

### FEATURES

- 6Ux4HP package
- 500W power at 0-50°C
- PICMG 2.11 compliant
- RoHS compliant
- Widerange 36-72Vdc input range
- IPMI option
- Active or passive current sharing
- 47-pin I/O Connector
- 80% efficiency
- No minimum load
- Hot-swap capable

### DESCRIPTION

The cPCI500 is a high-reliability, 500W, 6Ux4HP CompactPCI™ power supply operating from wide-range DC-input. The use of our patented V-Series topology yields high efficiency which consequently permits packaging of this product in a compact, single card slot format (4HP).

ORing diodes and current sharing allow the cPCI500 to be operated in N+n parallel-redundant configurations. Available with an IPMI interface option, the cPCI500 was designed for hot-swap, redundant configurations to support high-availability (HA) telecom applications.

With a widerange input of 36-72Vdc, safety agency approvals to UL60950 and EN60950, EMI compliance to ETSI and Telcordia standards, the cPCI500 was designed with globally-deployed systems in mind. Additional features include remote sense compensation, unit enable control (EN#), output inhibit control (INH#), output fault signal (FAL#), and thermal warning signal (DEG#). LEDs are provided for visual indication of input power presence and output fault condition.

The 4HP package and complement of global safety agency approvals provide for an advanced, high-density, high-efficiency power solution for your CompactPCI requirements.



### SELECTION GUIDE

Model Number	Power	Output Current				IPMI	Ish1	RoHS COMPLIANT 2002/95/EC
		5V	3.3V	12V	-12V			
CPCI500D-1	500W	55A	Y	11A	1.7A	N	P	No
CPCI500D-2	500W	30A	N	11A	1.7A	N	P	No
CPCI500D-3	500W	30A	N	11A	1.7A	Y	A	No
CPCI500D-4	500W	55A	Y	11A	1.7A	Y	A	No
CPCI500D-5	500W	55A	N	11A	1.7A	N	A	No
CPCI500D-6	500W	30A	N	11A	1.7A	N	A	No
CPCI500D-1C	500W	55A	Y	11A	1.7A	N	P	Yes
CPCI500D-2C	500W	30A	N	11A	1.7A	N	P	Yes
CPCI500D-3C	500W	30A	N	11A	1.7A	Y	A	Yes
CPCI500D-4C	500W	55A	Y	11A	1.7A	Y	A	Yes
CPCI500D-5C	500W	55A	N	11A	1.7A	N	A	Yes
CPCI500D-6C	500W	30A	N	11A	1.7A	N	A	Yes

### INPUT CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Input Operating Voltage		36		72	Vdc
Input Voltage Withstand		34		75	Vdc
Inrush Current	36Vdc input			25	Apk
	72Vdc input			50	Apk

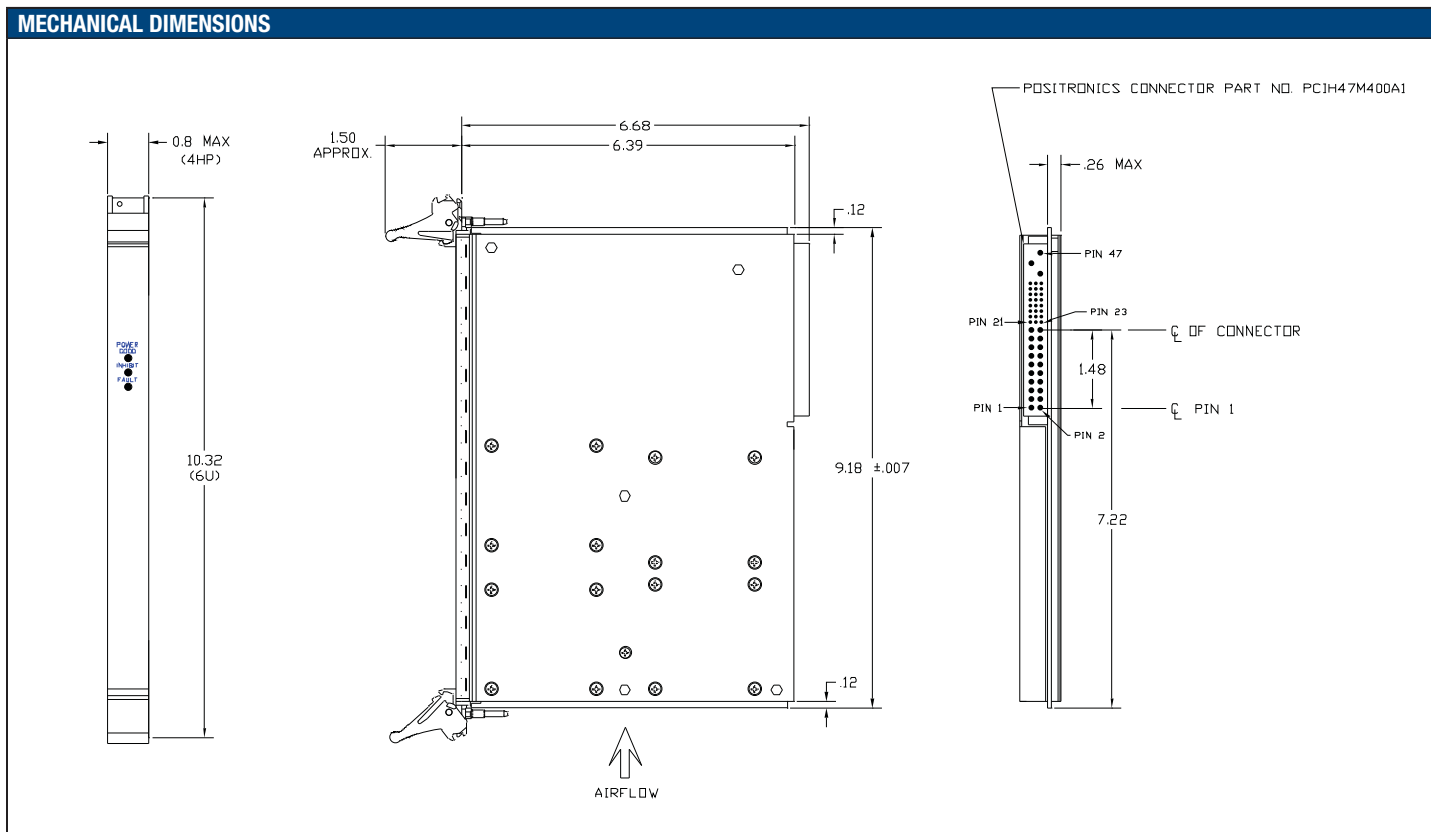
### OUTPUT CHARACTERISTICS

Output	Nominal Voltage	Output Current			Total Regulation <sup>1</sup>
		Min	Max A	Max B	
V1	+5.0Vdc	0A	55A	30A	±1%
V2	+3.3Vdc	0A	30A	60A	±1%
V3	+12Vdc	0A	11A	11A	±1%
V4	-12Vdc	0A	1.7A	1.7A	±3%
Parameter	Conditions	Min	Typ	Max	Units
Temperature Coefficient				0.02	%/°C
PARD (V1 & V2)	20MHz bandwidth			50	mV <sub>p-p</sub>
PARD (V3 & V4)	20MHz bandwidth		120	180	mV <sub>p-p</sub>
Output Power	50°C, 400lfm airflow	0		500	W
Output Power	70°C, 400lfm airflow	0		250	W
Transient Response	ΔV, 50% load step			±8	%Vnom
	Settling time			200	μsec
Over-Voltage Protection	All outputs		125	135	%Vnom
Minimum Load		0			A
Output Holdup Tim	Full load, low line	12		16	msec
Remote Sense Compensation	V1, V2 & V3	300			mV
Current Share Tolerance	V1-V3; full load			±10	%
Isolation	Pri-Sec	4			kVac
	Pri-Chassis	1.5			kVac
	Sec-Chassis	500			Vac

Notes: 1 Total regulation includes line, load, and cross regulation.

GENERAL CHARACTERISTICS						
Parameter	Conditions	Min	Typ	Max	Units	
Efficiency	48Vdc input, 500W load (dependent upon load profile)		65		%	
Switching Frequency			72		kHz	
MTBF	Calculated per MIL-HDBK-217F, 25°C, ground benign	84			khrs	
Weight	Unpackaged		3.6		kg	
PROTECTION						
Parameter	Conditions/Response	Inception				
		Min	Typ	Max	Units	
Thermal Shutdown	Automatic recovery upon restoration to operational temperatures		90		°C	
Output Power Limit	Automatic recovery		530		W	
Input Protection	Internal line fuse, Littlefuse BLN 25P ROHS or equivalent			25	A	
Over-voltage Protection	Output V1, latching	6.0	6.5	7.0	Vdc	
	Output V2, latching	3.9	4.3	4.7	Vdc	
Parameter	Conditions/Response					
Output Overload Protection	Outputs are individually protected against overloads and indefinite short circuit with automatic recovery upon removal of the fault condition.					
Hot-Swap Capability	Design Verification Testing (DVT) confirms that voltage excursions on the output buses resulting from insertion/extraction events do not exceed the specified maximum of 5%. However, routing of power and signal lines in the mating backplane is critical to minimization of such excursions. In addition, performance can be critically affected by load characteristics including resistance, negative resistance, and reactive components. While the control loop responses have been designed for optimum hot-swap performance over a wide range of characteristics, there may be instances where the voltage excursions exceed published specifications. In such cases, the control loop responses can be modified to perform optimally.					
Output Fault Isolation	Output isolation devices are present in all outputs to isolate faults within a failed power supply.					
STATUS & CONTROL SIGNALS & INDICATORS						
Name	Description					
Hot-Swap Enable	Short pin on connector will enable the outputs when the mating pin is tied to DC GRD. Supply will not power up until this pin is engaged to its mate in the backplane. Unit output will be inhibited as pin is disengaged from the mating connector.					
Output Inhibit	Secondary referenced; active low, TTL compatible. Logic “0” or short circuit to Logic RTN (pin 40 or 43) inhibits all outputs.					
DC Good	Secondary referenced. Open collector signal with an internal 2.2k pull-up resistor is connected to the +5V output. TTL signal will transition high when all outputs are between 90% and 110% of their nominal voltage.					
Remote Sense	Connection of the sense leads across the load at the desired point of regulation will compensate for voltage distribution drops up to 700mV between the output terminals of the power supply and the point of connection. The unit reverts to local sensing if the sense lines are opened for any reason. The output is protected against shorted or open leads. Applies to all outputs.					
Fan Alarm	Secondary referenced; TTL compatible; active low. Signal transitions to a Logic 0 denotes a thermal warning.					
Power Present Indicator LED	A green LED will be illuminated when the input voltage is present and above the minimum requirement.					
DC Good Indicator LED	A green LED will be illuminated when the output voltages are within 90-110% of specification, coincident with assertion of the DC Good signal. This LED will be extinguished if any of the output voltages is outside of this range.					
Fan Good Indicator LED	A green LED will be illuminated when the fan is operational, coincident with de-assertion of the Fan Alarm signal. This LED will be extinguished in the event of a fan failure.					
Sync Start	A power supply generated signal used to simultaneously start power supplies connected in parallel when the load on any output exceeds a single power supply's capacity for that output. These pins must be bused together at the backplane in parallel/redundant applications (N+n) when N>1. In simple redundant (1+1) or non-parallel applications (1+0), the pin can be ignored.					
Power Supply Present	This pin presents a DC ground signal to the mating pin in the backplane. It is intended to be used by the system to detect the presence of a power supply when the supply is mated into an available position.					
ENVIRONMENTAL CHARACTERISTICS						
Parameter	Conditions	Min	Typ	Max	Units	
Ambient/Operating Temperature	De-rate output power linearly above 40°C to 250W at 60°C.	0		60	°C	
Ambient Storage Temperature		-25		+125	°C	
Humidity	Operating; non-condensing	10		95	%	
	Storage; non-condensing	5		95	%	
Altitude	Operating. De-rate ambient temperature by 2C° per 1000ft above 5000ft.	-200		10000	ft	
	Storage	-200		40000	ft	
Cooling	Self-cooled by internal fan					

CERTIFICATIONS	
Agency/Characteristic	Standard
UL	UL1950
CSA	CSA950 (per cUL)
VDE	EN60950
CE	LVD Directive; self-certified
RoHS	EN Directive 2002/95/EC; self-certified; see Selection Guide table for specific model compliance
SELV	Self-certified
Vibration	MIL-STD-810F, Method 514.5, Procedure I; self-certified
Shock	MIL-STD-810F, Method 516.5, Procedure I; self-certified
ELECTROMAGNETIC COMPATABILITY (EMC)	
Conducted Emissions	EN 300 386, NEBS GR-1089
Electrostatic Discharge (ESD)	EN61000-4-2, Level 3, Criteria B
Radiated Immunity	EN61000-4-3, Level 3, Criteria A
Conducted Immunity	EN61000-4-4, Level 3, Criteria A
Line Voltage Surge	EN61000-4-5, Class 3, Criteria B



**PACKAGE SPECIFICATIONS**

CONNECTOR			
Pin # <sup>1</sup>	Staging <sup>2</sup>	Signal Name	Description
1-4	M	V1	V1 Output
5-12	M	RTN	V1 and V2 Return
13-18	M	V2	V2 Output
19	M	RTN	V3 Return
20	M	V3	V3 Output
21	M	V4	V4 Output
22	M	RTN	Signal Return
23	M	RESERVED	Reserved
24	M	RTN	V4 Return
25	M	GA0	Geographic Address Bit 0
26	M	RESERVED	Reserved
27	S	EN#	Enable
28	M	GA1	Geographic Address Bit <sup>1</sup>
29	M	V1ADJ	V1 Adjust
30	M	V1 SENSE	V1 Remote Sense
31	M	GA2	Geographic Address Bit <sup>2</sup>
32	M	V2ADJ	V2 Adjust
33	M	V2 SENSE	V2 Remote Sense
34	M	S RTN	Sense Return
35	M	V1 SHARE	V1 Current Share
36	M	V3 SENSE	V3 Remote Sense
37	M	IPMB SCL	IPMB Serial Clock Line
38	M	DEG#	Degrade Signal
39	M	INH#	Inhibit
40	M	IPMB SDA	IPMB Serial Data Line
41	M	V2 SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43	M	IPMB PWR	IPMB Power Input
44	M	V3 SHARE	V3 Current Share
45	L	CGND	Chassis Grnd (Safety Grnd)
46	M	ACN/+DC IN	AC Input Neutral/+DC Input
47	M	ACL/-DC IN	AC Input Line/-DC Input

**IPMI/IPMB POWER SUPPLY SATELLITE CONTROLLER FEATURES**

- Complies with IPMI V1.5 Rev 1.1 and IPMB V1.0
- Complies to PICMG2.9 (CompactPCI Systems Management Specification)
- 8 Analog inputs configured for monitoring voltages and currents on power supply outputs V1 - V4
- Monitors the state of the thermal sensor
- Output inhibit control can be overwritten by IPMI commands
- Self Test with LED indicator (can be read and overwritten by IPMI commands)
- 6 programmable thresholds on each analog sensor
- Each threshold on each sensor can be enabled to generate event messages if that threshold is crossed
- Thermal sensor can be enabled to generate event messages
- Responds to all mandatory IPMI commands and numerous optional commands as indicated in the functional specification
- Firmware can be upgraded via the IPMB bus
- Includes Device SDR's (Sensor Data Records) - These specify the type of sensor for each input (voltage, current, temperature, etc.) as well as the conversion formulas from raw ADC data to voltages, currents, etc.
- Includes FRU type information such as Model Number, serial number and firmware creation date

**MECHANICAL**

Shock: MIL-STD-810d, Method 516.3, Procedure 1.

Vibration: MIL-STD-810d, Method 514.3, Procedure 1.

Dimensions: 6U x 4HP x 160mm (see Mechanical above)

**EMC & SAFETY**

EMI: NEBS Compliant, ETSI Compliant

Safety Agency Ratings

Input Voltage: 48 VDC

Input Current: 15A

Input Power: 620W

Agency Approvals

UL1950/CSA950, EN60950, CE Mark.

(Low Voltage Directive)

NOTES: (1) Pin numbers correspond to the female backplane connector.

(2) L = Long Length Pin (First Make, Last Break); M = Medium Length Pins; S = Short Length Pins (Last Make, First Break)

**SAFETY AGENCY RATINGS**

Input Voltage	36-72Vdc
Input Current	25-12.5Adc
Input Power	620W