



- ☑ STANDARD ☑ FULL BRICK ☑ PACKAGE
- ☑ OPERATES DIRECTLY FROM FUEL CELL
- ☑ POWER DENSITY UP TO 5.53W/CM³
- ☑ EFFICIENCIES FROM 86-91%
- ☑ ACTIVE LOAD SHARING
- ☑ ACTIVE LOAD SHARING
- ☑ REMOTE ON/OFF
- ☑ NO NEED FOR ☑ MASTER/SLAVE ☑



FC SERIES - DC/DC

POWER SUPPLY DESIGN EXCELLENCE

The FC Series from Powerstax is a derivation of the well established F Series which has been optimised to be powered directly from a Fuel Cell.

The comprehensive list of in-built protection functions such as over voltage protection,

undervoltage protection and short circuit protection are complemented by unique features such as the thermal monitoring voltage to provide early warning of system fault.

| STANDARD MODEL | INPUT VOLTAGE (RANGE) | INPUT CURRENT | OUTPUT VOLTAGE | OUTPUT CURRENT | OUTPUT POWER | TYPICAL EFFICIENCY |
|----------------|-----------------------|---------------|----------------|----------------|--------------|--------------------|
| FC501-048-150 | 70V (50-100V) | 7.4A | 15V | 33.3A | 500W | >91% |
| FC501-048-240 | | | 24V | 20.8A | 500W | |
| FC501-048-280 | | | 28V | 17.8A | 500W | |
| FC501-048-480 | | | 48V | 10.4A | 500W | |

OTHER HIGH DENSITY PRODUCTS
 F Series DC/DC - 200 to 500W
 F501-385 - High Voltage DC Input
 FP Series - PFC Front-Ends
 FAC Series - Integrated AC/DC



| INPUT SPECIFICATIONS | |
|---------------------------|---------------------------------------------------------------------------------------|
| Input Voltage (range) | 50-100V |
| Input Current (typ.) | 7.4A |
| Input Current (standby) | <90mA |
| Vin (on) (input rising) | 49.5V |
| Vin (off) (input falling) | 43.5V |
| Surge Withstand | 200V |
| Ripple Rejection (120Hz) | 60dB |
| Protection | an external fuse of appropriate type & rating is required to meet agency requirements |

| OUTPUT SPECIFICATIONS | |
|-----------------------------|-----------------------------------------------------------|
| Voltage Setpoint | ±0.7% Vout nom. (at full load) |
| Voltage Tolerance Band | ±1.1% Vout nom. (all line, load & temperature conditions) |
| Line Regulation | >0.5% Vout nom. (Vin minimum to Vin maximum) |
| Load Regulation | >0.05% Vout nom. (no load to full load) |
| Current Share Error | <±10% Io max. |
| Temperature Coefficient | >3mV/°C (20°C to 100°C) |
| Transient Response | >1.5% Vout nom. (50% load step at 0.1A/μs) |
| Over Temperature Shutdown | 100-110°C, 105°C typ. |
| Settling Time | >500μs (to 10% of peak deviation) |
| Current Limit | 100-130% Iout max., 115% Io typ. |
| Ripple & Noise (rms) | >0.3% Vout nom. (10-100% Iout, 20MHz bandwidth) |
| Short Circuit Current Limit | 3.3% maximum output current |
| Trim Range | 60 to 100% Vout nom. (subject to Pout max. and Iout max.) |

| GENERAL & ENVIRONMENTAL SPECIFICATIONS | |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Range | -20°C to +100°C operating, -40°C to +125°C storage |
| Humidity | 10-90%RH, non-condensing |
| Cooling | maintain baseplate @ <100°C, see mechanical drawings |
| Switching Frequency (range) | 300kHz (273-315kHz) |
| Isolation Capacitance | 470pF (input/output) |
| Isolation Resistance | 10MΩ (input/output) |
| Isolation Voltage | 2000VACrms (input/output, reinforced insulation) 1000VACrms (input/baseplate, basic insulation) 500VACrms (output/baseplate, operational insulation) |
| Thermal Resistance | 0.1°C/W (baseplate to heatsink with thermal pad) |
| Pin Soldering Temperature | 260°C max. (<5s wave) or 390°C max. (<7s hand) |
| Pin Material | brass with gold plate |
| Case Material | aluminium |
| Weight | <170g |
| MTBF | 1,100,000 hours (Belcore SR332) |



FC SERIES - DC/DC

CONTROL SPECIFICATIONS

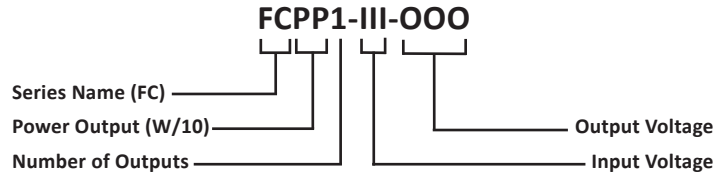
| Primary Side | | | | |
|----------------------------|------------------------------------------------------|--------------------------|-----------|----------|
| ON/OFF disable | external open collector or equivalent drive circuit | 0V min. | 2.4V typ. | |
| ON/OFF enable | external open collector or equivalent drive circuit | | 2.7V typ. | 5V max. |
| ON/OFF driven voltage | external drive source voltage | | | 7V max. |
| ON/OFF enable delay | delay to 50% output voltage, +Vout to -Vout | | 2ms typ. | 5ms max. |
| ON/OFF pull-up resistance | internal pull-up to 5V | | 18kΩ | |
| ON/OFF series resistance | internal pull-down to -Vin when OT, OV or UV tripped | | 220Ω | |
| ON/OFF temp. shutdown | increasing baseplate temperature, centre | 100 | 105 | 125°C |
| ON/OFF temp. restart | decreasing baseplate temperature, centre | | 90 | |
| ON/OFF temp. sense voltage | advance trip warning | | 2.7V | 4.5V |
| ON/OFF temp. sense voltage | advance trip warning @ 90°C | 3.25V | 3.5V | 3.75V |
| ON/OFF temp. sense voltage | prior threshold | 2.4V | | 2.7V |
| ON/OFF temp. sense voltage | post threshold | 2.0V | | 2.4V |
| ON/OFF temp. sense voltage | after restart | | 3.5V | |
| ON/OFF input Under Voltage | turn-on (increasing input Vin) | see input specifications | | |
| ON/OFF input Under Voltage | turn-off (decreasing input Vin) | see input specifications | | |
| ON/OFF input Over Voltage | turn-off/on | | | |
| ON/OFF alarm | UV and OV fault alarm, sink 1.5mA | | | 0.8V |
| ON/OFF alarm | OT trip | 2.1V | | 2.4V |
| SYNC amplitude | external drive source | 3V | 4V | 30V |
| SYNC width | maximum Tr and Tf to be nominally 10% of pulse width | 50ns | 100ns | 200ns |
| SYNC control range | single and multiple modules | 320kHz | 330kHz | 360kHz |
| SYNC resistance | resistance to -Vin | | 90Ω | |
| Secondary Side | | | | |
| SHARE resistance | resistance to Vout | | 330Ω | |
| TRIM voltage | reference to -Sense | 2.487V | 2.5V | 2.513V |
| TRIM resistance | internal series resistance | | 10kΩ | |

SAFETY & EMC SPECIFICATIONS

| | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Safety Standards | UL/EN/IEC60950-1 2nd Ed. (designed to meet) |
| Emissions ¹ | EN55011, level B (Conducted & Radiated) |
| Immunity ¹ | ESD - EN61000-4-2, Radiated RF - EN61000-4-3, Conducted RF - EN61000-4-6, Fast Transients - EN61000-4-4, Input Surges - EN61000-4-11 |

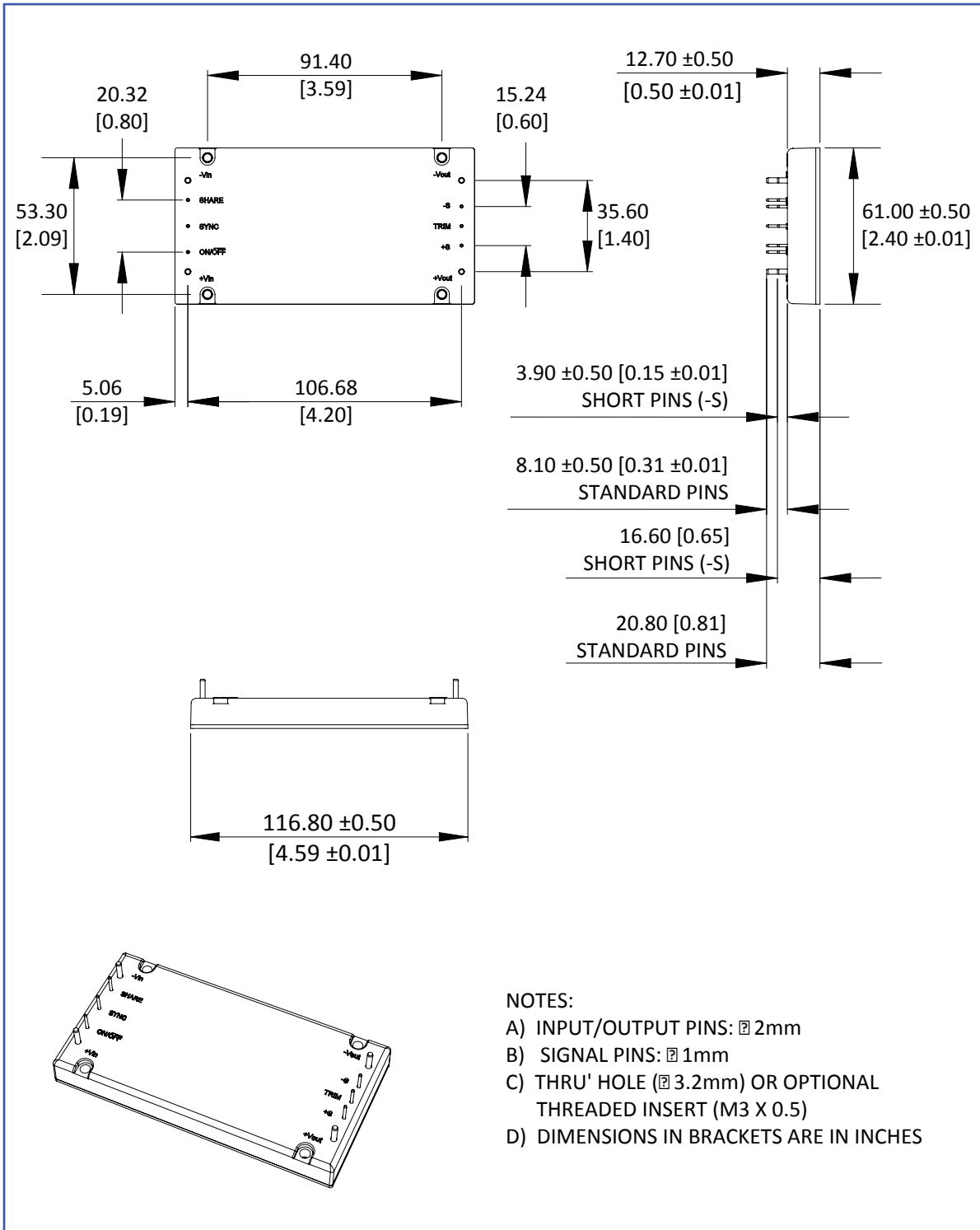
Note 1: Consult factory for details of suitable external filtering.

MODEL NUMBER CONFIGURATION GUIDE





MECHANICALS



All specifications are typical at nominal line input, full load and 25°C unless otherwise stated.

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FC SERIES - DC/DC

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