



- STANDARD "FULL BRICK" PACKAGE
- OPERATES DIRECTLY FROM FUEL CELL
- POWER DENSITY UP TO 5.53W/CM³
- EFFICIENCY UP TO 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
FC501-048-240	70V (50-100V)	7.4A	24V	20.8A	500W	≤91%

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



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	$\pm 0.7\%$ Vout nom. (at full load)
Voltage Tolerance Band	$\pm 1.1\%$ 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	$< \pm 10\%$ Io max.
Temperature Coefficient	$> 3\text{mV}/^\circ\text{C}$ (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	$> 500\mu\text{s}$ (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 @ $< 100^\circ\text{C}$, see mechanical drawings
Switching Frequency (range)	300kHz (273-315kHz)
Isolation Capacitance	470pF (input/output)
Isolation Resistance	10M Ω (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. ($< 5\text{s}$ wave) or 390°C max. ($< 7\text{s}$ hand)
Pin Material	brass with gold plate
Case Material	aluminium
Weight	$< 170\text{g}$
MTBF	1,100,000 hours (Belcore SR332)



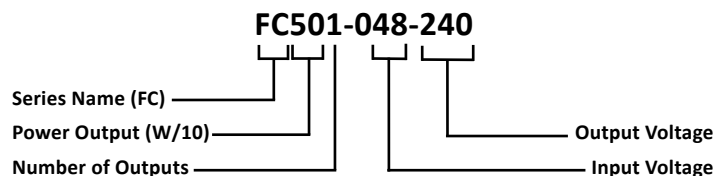
FC SERIES - DC/DC

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°C	105°C	125°C	
ON/OFF temp. restart	decreasing baseplate temperature, centre		90°C		
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

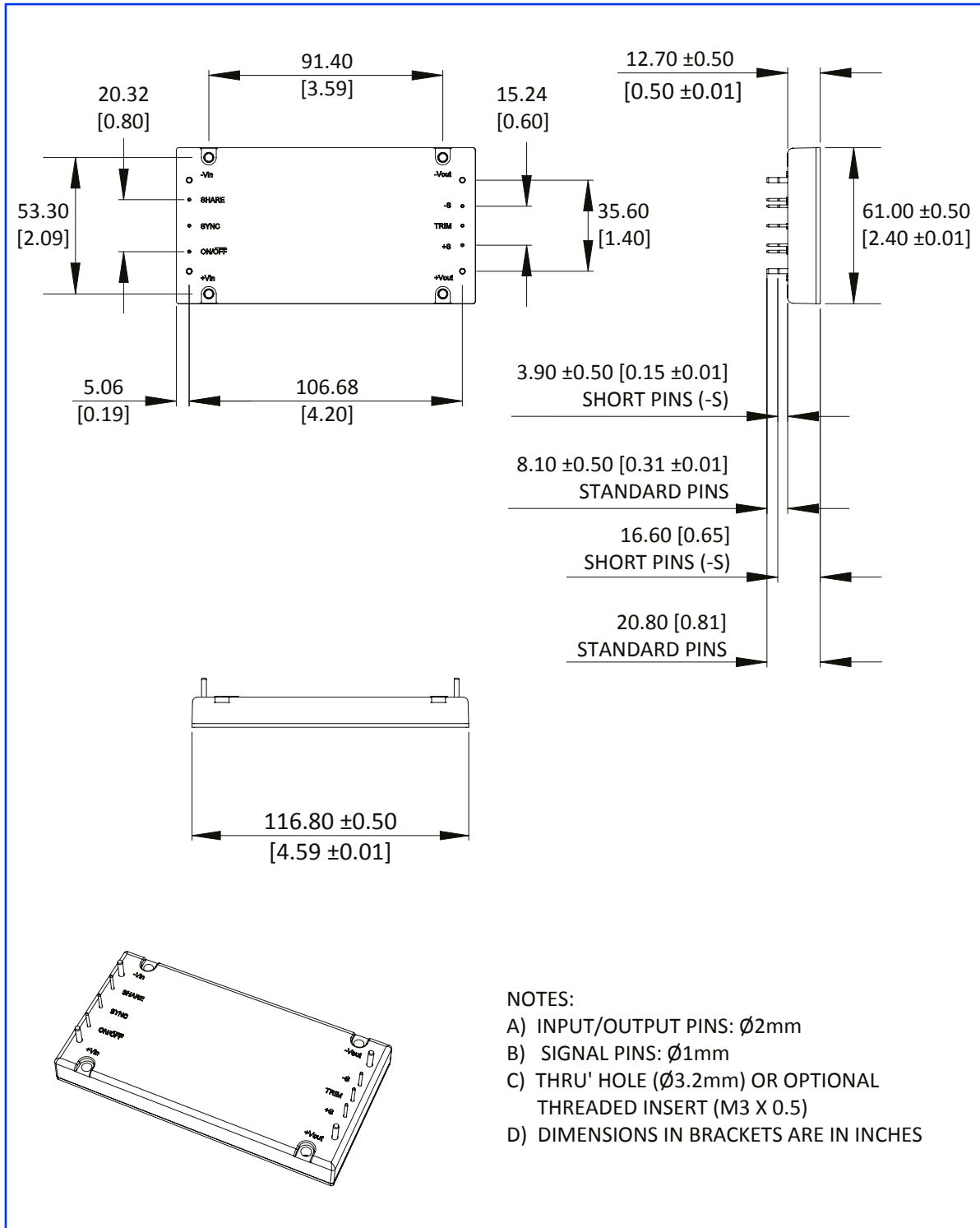
Note 1: Consult factory for details of suitable external filtering.

MODEL NUMBER CONFIGURATION GUIDE





MECHANICALS



FC SERIES - DC/DC

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

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