



## Power-One's CompactPCI® Power Solutions Provide Extremely-High Current Densities

### Overview

Power-One's CompactPCI® power solutions are fully compliant to the PICMG® 2.11 Power Interface Specification using a standard Positronic 47-pin connector. Patented EDGE™ Technology provides very high output current capacities. At 50°C the 3U units deliver 40 amps on both the +5 and +3.3 volt outputs, and the 6U unit delivers 50 and 60 amps, respectively.

Remote sense and active current share on the +5, +3.3, and +12 volt outputs, along with internal ORing FETs, allow these units to be used in redundant, hot-swap applications. Power-One's CompactPCI® models meet international safety standards and display the CE Mark for the Low Voltage Directive.

### Features

- High current density in industry-standard packages.
- Wide range AC or DC input.
  - DC input 36-75 VDC
  - AC input 90-264 VAC with PFC
- High output power.
  - 3U x 8HP 200 and 250 Watts
  - 6U x 8HP 500 Watts
- High current on +3.3 and +5 volt outputs.
- Single-wire active current share and remote sense on +5, +3.3, and +12 volt outputs.
- Overtemperature, overvoltage, and overcurrent protection.
- Input Good and Power Supply Fault LED indicators.
- Inhibit and Enable inputs.

**NUCLEAR AND MEDICAL APPLICATIONS-** Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

**TECHNICAL REVISIONS-** The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

CompactPCI and PICMG are registered trademarks of the PCI Industrial Computer Manufacturers Group.

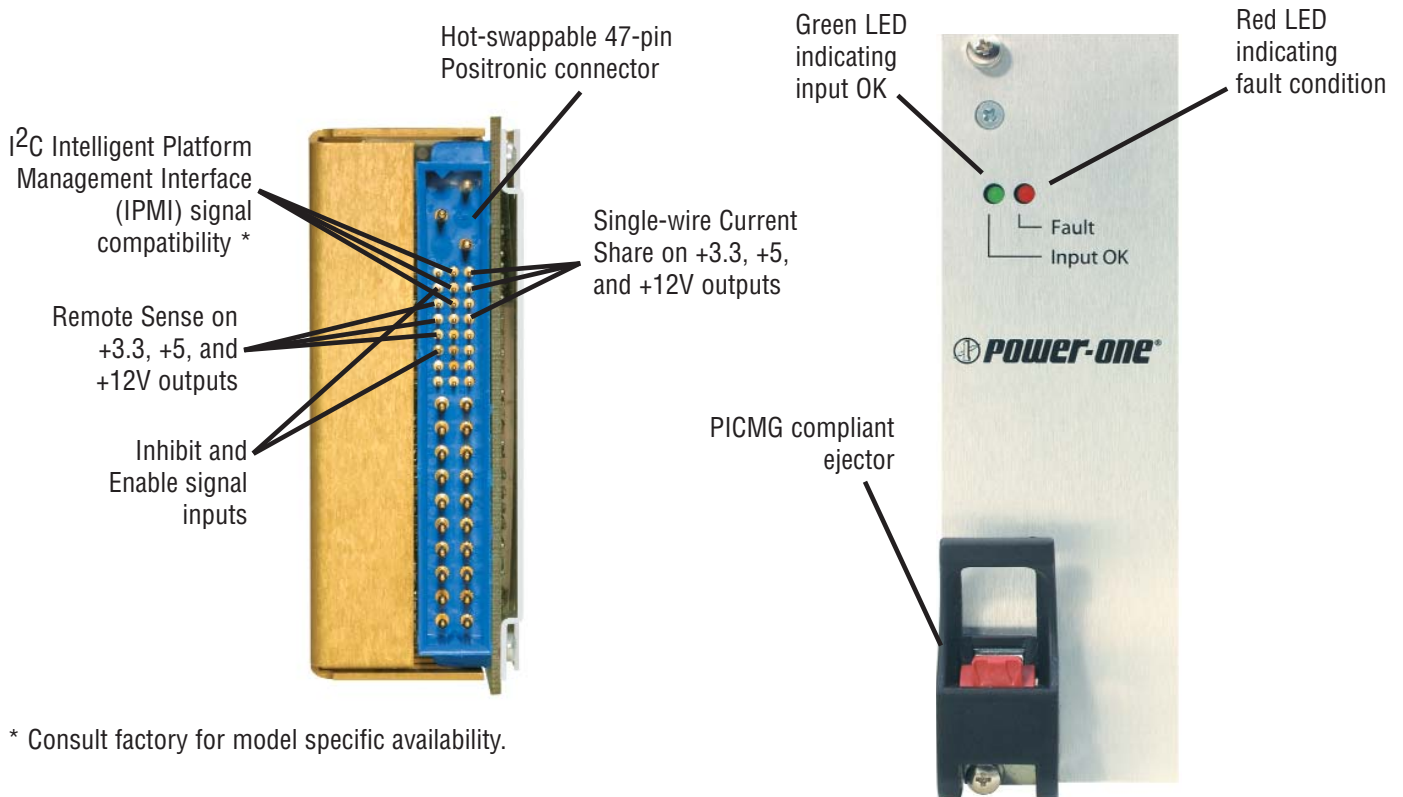
The Power-One logo and EDGE are trademarks of Power-One, Inc.

### Model Selection

Model	Power (Watts)	Height Profile	Input Voltage	+5V Current	+3.3V Current	+12V Current	-12V Current
★ CPA200-4530	200	3U	90-264 VAC	40 A	40 A	5.5 A	2 A
★ CPD200-4530	200	3U	36-75 VDC	40 A	40 A	5.5 A	2 A
★ CPA250-4530	250	3U	90-264 VAC	40 A	40 A	5.5 A	2 A
★ CPD250-4530	250	3U	36-75 VDC	40 A	40 A	5.5 A	2 A
★ CPA500-4530	500	6U	90-264 VAC	50 A	60 A	12 A	4 A

### The Only CompactPCI® Power Solutions with EDGE™ Technology

Power-One's Efficient Dual Geometric Edge (EDGE™) Technology facilitates high current densities, increases reliability by reducing component stresses, and decreases the amount of heat dissipated from the power supply into your system. The backbone of this patented technology is an interleaved, multi-channel forward converter utilizing transitional resonant switching techniques, and proprietary leading and trailing edge pulsewidth modulation. EDGE™ technology has a proven track record in high-availability power solutions such as Power-One's Net Series.



\* Consult factory for model specific availability.

### ★ QUICK EVALUATION DELIVERY (QED) PRODUCTS

These latest technology products are readily available at Power-One, or your local distributor, to quickly get power to your prototype system. In addition to fast delivery, Power-One's QED solutions provide industry-leading current and power densities.

## A Power Solution as Flexible as CompactPCI®

Power-One's CompactPCI® power solutions provide high currents on the 3.3V and 5V outputs and offer the flexibility of being able to simultaneously load these two outputs until their combined power equals the total rated wattage of the power supply. This provides greater flexibility to support the dynamic loading requirements of your current system and allows for system migration between voltages for future configurations.

Power-One will also be providing migration paths for communications protocols and applications. Communications protocol development plans include the I<sup>2</sup>C bus Intelligent Platform Management Interface. Applications specific development plans include 24V input CompactPCI® power solutions for wireless communication applications.

Extremely high current densities; 3U high units provide up to 40 amps on 3.3V and 5V outputs. The 6U unit provides 3.3V @ 60A and 5V @ 50A.

**DC-DC Power Supply** **CPD250-4530**

Input: 36...75 VDC

Output 1: +5V, 40 A

Output 2: +3.3V, 40 A

Output 3: +12V, 5.5 A

Output 4: -12V, 2 A

250 Watts Max.

US Patent Pending

Industry Standard 3U Profile Hot-Swap Power Supply

www.power-one.com

**power-one®**

UL<sup>®</sup> US

TUV

CE

ISO 9001 Certified

AC (with PFC) and DC input versions available

Patented EDGE Technology provides efficiencies of over 80%

EMI gasket facilitates compliance to system-level EMI requirements

Fully compliant to PICMG 2.11 Power Interface Specification

Full rated output available at 50°C with 400 LFM cooling

Comprehensive International regulatory agency compliances

## CPD DC/DC Series Specifications

### Input Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Input Voltage - DC	Continuous input range.	36		75	VDC
Hold-up Time	From 48 VDC Input.	4			ms
Input Current	At full rated load; 36 VDC, 48 VDC.		7.6, 5.4		A
Input Protection	Non-user serviceable, internally-located input line fuse.				
Inrush Surge Current	Internally limited by thermistor and electronic switch.			12	A
Operating Frequency	Switching frequency of main output transformer.	125		145	kHz
Input Transient Protection	Varistor.				

### Output Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Efficiency	Full rated load, 48 VDC Input.		80		%
Minimum Load; V1, V2, V3	Minimum load required to maintain regulation with no load on V4.	None			A
Minimum Load, V3	Minimum load on V3 required to maintain regulation on V4.	75% of V4 Load			A
Ripple and Noise	Full load, 20 MHz bandwidth. +5 and +3.3V. +12 and -12V			2 1.3	%
Output Power	CPD200-4530 with 250 LFM forced-air cooling. CPD250-4530 with 400 LFM forced-air cooling.			200 250	W
Overshoot /Undershoot	Output voltage overshoot/undershoot at turn-on.			0	%
Regulation	Line changes over the specified input range. Changes in load starting at 50% load and changing to 100% load; V1, V2, V3. V4 has droop regulation for passive current sharing.		0.5 1 4		%
Turn-on Delay	Time required for initial output voltage stabilization.		150		ms
Initial Setting Accuracy			±1		%

### Environmental Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating. Non-Operating.			10k 40k	ASL Ft.
Operating Temperature	With 250 LFM for CPD200 and 400 LFM for CPD250 forced-air cooling Derate linearly above 50°C by 2.5% per °C.	At 100% load: 0 At 50% load:		50 70	°C
Storage Temperature		-40		85	°C
Relative Humidity	Non-Condensing.	5		95	%RH
Shock	Peak acceleration.			20	GPK
Vibration	Random vibration, 10 Hz to 2 kHz, 3 axis.			6	GRMS

### Interface Signals and Internal Protection

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Oversvoltage Protection	Latch style oversvoltage protection.	120		130	%Vnom
Overload Protection	Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition.				
Overtemperature Protection	System shutdown due to excessive internal temperature, automatic reset.				
Power Fail (FAL#)	TTL compatible signal, open collector active low signal. Indicates any output below 90% and/or a low input <36VDC.				
Current Share	Accuracy of shared current with up to 6 parallel units. Single wire current share on V1, V2, and V3. V4 has passive droop current sharing.			10	%
Remote Sense	Available on V1, V2, and V3. Total voltage compensation for cable losses with respect to the main output.			150	mV
Inhibit (INH#)	TTL-compatible signal inhibited with GND or TTL "0".				
Enable (EN#)	Contact closure to external ground to start unit. On shortest pin (last make, first break).				
Overtemperature Warning	(DEG#) Provides warning when power supply temperature is within 20 degrees C of derating point. TTL-compatible open.				
Front Panel LED Status Indicators	Input OK (Green), Output Failure (Red).				

## CPD DC/DC Series Specifications

### Safety, Regulatory, and EMI Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	UL1950. cUL1950. EN60950 (TÜV).		Approved		
Dielectric Withstand Voltage	Input to Output per EN60950.	2120			VDC
Electromagnetic Interference	EN55022 / CISPR 22 - Conducted. Radiated.	A			Class
ESD Susceptibility	Per EN61000-4-2, level 4.	8			kV
Radiated Susceptibility	Per EN61000-4-3, level 3.	10			V/M
EFT/Burst	Per EN61000-4-4, level 3.	±2			kV
Input Surge	Per EN61000-4-5, level 3.		Line to Line Line to Ground	1 2	kV
Conducted Disturbance	Per EN61000-4-6, level 2.			3	V
Insulation Resistance	Input-to-Output.		10		MΩ



### CPD Pin Allocation Chart

PIN	PIN-LENGTH TYPE (NOTE 1)	SIGNAL NAME	DESCRIPTION	PIN	PIN-LENGTH TYPE (NOTE 1)	SIGNAL NAME	DESCRIPTION
1-4	M	V1	V1 Output	32	M	NC	Not Connected
5-12	M	RTN	V1 and V2 Return	33	M	V2 SENSE	V2 Remote Sense
13-18	M	V2	V2 Output	34	M	S RTN	Sense Return
19	M	RTN	V3 RETURN	35	M	V1SHARE	V1 Current Share
20	M	V3	V3 Output	36	M	V3SENSE	V3 Remote Sense
21	M	V4	V4 Output	37	M	NC	Not Connected
22	M	RTN	Signal Return	38	M	DEG#	Degrade Signal
23	M	RESERVED	Reserved	39	M	INH#	Inhibit
24	M	RTN	V4 Return	40	M	NC	Not Connected
25	M	NC	Not Connected	41	M	V2SHARE	V2 Current Share
26	M	RESERVED	Reserved	42	M	FAL#	Fail Signal
27	S	EN#	Enable	43	M	NC	Not Connected
28	M	NC	Not Connected	44	M	V3SHARE	V3 Current Share
29	M	NC	Not Connected	45	L	CGND	Chassis Ground
30	M	V1SENSE	V1 Remote Sense	46	M	+DCIN	+ DC Input
31	M	NC	Not Connected	47	M	-DCIN	- DC Input

NOTE 1) L = Long-Length Pins, M = Medium-Length Pins, S= Short-Length Pins

## CPA AC/DC Series Specifications

### Input Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Input Voltage - AC	Continuous input range.	90		264	VAC
Input Frequency		47		63	Hz
Hold-up Time		20			ms
Input Protection	Non-user serviceable, internally-located input line fuse.				
Inrush Surge Current	Internally limited by thermistor and electronic switch.			15	A
Power Factor	Meets EN61000-3-2.	0.95			W/VA
Operating Frequency	Switching frequency of main output transformer.	125		145	kHz
Input Transient Protection	Varistor.				

### Output Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Efficiency	Full rated load, 115/230 VAC Input.		80		%
Minimum Load; V1, V2, V3	Minimum load required to maintain regulation with no load on V4.	None			A
Minimum Load, V3	Minimum load on V3 required to maintain regulation on V4.	75% of V4 Load			A
Ripple and Noise	Full load, 20 MHz bandwidth. +5 and +3.3V. +12 and -12V			2 1.3	%
Output Power	CPA200-4530 with 250 LFM forced-air cooling. CPA250-4530 with 400 LFM forced-air cooling. CPA500-4530 with 400 LFM forced-air cooling.			200 250 500	W
Overshoot /Undershoot	Output voltage overshoot/undershoot at turn-on.			0	%
Regulation	Line changes over the specified input range. Changes in load starting at 50% load and changing to 100% load; V1, V2, V3. V4 has droop regulation for passive current sharing.		0.5 1 4		%
Turn-on Delay	Time required for initial output voltage stabilization.		150		ms
Initial Setting Accuracy			±1		%

### Environmental Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating. Non-Operating.			10k 40k	ASL Ft.
Operating Temperature	With 250 LFM for CPA200, 400 LFM for CPA250, and 400 LFM for CPA500 forced-air cooling Derate linearly above 50°C by 2.5% per °C.	At 100% load: 0 At 50% load:		50 70	°C
Storage Temperature		-40		85	°C
Relative Humidity	Non-Condensing.	5		95	%RH
Shock	Peak acceleration.			20	GPK
Vibration	Random vibration, 10 Hz to 2 kHz, 3 axis.			6	GRMS

## CPA AC/DC Series Specifications

### Interface Signals and Internal Protection

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Overvoltage Protection	Latch style overvoltage protection.	120		130	%Vnom
Overload Protection	Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition.				
Overtemperature Protection	System shutdown due to excessive internal temperature, automatic reset.				
Power Fail (FAL#)	TTL compatible signal, open collector active low signal. Indicates any output below 90% and/or a low input <90VAC.				
Current Share	Accuracy of shared current with up to 6 parallel units. Single wire current share on V1, V2, and V3. V4 has passive droop current sharing.			10	%
Remote Sense	Available on V1, V2, and V3. Total voltage compensation for cable losses with respect to the main output.			150	mV
Inhibit (INH#)	TTL-compatible signal inhibited with GND or TTL "0".				
Enable (EN#)	Contact closure to external ground to start unit. On shortest pin (last make, first break).				
Overtemperature Warning	(DEG#) Provides warning when power supply temperature is within 20 degrees C of derating point. TTL-compatible open.				
Front Panel LED Status Indicators	Input OK (Green), Output Failure (Red).				

### Safety, Regulatory, and EMI Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	UL1950. cUL1950. EN60950 (TÜV).		Approved		
Dielectric Withstand Voltage	Input to Output per EN60950.	4243			VDC
Electromagnetic Interference	EN55022 / CISPR 22 - Conducted. Radiated.	A A			Class
ESD Susceptibility	Per EN61000-4-2, level 4.	8			kV
Radiated Susceptibility	Per EN61000-4-3, level 3.	10			V/M
EFT/Burst	Per EN61000-4-4, level 3.	±2			kV
Input Surge	Per EN61000-4-5, level 3.	1 2	Line-to-Line Line-to-Ground		kV
Conducted Disturbance	Per EN61000-4-6, level 2.			3	V
Insulation Resistance	Input-to-Output.		10		MΩ

### CPA Pin Allocation Chart



PIN	PIN-LENGTH TYPE (NOTE 1)	SIGNAL NAME	DESCRIPTION	PIN	PIN-LENGTH TYPE (NOTE 1)	SIGNAL NAME	DESCRIPTION
1-4	M	V1	V1 Output	32	M	NC	Not Connected
5-12	M	RTN	V1 and V2 Return	33	M	V2 SENSE	V2 Remote Sense
13-18	M	V2	V2 Output	34	M	S RTN	Sense Return
19	M	RTN	V3 RETURN	35	M	V1SHARE	V1 Current Share
20	M	V3	V3 Output	36	M	V3SENSE	V3 Remote Sense
21	M	V4	V4 Output	37	M	NC	Not Connected
22	M	RTN	Signal Return	38	M	DEG#	Degrade Signal
23	M	RESERVED	Reserved	39	M	INH#	Inhibit
24	M	RTN	V4 Return	40	M	NC	Not Connected
25	M	NC	Not Connected	41	M	V2SHARE	V2 Current Share
26	M	RESERVED	Reserved	42	M	FAL#	Fail Signal
27	S	EN#	Enable	43	M	NC	Not Connected
28	M	NC	Not Connected	44	M	V3SHARE	V3 Current Share
29	M	NC	Not Connected	45	L	CGND	Chassis Ground
30	M	V1SENSE	V1 Remote Sense	46	M	ACN	AC Input Neutral
31	M	NC	Not Connected	47	M	ACL	AC Input Line

NOTE 1) L = Long-Length Pins, M = Medium-Length Pins, S= Short-Length Pins