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Compact Power Supplies
QUINT-PS-120AC/12DC/10/F
QUINT-PS-230AC/12DC/10/F

– **Electronic short-circuit/idling-proof**

– **Extended input voltage range**

– **Safe isolation (DIN VDE0100-410, EN 60 950)**

– **Mains buffering > 20 ms**

– **LED function indicator in primary and secondary circuit**

– **COMBICON connectors**

– **Redundant circuits can be created**

– **Reduced housing depth**

– **Robust high-grade steel housing**



1. Brief Description

Compact power supplies from Phoenix Contact have proven themselves in the distributed supply of electrical engineering components.

This power supply, which is designed for the supply of 12 V I/O devices, provides an output current of 10 A for a precisely controlled and adjustable output voltage of 11.5 - 18 VDC. These devices do not switch off on a load short-circuit due to an U/I characteristic controlled output, instead they reduce the output voltage for an existing overload and continue to provide the complete output current. This current reserve ensures that both heavy capacitive loads and devices with DC/DC converters can be supplied by QUINT POWER in the input circuit without any problems. Connected fuses are also reliably tripped. This means that the selectivity in your system configuration is ensured at all times.

2. Area of Application

The rail-mountable current supply QUINT POWER is designed as a primary switched-mode regulator and keeps heat loss to a minimum due to its high level of efficiency. The flat design and the high level of efficiency of the power supplies makes them suitable for installation in remote distribution boards. Every module adheres to the limit values for radio interference Class B and can therefore be used universally in harsh industrial environments as well as in commercial and domestic environments, which are susceptible to interference.

3. Technical Data

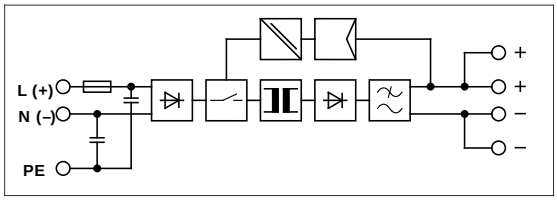


Fig. 02

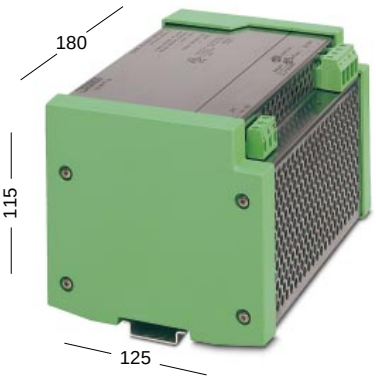


Fig. 03

QUINT 10 A

	rigid	flexible	AWG
	[mm²]		
Input	0.2 - 2.5	0.2 - 2.5	24 - 14
Output	0.2 - 4	0.2 - 4	24 - 12

Description	Type	Order No.	Pcs. Pkt.
Power supply, primarily clocked	**QUINT-PS-120AC/12DC/10/F**	**29 38 16 7**	1
	QUINT-PS-230AC/12DC/10/F	**29 38 15 4**	1

Technical Data

Input Data		
Input voltage	120 V AC	230 V AC
• Input voltage range	98 - 132 V AC	196 - 264 V AC
• Temporary input voltage range (1 min)	75 - 135 V AC	150 - 270 V AC
• Direct voltage	132 - 186 V DC	253 - 373 V DC
Frequency	47 - 63 Hz	47 - 63 Hz
Inrush current at 25°C (77°F)	< 24 A	< 24 A
Current consumption at nominal input voltage	0.9 A, approximately	1.8 A, approximately
Input fuse, internally soldered	6.3 AT	6.3 AT
Power factor	0.75	0.75
Mains buffering	> 20 ms	> 20 ms
Transient overvoltage protection	Varistor (Response voltage 150 VAC)	Varistor (Response voltage 275 VAC)
Output Data		
Nominal output voltage/current	12 V DC/10 A	12 V DC/10 A
Tolerance	± 1%	± 1%
Setting range	11.5 - 18 V	11.5 - 18 V
Startup delay		
• Ohmic load/capacitive load	100 ms, approximately	100 ms, approximately
Switching on after applying the line voltage	2.5 s, approximately	2.5 s, approximately
Startup of capacitive loads	Unlimited	Unlimited
Internal overvoltage protection	Yes	Yes
Function indicator	LED	LED
Can be connected in parallel	Yes, to create redundant systems and to increase power output	Yes, to create redundant systems and to increase power output

Additional output data on page 3

Additional Output Data			
Current limit		>1.1 x I ± 5%	>1.1 x I ± 5%
System deviation on load change:			
Static 10 - 90%		< 1%	< 1%
Dynamic 10 - 90%		< 5%	< 5%
System deviation on input voltage change ±10%		< 0.1%	< 0.1%
Rise time U out (10% - 90%)		100 ms	100 ms
Residual ripple/switching peaks (1.2 MHz)	No load	10 mV pp/10 mV pp	10 mV pp/10 mV pp
	Nominal load	150 mV pp/100 mV pp	150 mV pp/100 mV pp
Maximum power loss	No load	5 W	5 W
	Nominal load	29 W	29 W
Climatic Data			
Ambient temperature	Operation	0 °C to +70°C (-32˚F to +158˚F)	0 °C to +70°C (-32˚F to +158˚F)
	Storage	-25 °C to +85°C (-13˚F to +185˚F)	-25 °C to +85°C (-13˚F to +185˚F)
Humidity, no condensation		95%, 25 °C (77˚F)	95%, 25 °C (77˚F)
Vibration according to IEC 68-2-6		10 Hz - 150 Hz, 0.15 mm (0.006 in.) or 2 g	10 Hz - 150 Hz, 0.15 mm (0.006 in.) or 2 g
Shock according to IEC 68-2-27		30 g for 18 ms in 3 space directions	30 g for 18 ms in 3 space directions
Degree of pollution according to EN 50 178		2	2
General Data			
Isolation voltage input/output		1.8 kV (3 kV type test)	1.8 kV (3 kV type test)
Electrical safety		VDE 0805, EN 6095 UL 1950, CSA 22.2 No. 950 VDE 0160, EN 50178 UL 508 c, CSA 22.2 No. 14-M-91	VDE 0805, EN 6095 UL 1950, CSA 22.2 No. 950 VDE 0160, EN 50178 UL 508 c, CSA 22.2 No. 14-M-91
Safe isolation		VDE 0100-410/DIN 57100-410 DIN VDE 0106-101	VDE 0100-410/DIN 57100-410 DIN VDE 0106-101
Limitation of line current harmonics according to EN 61000-3-2		Yes	Yes
Mounting position		Horizontal DIN rail NS 35/7.5 according to EN 50022	Horizontal DIN rail NS 35/7.5 according to EN 50022
Mounting		Can be mounted: Vertical spacing of > 10cm (3.937 in.) Horizontal without spacing	Can be mounted: Vertical spacing of > 10cm (3.937 in.) Horizontal without spacing
Connection type/cross-section	Input	COMBICON/0.2 - 2.5 mm^2 (24 - 14 AWG)/rigid/flexible	COMBICON/0.2 - 2.5 mm^2 (24 - 14 AWG)/rigid/flexible
	Output	POWER COMBICON/0.2 - 4 mm^2 (24 - 12 AWG)/rigid/flexible	POWER COMBICON/0.2 - 4 mm^2 (24 - 12 AWG)/rigid/flexible
Degree of protection		IP 20	IP 20
Protection class		I, with PE connection	I, with PE connection
MTBF		> 500 000 h acc. to SN 29 500	> 500 000 h acc. to SN 29 500
Efficiency		> 82%	> 82%
Weight		1.8 kg, approximately	1.8 kg, approximately
Approximate dimensions (W x H x D)		180 x 125 x 115 mm (7.087 x 4.921 x 4.528 in.)	180 x 125 x 115 mm (7.087 x 4.921 x 4.528 in.)

CE

Conforms to the EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC

Noise immunity according to EN 50082-2		
• Electrostatic discharge (ESD)	EN 61000-4-2	Level 3 (6/8 kV)[2)]
• Electromagnetic HF field:	EN 61000-4-3	Level 3 (10 V/m)[1)]
• Fast transients (burst)	EN 61000-4-4	Level 3 (2 kV)[2)]
• Surge current load (surge)	EN 61000-4-5	Inst. class 3 (2 kV)[2)] (1 kV symm./2 kV asymm.)[2)]
• Conducted interference		
• Simulation of radiophones	EN 61000-4-6 ENV 50204	10 V, 150 kHz-80 MHz 20 V/m, 900 MHz ± 5 MHz, 50% VT
Noise emission according to EN 50081-1		
• Radio interference emission	EN 55022	Class B
• Radio interference voltage at the line input	EN 55022	Class B

EN 61000 corresponds to IEC 1000/
EN 55011 corresponds to CISPR22

[1)]Criterion A: normal operating characteristics within the specified limits.
[2)]Criterion B: temporary adverse effects on the operating characteristics which the device corrects itself.

Class B: Industrial and domestic applications

4. Connection Diagram

Primarily-Clocked Power Supply
QUINT-PS-120AC/12DC/10/F
QUINT-PS-230AC/12DC/10/F

① AC input
Plug-in COMBICON screw terminal
(0.2 mm^2 to 2.5 mm^2 rigid/flexible)
(24 - 14 AWG)

② DC output
Plug-in POWER COMBICON screw terminal
(0.2 mm^2 to 4 mm^2 rigid/flexible)
(24 - 12 AWG)

③ DC o.k. indicator

④ Power o.k. indicator

⑤ Potentiometer 11.5 - 18 V

⑥ DIN rail support

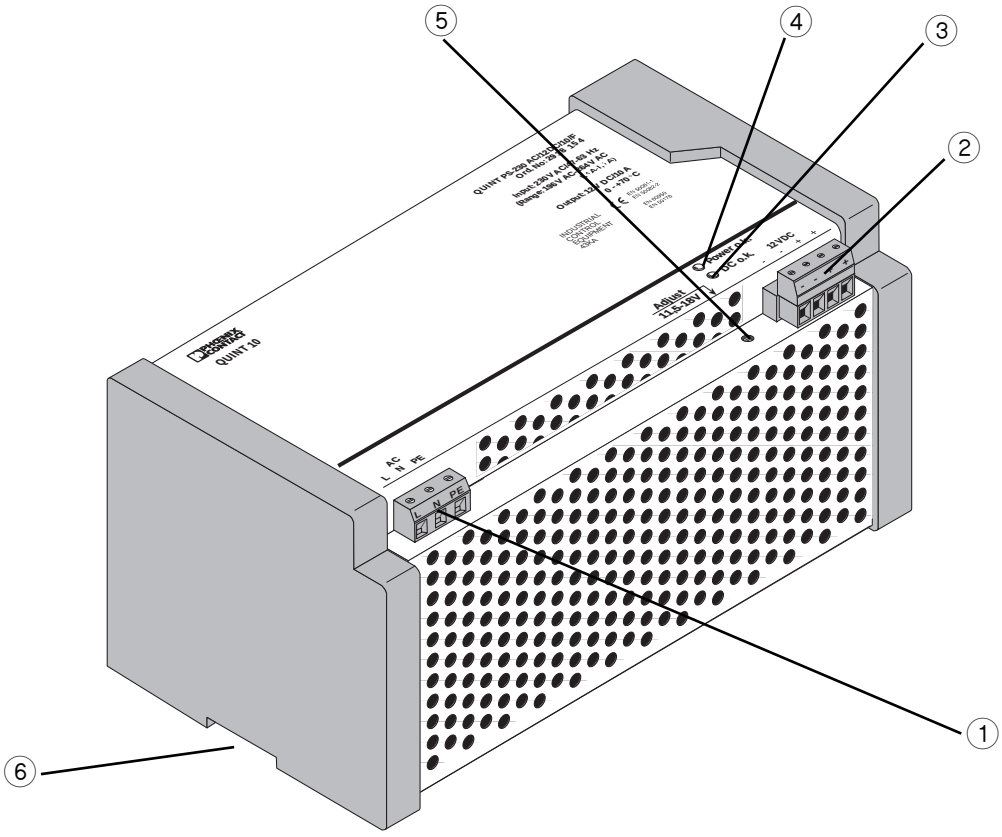


Fig. 04

5. Connection and Operating Instructions

For vertical installations we recommend a minimum spacing of 10 cm (3.937 in.) between other modules and this power supply to ensure sufficient convection. No minimum spacing is required for horizontal mounting!

5.1. Rail Mounting

The power supplies can be snapped onto all DIN rails according to EN 50022-35.

Mounting:

Place the module with the DIN rail guideway on the **top edge** of the DIN rail and then snap it **downwards** (Fig. 05a).

Removal:

Release the snap-on catch using a screwdriver and then detach the module from the **bottom edge** of the DIN rail
(Fig. 05b).

5.2. Cable Connection

The device is equipped with COMBICON connectors. This user-friendly connection method enables quick device replacement and safe isolation of the electrical connection.

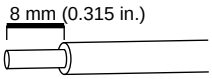
Caution: Never carry out work when the power is turned on, this is *highly dangerous!*

Connection Cable:
The following cable diameters can be used:

Input
0.2 mm^2 to 2.5 mm^2 rigid/flexible (24 - 14 AWG)

Output
0.2 mm^2 to 4.0 mm^2 rigid/flexible (24 - 12 AWG)

To maintain the UL, use copper cables which are designed for operating temperatures of 75°C (167˚F). **For reliable and safe contacts,** isolate the connector ends as shown here!



Input (Fig. 06):

The 120 V/230 V AC connection is made using the screw connections L, N and PE at the COMBICON plug-in connection (torque 0.5 Nm) (Fig. 06).

Connection to the various types of network is shown in Fig. 7.

The power o.k. indicator displays the function of the device (Page 6, Fig. 08 ③).

Mounting Instructions

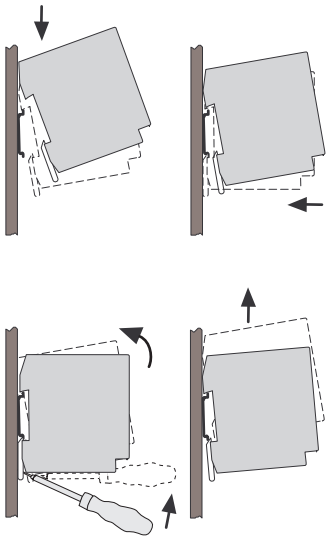


Fig.5a
Mounting

Fig.5b
Removal

Fig. 05

AC cable connection

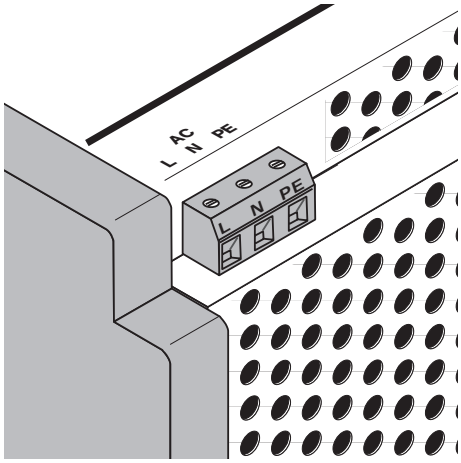


Fig. 06

Network Types

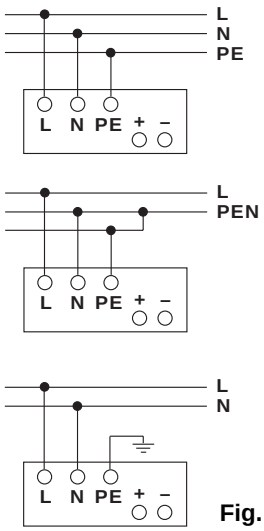


Fig. 07

Output (Fig. 08):

The 12 V DC connection is made using the "+" and "–" screw connections at the POWER COMBICON connection (torque 0.5 Nm).

The output voltage set upon delivery is 12 VDC. The output voltage can be adjusted from 11.5 to 18 VDC on the potentiometer ①.

If the DC o.k. indicator ② switches off, this indicates that the output voltage has fallen more than 2V below the set value.

If the power o.k. signal ③ is active and the DC o.k. indicator switches off, the device is over range (see also Point 6.1. Short-Circuit/Overload). If both LEDS are off, then the 120 V/230 V AC power input is interrupted.

5.3. Fuse

Primary Side:

The device is equipped with an **internal** T 6.3 A/250 V fine-wire fuse.

If the internal primary side is blown, this is most probably due to a device fault. In this case, the device should be checked in the factory.

Secondary Side:

The device is electronic short-circuit-proof and idling-proof. In the event of an error, the output voltage is limited to a maximum of 35 V ± 0.5%.

5.4. Redundancy Operation

If a fault occurs in the primary circuit of device number no. 1, device no. 2 automatically takes over the complete power supply without interruption and vice versa.

5.5. Parallel Operation for Power Increase

The device can be connected in parallel without restrictions. The output current can be increased to **n x I_N** where n is the number of devices connected in parallel (Fig. 09).

6. Characteristic Curves

6.1. Short-Circuit/Overload

The output of the device has **electronic** overload and short-circuit protection.

The device can continuously supply 1.1 times the nominal current at the nominal voltage. The working point demonstrates the curve shown in Fig. 10 with an extreme overload. The output voltage decreases according to the conditions in the load circuit so that the output current is limited to 1.1 times the nominal current. This current reserve ensures that both big capacitive loads and devices with DC/DC converters can be supplied by QUINT POWER in the input circuit without any problems. Connected fuses are also reliably tripped.

DC cable connection

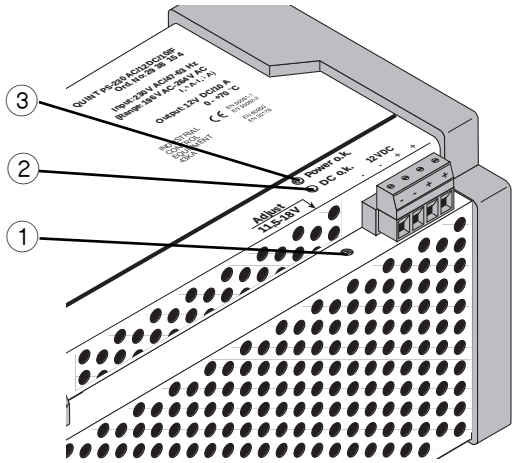


Fig. 08

Redundancy operation

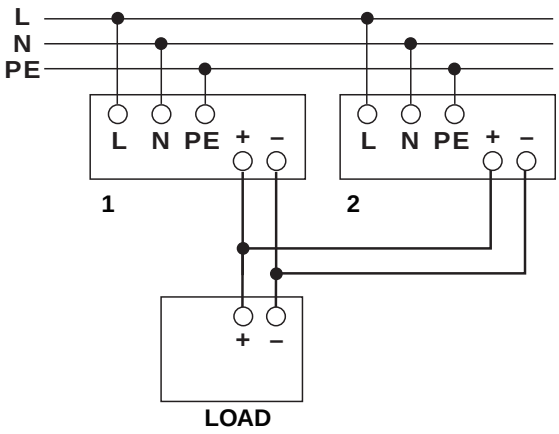


Fig. 09

Output characteristic curve

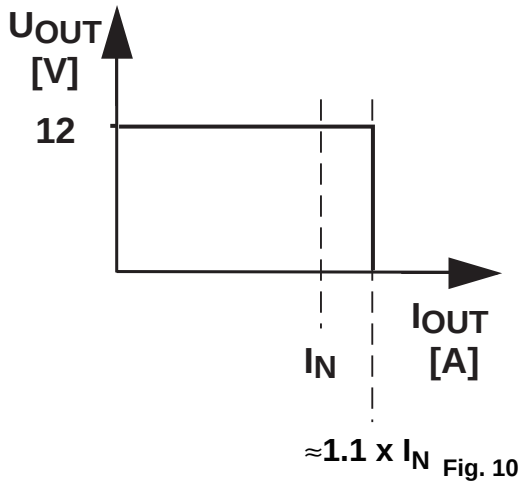


Fig. 10

6.2. Temperature Response (Fig. 11)

The device supplies the maximum output current without derating up to an ambient temperature of 70°C (158°F).

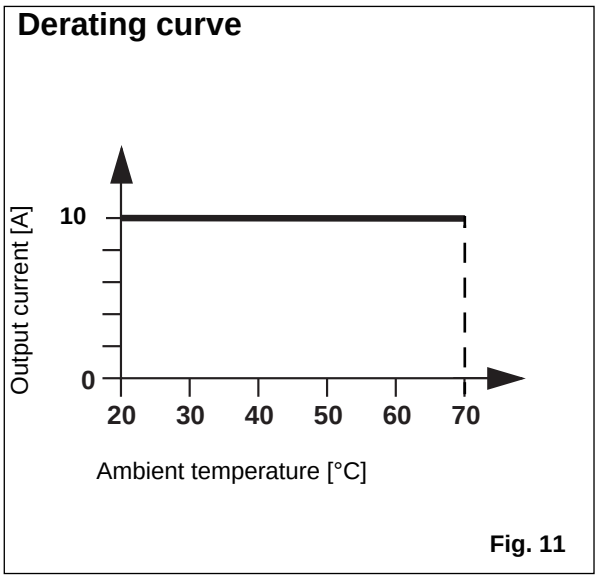


Fig. 11

7. Certification Standards

7.1. Electrical Safety

Electrical safety is provided using a device configuration which conforms to EN 60950 (VDE 0805) and EN 50178 (VDE 0160). The device is certified according to EN 60950/VDE 0805, UL 1950, CSA 22.2 No. 950 and EN 50178/VDE 0160, UL 508 c, CSA 22.2 No. 14-M-91. Requirements for safe isolation specified in VDE 0100-410 and VDE 0106-101 are also met.

- Radio interference according to EN 55 022 Class B (industrial and domestic applications)
- Conformance with EN 61 000-3-2 (harmonic line currents) for all devices of type .../F (filtered).

The device must be installed according to the specifications of EN 60950. It must be possible to switch off the device using a suitable **disconnecting device outside the power supply** e.g., a pre-connected fuse.

7.2. Mechanical Safety

- The devices are tested for shock load according to IEC 68 Part 2-27 (30 g for 18 ms in three space directions) and for vibrations according to IEC 68 Part 2-6 (10 Hz - 150 Hz; 0.15 mm (0.006 in.) or 2 g).
- Protection class I, IP 20 degree of protection

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