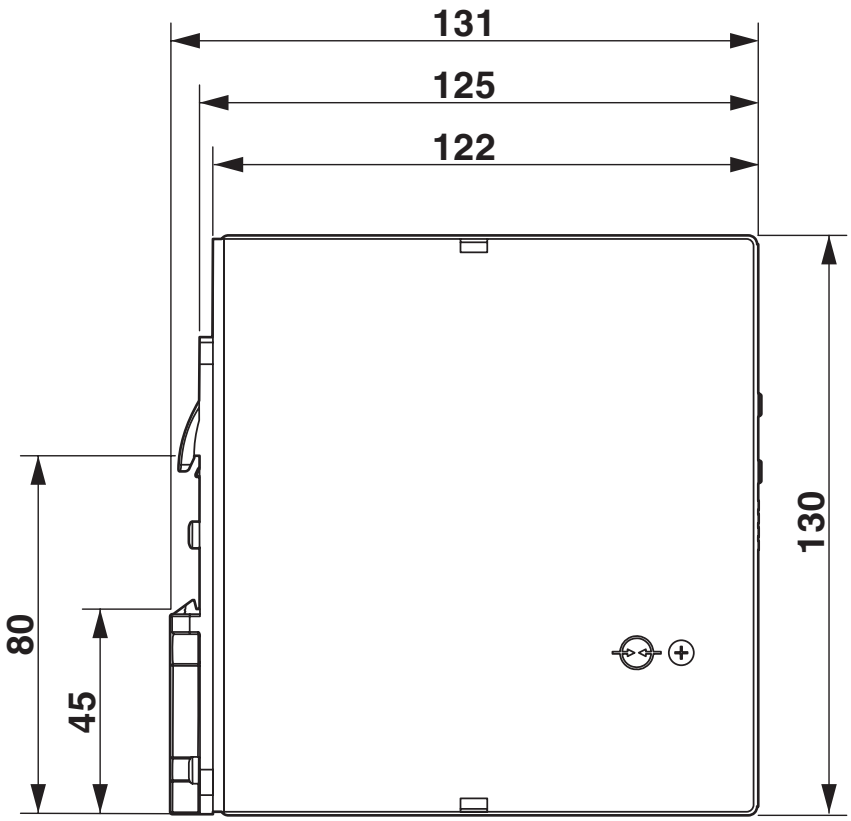
Drawings

Dimensional drawing



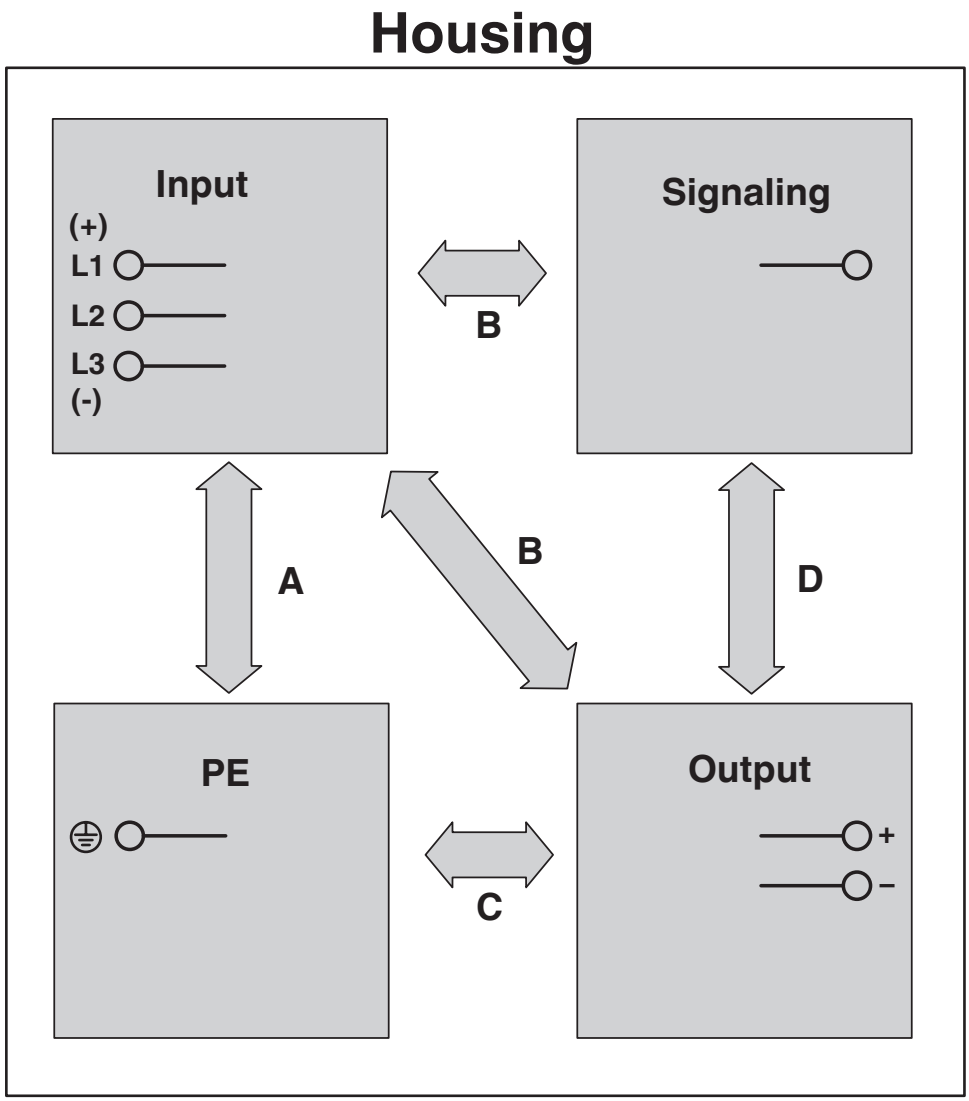
Dimensions, front view (in mm)

Dimensional drawing



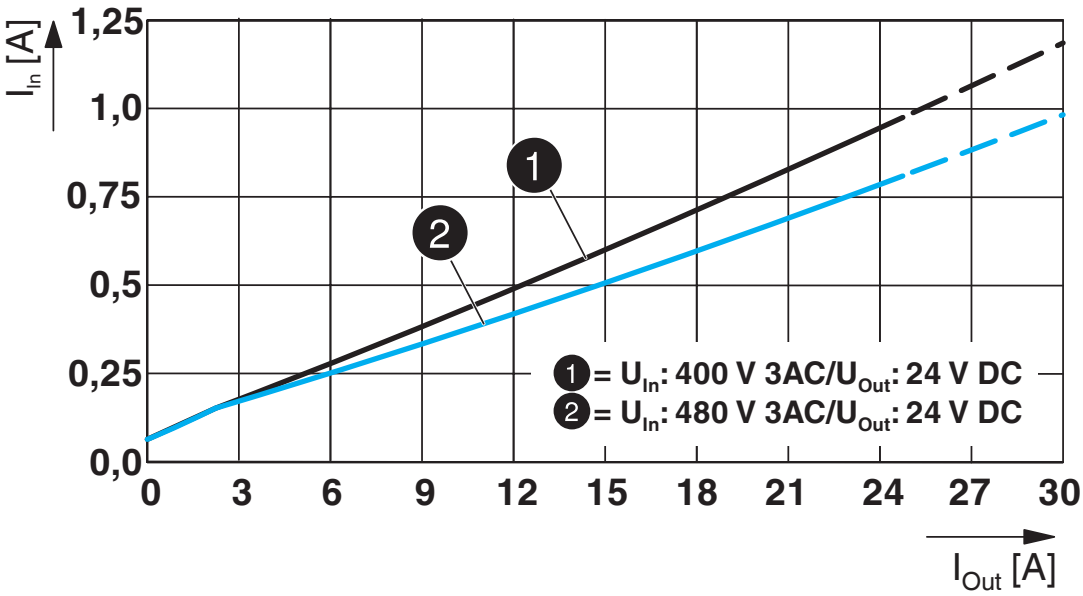
Dimensions, side view (in mm)

Schematic diagram



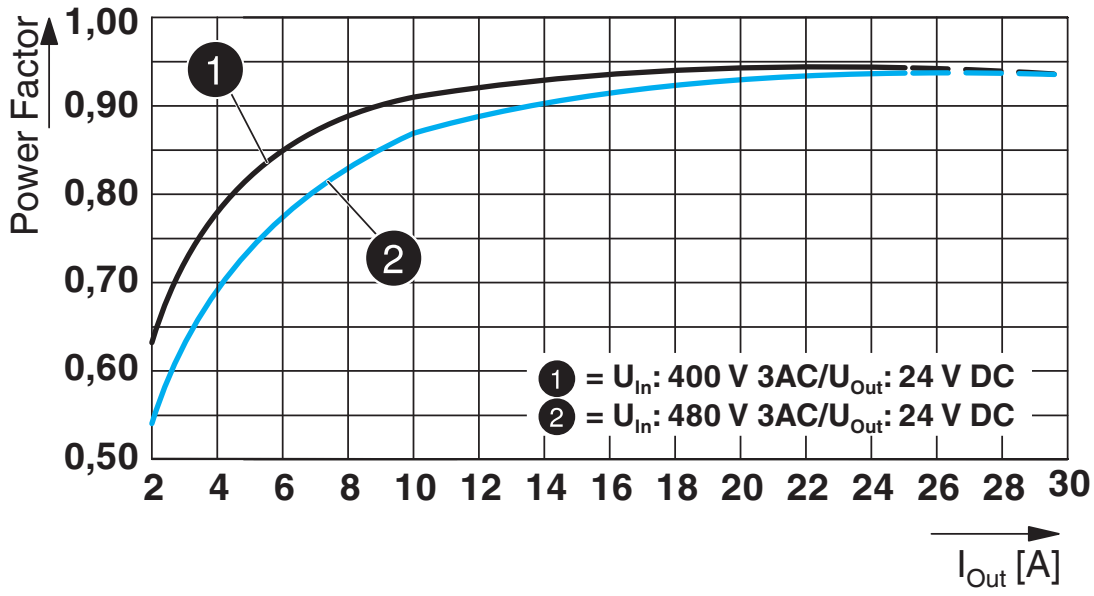
Test sections, insulation voltage

Diagram



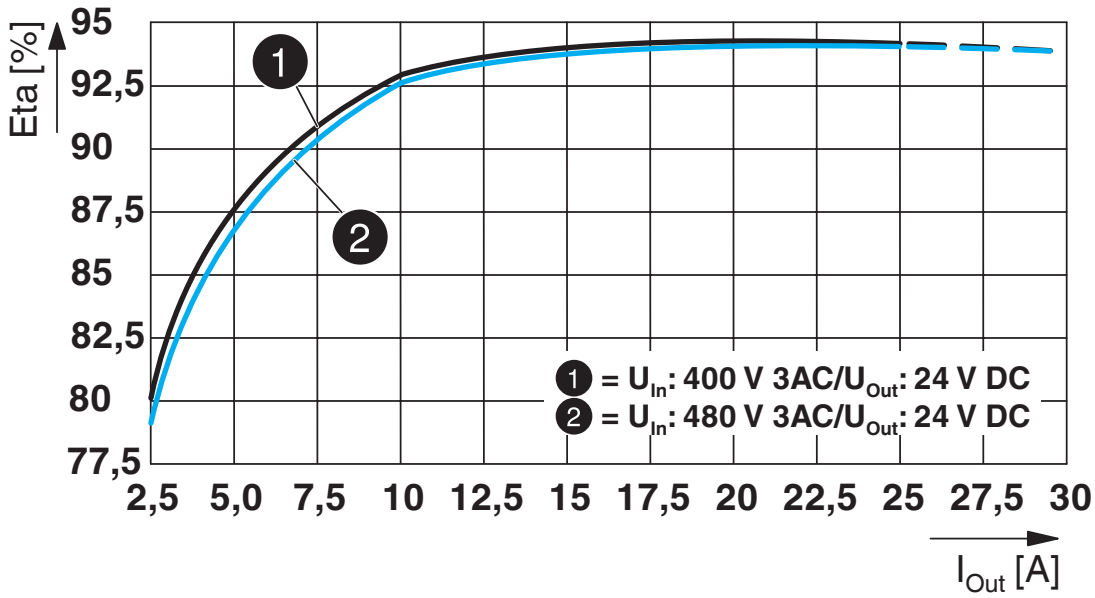
Input current/output current

Diagram



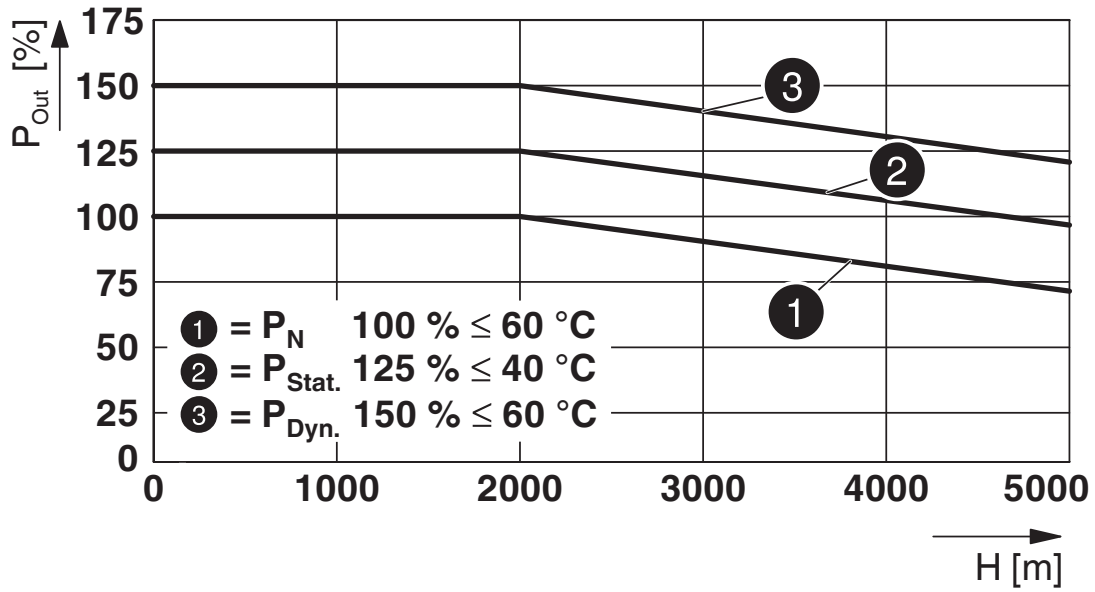
Power factor

Diagram



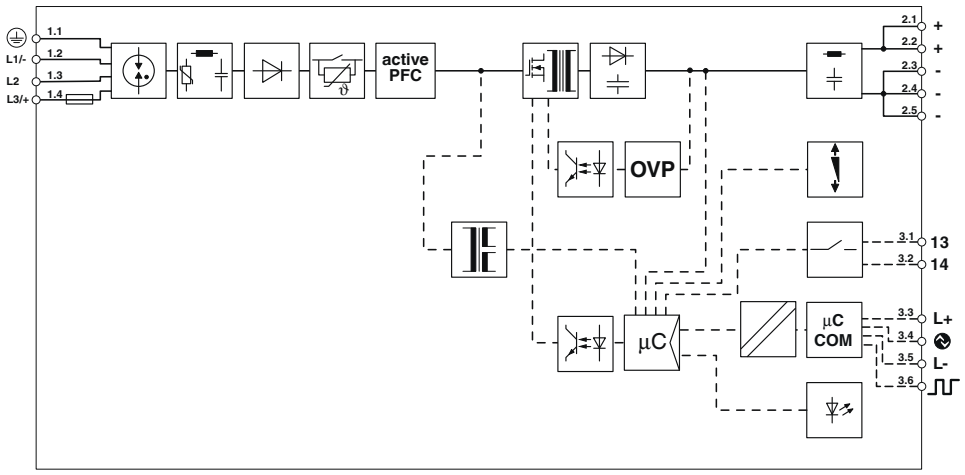
Efficiency

Diagram



Altitude-dependent derating

Block diagram



Block diagram

Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/gb/products/1151048

DNV
Approval ID: TAA00001YD

LR
Approval ID: LR22472797TA

cCSAus
Approval ID: 70098201

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

BV
Approval ID: 44621/B1 BV

IECEE CB Scheme
Approval ID: SI-11355

IECEE CB Scheme
Approval ID: SI-11358

SEMI F47
Approval ID: SEMI F47

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

cULus Recognized
Approval ID: E211944-A86-UL

ABS
Approval ID: 26-0442641-PDA

cULus Listed
Approval ID: E123528-20220331

cULus Listed
Approval ID: E199827-20220525

Classifications

ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	27040701

ETIM

ETIM 10.0	EC002540

UNSPSC

UNSPSC 21.0	39121000

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 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	c9c74512-5a84-4dcd-9dcf-b70f3278ac7e

EF3.1 Climate Change

CO2e kg	30.074 kg CO2e

PHOENIX CONTACT Ltd
Halesfield 13, Telford
Shropshire, TF7 4PG
01952 681700
info@phoenixcontact.co.uk