

APC-F501 Series DC-DC CONVERTER

500W Single Output Full Brick

Advanced
Power
Conversion PLC

Outline Product Specification

This very high efficiency converter gives the Power system designer added versatility and space saving capability in a cost effective package.

The APC500 represents a major achievement in the development of high power, high-density DC converter modules, providing 500Watts of power in the industry standard "full brick" size case.

This gives exceptional power density ($90\text{w/in}^3 / 5.53\text{cm}^3$) allowing over twice the power output from the same space as the standard range of full brick size converters on the market.

At greater than 92% efficiencies, with fixed frequency operation and low ripple the APC-F501 is ideally suited for the telecoms and IT industries, while automated production and test ensure high reliability.

The comprehensive list of in-built protection functions such as over voltage protection, under-voltage protection and short circuit protection are complemented by unique features such as the thermal monitoring voltage to provide early warning of system fault.

Also available in a rare STEP-UP version to converter low 12 or 24V input voltages UP to high voltage outputs of 24, 28 or 48VDC.

2 Year Warranty

FEATURES

- ❑ Exceptional efficiency of typ 92%
- ❑ Outstanding power density – 5.53cm^3
- ❑ Standard "full brick" package (116.8 x 61 x 12.7mm)
- ❑ Low input & output ripple currents
- ❑ Input transient voltage protection
- ❑ Thermal monitoring voltage to provide early warning of system fault
- ❑ Single connection for parallel operation to provide true N+1 redundancy capability
- ❑ No need for master/slave operation
- ❑ External synchronisation facility
- ❑ Hot plug in capability
- ❑ Remote sensing provided
- ❑ Remote shutdown
- ❑ Wide input voltage range
- ❑ Output current monitor voltage
- ❑ Thermal protection & Current limit protection
- ❑ **STEP-UP** from 12V or 24V input.



Outline Product Specification

APC-F501 Full Brick Single output DC-DC Converter - 500 Watt

General Specification

Absolute Maximum Ratings

General Characteristics	Conditions	Min	Typ	Max	Unit
Efficiency	V1=V1, nom, Ta=25°C, Io=Io,	-	90	-	%
Switching frequency	max	-	300	-	KHz
Isolation resistance input to output		10	-	-	MΩ
Calculated MTBF	80% of full load, Tc=40°C	-	1.5	-	Mhr.
Weight		-	170	-	g
Tc	Operating case temperature	-25		85	°C
Tstg	Storage Temperature	-55		125	°C
V1	Input Voltage (continuous)	-		75	V
V1,trans	Transient input voltage (100ms) 48v	-		100	V
	24v	-		50	V
Viso	Input to output isolation voltage	-		1500	V
Input Characteristics	Conditions	Min	Typ	Max	Unit
V1	Operating input voltage (48v)	36	48	75	V
	(24v)	18	24	37	V
Ii, typ	Typical input current (48v)	-	12.5	-	A
	(24v)	-	25	-	A
Ir	Input reflected-ripple current, peak-to-peak (5Hz to 20 MHz)	-	48v -0.5A 24v -1.0A	-	A
Ir	Input ripple rejection (120Hz)	-	60	-	dB
Output Characteristics	Conditions	Min	Typ	Max	Unit
Vo Output voltage set point	V1=V1,nom, Ta=25°C Io=Io,max	27.72	28	28.28	V
Vo Output voltage tolerance band	Over all line, load & temperature Conditions.	27.6	-	28.4	V
Vo Line regulation	V1=V1, min to V1,max	-	0.15	0.2	%Vo
Vo Load regulation	Io=Io, min to Io,max	-	0.7	1	%Vo
Vo Temperature regulation	Tc=-25°C, to +100°C	-	0.01	-	%/°C
Vtr Vo load transient voltage deviation	Vi=V1,nom, Ta=25°C, Io/ t=0.1A/us	-	5	-	%
Ttr Vo load transient recovery time	Io change from 50% to 75% of Io, max or 50% to 25% of Io, max	-	400	-	us
Io Output current	The module may exceed output ripple specifications at Io<Io,min	0.1	-	20	A
Po, max Maximum output power		-	-	500	W
Io Output current limit		19	-	21	A
Vo Output ripple and noise RMS	Test frequency band width<20MHz	-	-	TBA	mV
Vo Output ripple and noise peak to peak		-	-	TBA	mV
Cex External load capacitance		-	-	470	uF

Note: This power module can be used in a wide variety of applications. To preserve maximum flexibility, internal fusing is not included. However, to achieve maximum safety and system protection, always use an input line fuse. The safety agencies require a normal-blow, DC fuse with a maximum rating of 20A. The same type fuse with a lower rating can be used in practice.

Input Specifications (48V & 24V input models)

Unless otherwise indicated, specifications apply over all operating input voltage, resistive load, and temperature conditions



Range

Model Reference	Input Voltage (V)	Output Voltage (V)	Output Current (A)
12V input			
APC-F501-012-240	12	24	available soon
APC-F501-012-280	12	28	available soon
APC-F501-012-480	12	48	available soon
24V input			
APC-F501-024-050	24	5	100
APC-F501-024-120	24	12	41.7
APC-F501-024-150	24	15	33.3
APC-F501-024-240	24	24	20.8
APC-F501-024-280	24	28	17.8
APC-F501-024-480	24	48	10.4
48V input			
APC-F501-048-050	48	5	100
APC-F501-048-120	48	12	41.7
APC-F501-048-150	48	15	33.3
APC-F501-048-240	48	24	20.8
APC-F501-048-280	48	28	17.8
APC-F501-048-480	48	48	10.4

Mechanical Outline

