

## POWER SUPPLY 1-PHASE, 48 V DC DIMENSION C SERIES, GENERATION 2

CP10.481

PSU 100-240V ac I/P 48V dc 5A 259W O/P

- Output current of 5.4 A
- Up to 95.5% efficiency
- Active current inrush protection
- Active PFC
- Hiccup Plus



### 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 95.5%, 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 94.5% 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 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 <sup>Plus</sup>

With Puls 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 falls below 26 V dc, a continuous current of 7 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 current inrush protection 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 störrik electrical environment makes the unit suitable for virtually all installations.

For good cooling, we recommend a clearance of 40 mm over 20 mm below. We recommend 5 mm air gap to the sides. (15 mm on the sides of adjacent product is a heat source.)

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Wiring

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- A: Primary side/control voltage
- B: Secondary side. Output voltage
- C: Potentiometer adjustable output voltage 48-56 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.

## SEC. FUSES

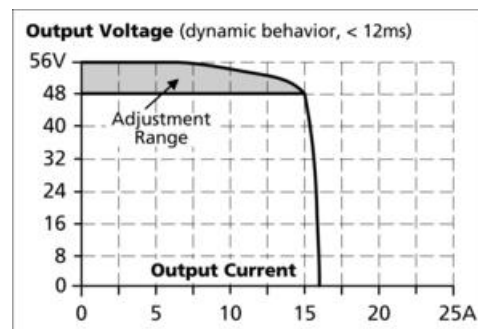
Breakers is the most common type of fuse for ac voltage but is also used for dc voltages. Power supply always has a current limitation compared with an electricity network which hampers tripping of a circuit breaker of the magnetic field. Greater consideration must be given to the cable diameter and 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 CP10.481 have high short-circuit currents which enables tripping within 10 ms of length and cable section is as below specification.

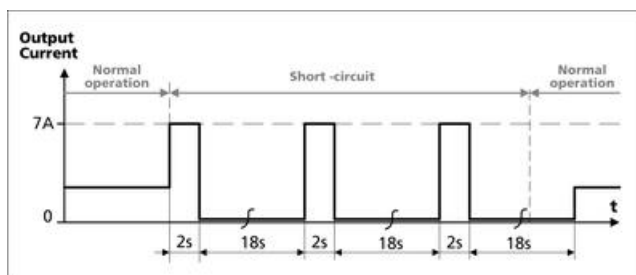
Safe tripping of breakers with different cable lengths / diameters

Short circuit. Fig 3-2

|      | 0.75 mm <sup>2</sup> | 1.0 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> |
|------|----------------------|---------------------|---------------------|---------------------|
| C-2A | 42 m                 | 49 m                | 59 m                | 109 m               |
| C-3A | 13 m                 | 24 m                | 28 m                | 42 m                |



Hiccup function. Fig 3-3



Description of Hiccup<sup>plus</sup> function

Thanks to the unique Pul Hiccup<sup>plus</sup> 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 7 A for 2 s.

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                         | 264 V AC   |
| Input voltage dc                             | 110-150 V  |
| Input voltage dc min                         | 88 V DC    |
| Input voltage dc max                         | 180 V DC   |
| Inrush current at 120 V ac typical           | 9 A        |
| Inrush current at 230 V ac typical           | 7 A        |
| Input voltage range                          | Wide-range |
| Power factor at 120 V ac, full load. Typical | 0,99       |
| Power factor at 230 V ac, full load. Typical | 0,98       |
| Number of phases                             | 1          |

### OUTPUT DATA

|                    |         |
|--------------------|---------|
| Output voltage     | 48 V DC |
| Output voltage min | 48 V DC |
| Output voltage max | 56 V DC |
| Output current     | 5,4 A   |
| Power              | 260 W   |

### EFFICIENCY / LIFETIME / MTBF

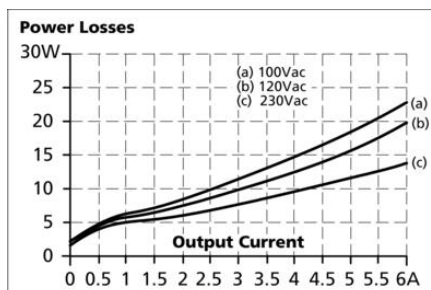
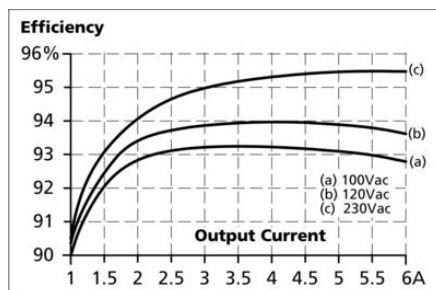
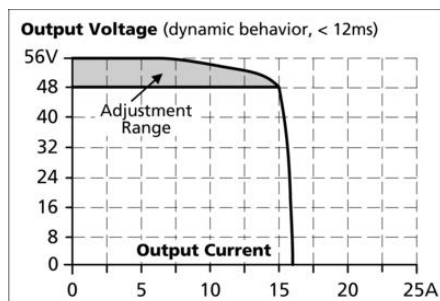
|   |          |
|---|----------|
| Efficiency at 120 V ac, full load, typical  | 93,8 %   |
| Efficiency at 230 V ac, typical             | 94,5 %   |
| Efficiency at 230 V ac, full load, typical  | 95,5 %   |
| Lifetime at 120 V ac, full load and +40 ° C | 77000 h  |
| Lifetime at 230 V ac, full load and +40 ° C | 120000 h |
| MTBF (IEC 61709) 230 V ac, max load, 40 ° C | 699000 h |

## DIMENSIONS

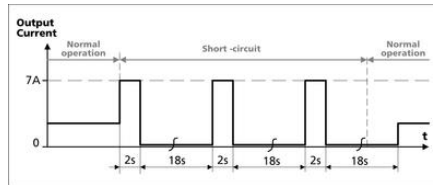
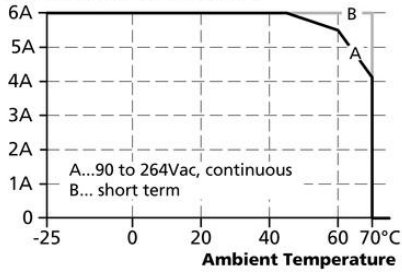
|        |        |
|--------|--------|
| Width  | 39 mm  |
| Height | 124 mm |
| Depth  | 117 mm |
| Weight | 0,6 kg |

## OTHER

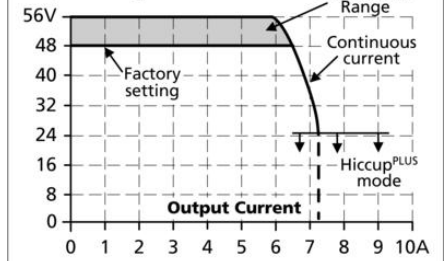
|  |                                     |
|--|-------------------------------------|
| Approvals                                | ABS, CB, CE, CSA, EX, GL, IECEx, UL |
| Hold time at 120 V ac, typical full load | 34 ms                               |
| Hold time at 230 V ac, typical full load | 34 ms                               |
| IP class                                 | IP20                                |
| Clamp type                               | Screw                               |
| Material protection                      | Aluminium                           |
| Supply frequency                         | 50-60 $\pm 6$ %                     |
| Ripple max                               | 50 mV pp                            |
| Series                                   | Dimension C                         |
| Power consumption 120 V ac               | 2,32 A                              |
| Power consumption 230 V ac               | 1,2 A                               |
| Power drop from +60 °C to + 70 °C        | 6,5 W/°C                            |
| Temperature min without derating         | -25 °C                              |
| Temperature max without derating         | 60 °C                               |
| Type Power Supply                        | AC-DC                               |
| DC relay output                          | Yes                                 |
| Active Transient                         | Yes                                 |



### Allowed Output Current at 48V



### Output Voltage



Maximal wire length <sup>\*)</sup> for a fast (magnetic) tripping:

|      | 0.75mm <sup>2</sup> | 1.0mm <sup>2</sup> | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> |
|------|---------------------|--------------------|--------------------|--------------------|
| C-2A | 42m                 | 49m                | 59m                | 109m               |
| C-3A | 13m                 | 24m                | 28m                | 42m                |

\*) Don't forget to consider twice the distance to the load (or cable length) when calculating the total wire length (+ and - wire).

