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POWER SUPPLY 1-PHASE, 12 V DC DIMENSION C SERIES, GENERATION 2

QS10.121
PSU 100-240V ac I/P 12V dc 15A 180W O/P



- Output current of 16 A
- Up to 94% efficiency
- Only 39 mm wide
- Active current inrush protection

PRODUCT DESCRIPTION

Puls Dimension C-series stands for cost optimization without compromising quality, reliability or performance.

CP10 is the second generation C-series 1-phase that sets new records by using the latest technology and sophisticated thermal design. With an efficiency of 94.3%, the power losses are very small and thus the width is reduced down to 39 mm. The efficiency is also very high at lower loads which is the normal operating condition. The mean value is on the whole 93.3% at 230 V ac.

Power boost of 20% enables higher current extraction without voltage drops. This is especially useful during start-ups and to bridge the current peaks in the application. The power reserve can be used continuously up to + 45°C and short periods from +45°C to +60°C.

Short-circuit currents. CP10 can provide short circuit current which is 3 times the nominal current for at least 12 ms, which helps secondary fuses and achieve selectivity. For more information see under Sec. fuses.

Hiccup Plus

With Pulse new short circuit technology ensures optimum protection. The unit leaves a very high short circuit that solves secondary fuses and provide sufficient starting current for example dc motors. If the output voltage drops below 6.5 V dc, a continuous current of 25 A is given for 2 seconds, then turn the assembly of the end to make a new restart attempt after about 18 seconds. This is done until the error has been corrected. This feature ensures a high short-circuit / overload current while avoiding a constant high current that can lead to thermal problems with cables and component damage.

More technical advantages. CP10 has active power factor correction (PFC) and actively protect inrush that effectively reduces start currents which are ideal if several units are connected in the same phase or if the supply is current limited through example. AC UPS. The protection is always active, regardless of the temperature. DC-OK output, wide temperature range, a large number of approvals and transient filter which ensures operation in an interference rich electrical environment makes the unit suitable for virtually all installations. CP10.121 also has an input where the signal turns off the unit.

Wiring

	A: Primary side/control voltage B: Secondary. Output voltage C: potentiometer adjustable output voltage 12-15 V dc D: DC OK LED. Lights when the voltage is 90% of the set value E: DC-OK relay output. Closes when the output voltage is OK F: Inputs for remote shutdown of the unit

Sec. fuses

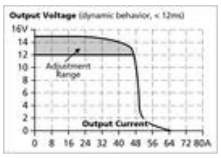
Breakers is the most common type of fuse for ac voltage but is also used for dc voltages. Power supply always has a current limitation compared with an electricity network which hampers tripping of a circuit breaker of the magnetic field, especially if the voltage is as low as 12 V dc. Greater consideration must be given to the cable diameter and cable lengths. This even if the power supply is able to deliver high short circuit currents. For long cables and/or thin cable area so the solution is electronic fuses.

Puls CP10.121 have high short-circuit currents which enables tripping within 10 ms of length and cable section is as below specification.

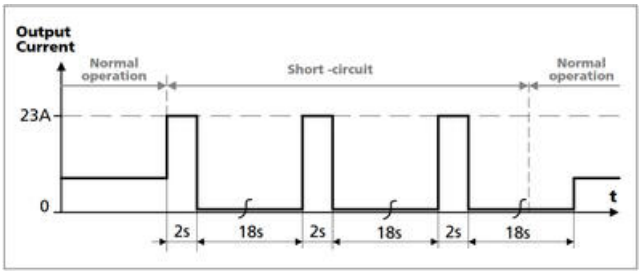
Safe tripping of circuit breakers with different cable lengths/diameter

	0.75 mm^2	1.0 mm^2	1.5 mm^2	2.5 mm^2
C-2A	11 m	15 m	22 m	35 m
C-3A	9 m	13 m	18 m	23 m
C-4A	5 m	8 m	12 m	17 m
C-6A	-	1 m	2 m	3 m
B-6A	6 m	11 m	15 m	23 m
B-10A	2 m	3 m	3 m	4 m
B-13A	1 m	2 m	3 m	4 m

Short-circuit currents. Figure 3-2



Hiccup function Fig 3-3



Description of Hiccup ^{plus} function

Thanks to the unique Pul Hiccup^{plus} ensures a high short circuit current while avoiding the risk of overheated cables and damage to the connected loads. When a short circuit occurs following.

1. High peak power that enables tripping in 12 ms Figure 3-2.
2. The unit leaves 25 A for 2 s.
3. After 2 seconds the unit shuts off, then try to restart every 18 seconds. If the fault is removed, the unit starts automatically, otherwise it will lose further 18 s. The operation does not burden the cabling and does not cause damage to the electronics.

TECHNICAL DATA

INPUT DATA

Input voltage ac	100-240 V
Input voltage ac min	85 V AC
Input voltage ac max	276 V AC
Input voltage dc	110-150 V
Input voltage dc min	88 V DC
Input voltage dc max	187 V DC
Inrush current at 120 V ac typical	4 A
Inrush current at 230 V ac typical	7 A
Input voltage range	Wide-range
Power factor at 120 V ac, full load. Typical	0.98
Power factor at 230 V ac, full load. Typical	0.92
Number of phases	1

OUTPUT DATA

Output voltage	12 V DC
Output voltage min	12 V DC
Output voltage max	15 V DC
Output current	15 A
Power	180 W

EFFICIENCY / LIFETIME / MTBF

Efficiency at 120 V ac, full load, typical	91.5 %
Efficiency at 230 V ac, typical	90.6 %
Efficiency at 230 V ac, full load, typical	91.8 %
Lifetime at 120 V ac, full load and +40 ° C	65000 h
Lifetime at 230 V ac, full load and +40 ° C	76000 h
MTBF (IEC 61709) 230 V ac, max load, 40 ° C	631000 h

DIMENSIONS

Width	60 mm
Height	124 mm
Depth	117 mm
Weight	0.9 kg

OTHER

Approvals	ABS, CB, CE, CSA, GL, UL
Hold time at 120 V ac, typical full load	32 ms

Hold time at 230 V ac, typical full load	32 ms
IP class	IP20
Clamp type	Spring-clamp
Material protection	Aluminium
Supply frequency	50-60 ±6 %
Ripple max	50 mV pp
Series	Dimension Q
Power consumption 120 V ac	1.65 A
Power consumption 230 V ac	0.93 A
Power drop from +60 °C to + 70 °C	5 W/°C
Temperature min without derating	-25 °C
Temperature max without derating	60 °C

Type Power Supply	AC-DC
Active Transient	Yes
DC relay output	Yes