



# JASPER ELECTRONICS



## FEATURES

- Standard PCI Output Voltages: 5.0V, 3.3V, ± 12.0V
- Hot Swap, N+1 Redundant with Internal OR-ing MOSFETs
- Input: >.99 Power Factor Corrected AC 90-264V, or DC 36-72V
- Current Sharing on 5.0V, 3.3V and +12.0V Outputs
- Standard 47 Pin Connector Configurations
- Custom Configurations To Meet User Requirements
- Excellent Performance, Competitively Priced
- 2 Year Warranty
- Complies With All Requirements of PICMG Power Interface Specifications
- Fully Compliant with the EU RoHS Directive
- cCSAus, CE Marked



## CONTACT

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# CompactPCI® Series

## 500 Watt - 6U 8HP Power Supplies

(PICMG® COMPLIANT)



COMPACTPCI® SERIES FRONT VIEW

## GENERAL OVERVIEW

Jasper's Compact PCI Power Supplies comply with the industry standard PICMG requirements and are available in AC or DC input, from 175W to 500W DC output.

### FEATURES ON SELECT MODELS INCLUDE:

- AC/DC: 90-264VAC Input – 175, 200, 250, 300, 350, & 500 Watt Models – 3U & 6U x 8HP
- DC/DC: 18-72VDC Input – 175, 200, 250, 300, 350, & 500 Watt Models – 3U & 6U x 8HP
- PICMG 2.11 Compliant
- Active PFC
- UL/CSA, NEMKO/TUV & CE Certified
- RoHS Compliant
- Current Sharing on 3.3, 5 & +12V Rails
- Hot Swap & ORing Diodes N+1 Operation
- Standard 47 Pin Output Connector with 38 & 32 Pin Options (Some Models)
- Models can be ruggedized against high shock, vibration, and humidity to meet MIL-STD-810 requirements
- Customizing To Meet Your System Requirements Is Our Specialty



ISO9001:2015

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## TECHNICAL SPECIFICATIONS

INPUT				
<b>Voltage/ Current</b>	AC 90-264V, 8.0A max, 47-63Hz, 1 Phase, or DC 36-72V, 13.2A @ 48.0V (nom.)			
<b>Fusing</b>	AC: 10.0A, 250V time lag internal line fuse provided, non-user serviceable			
<b>AC Power Factor</b>	Meets Harmonic Correction per IEC 1000-3-2. 0.99 line PFC typical at AC 115V, full load			
<b>Inrush Current</b>	Soft start, ~25oC cold start current: AC 30.6A (rms) @ 230V, DC 20.5ApK @ 48V			
<b>Efficiency</b>	AC 73% typical at 115V, full load. DC 77% typical at 48.0V			
<b>Input Voltage Protection (UVP/ OVP)</b>	Auto DC output shutdown when input rises or falls below safe operating limits. Automatic recovery when input returns to within normal operating range AC: UVP ≈ 80V or 150V DC: UVP ≈ 36V, OVP ≈ 75V			
OUTPUT				
Voltage/Current (V/A)	V1	V2	V3	V4
<b>AC Model: PCI504-1022-4</b>	5.0/50	3.3/30	+12/10(15pk)	-12/3.0(5pk)
Total continuous loading on all outputs not to exceed 500W. Peak loading <60sec., with a duty cycle <10%				
<b>DC Model: DPCI504-1022-4</b>	5.0/50	3.3/30	+12/10(15pk)	-12/3.0(5pk)
Total continuous loading on all outputs not to exceed 500W. Peak loading <60sec., with a duty cycle <10%				
<b>Line Regulation</b>	At the sense point over full input range, ±0.10% typical, sense leads connected			
<b>Load Regulation</b>	AC: typical, V1, V2 ±0.5%; V3 ±1.0%; V4 ±3.0%. DC: typical, V1 ±1.0%; V2 ±1.5%; V3, V4 ±4.0%			
<b>Minimum Loading</b>	AC: None required in single unit applications. 4.0A minimum required on V1 in N+1 configurations DC: 3~5A minimum required on V1			
<b>Stability</b>	Output drift <±0.2% after 20 minute warm-up			
<b>Temperature Coefficient</b>	0° - 50°C, after 20 minute warm-up. AC: <±0.04%/°C; DC: <±0.02%/°C			
<b>Dynamic Response</b>	AC: Peak transient less than 250mV, recovers to within 1% in less than 0.5msec with a 50% load change DC: Peak transient less than 250mV, recovers to within 1% in less than 1.0msec with a 25% load change			
<b>Ripple and Noise (PARD)</b>	For all outputs, 50mV max or 1% peak-to-peak nominal, which ever is greater, DC to 20MHz bandwidth with a coaxial probe and 0.1µF/22µF capacitors at the output terminals			
<b>Current Sharing/ Parallel N+1 Operation</b>	V1, V2, V3 outputs. Single wire connection for ±10% current sharing between any number of units			
<b>Remote Sense</b>	V1, V2, V3 outputs compensate for up to 0.25V total line drop, in the load cables, sense leads connected. Outputs are internally sensed if the leads are opened			
<b>AC Hold-Up Time</b>	Outputs remain in regulation following loss of AC power 22.8msec min @ 115V or 230V, full load			
<b>Over Current/ Short Circuit Protection</b>	Current limit on all outputs, 120-130% max load typical. Automatic recovery when the overload is removed			
<b>Over Voltage Protection</b>	Non-crowbar type. Any output that exceeds 25% ±10% of nominal Vout will cause all outputs to latch off. Remote inhibit, enable or input recycle required to reset			
<b>Over Temperature Protection</b>	Internal temperature sensing. Causes all outputs to latch off. Automatic recovery when the condition causing the overtemp is corrected			
<b>Over/ Under Shoot</b>	None at turn-on or turn-off			
<b>Refundant/ Hot Swap</b>	Full power N+1 redundant, hot swap capable			
SIGNALS, INDICATORS AND CONTROLS				
<b>Remote Enable</b>	Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1			
<b>Remote Inhibit</b>	Enabled by open circuit or TTL logic 1. Disabled by closed circuit or TTL logic 0			

\*Specifications subject to change without notice.

<b>Power Fail Warning</b>	Loss of input AC causes a TTL compatible signal to go low >4msec prior to V1 or V2 output dropping out of regulation. At AC turn-on, signal stays low until outputs are in regulation. PF signal also triggered in both AC and DC input models by any output dropping below 10% of nominal
<b>LED Indicator</b>	Dual uni-color LEDs. Normally On, Green "Power" indicates input power ON and outputs within regulation. Normally Off, Amber "Fault" indicates an output power fault or remote output inhibit enabled
<b>Output Adjust</b>	Remote electrical trim available for V1, V2. Manual adjust for V1, V2, V3, V4 <b>CAUTION: User adjustment of output voltage from factory set points is not recommended in order to maintain current sharing compatibility in N+1 applications.</b>
<b>Switch, On/Off (Optional)</b>	Integral with lower latch. Outputs are disabled with open (unlocked) latch
<b>MECHANICAL</b>	
6U x 8HP x 233mm Eurocard. Complies with all current PICMG® CompactPCI specifications	
<b>Power Density</b>	5.0 Watts/Cubic Inch
<b>Weight</b>	Approx: 4.8 lbs / 2.38 kg.
<b>Retaining Latches</b>	Supplied with dual Rittal #3686.135 Type VII (Telecom) latches. Other manufacturers and types available. Consult factory
<b>Guide Rails</b>	Supplied with .260[6.61] offset guide rails for use with Rittal 3687.832 (or equivalent) PSU guides
<b>Front Panel Overlay</b>	Supplied with Lexan overlay and JE Logo. May be deleted, or supplied with customer specified logo or other information. Consult factory
<b>OPERATING ENVIRONMENT</b>	
<b>Operating Temperature</b>	AC: -20° to + 50°C ambient; DC 0° to + 50°C at full load, with specified airflow. Derates linearly to 50% at +70°C
<b>Cooling</b>	A minimum of 800 lfm direct forward airflow required to achieve full rated power and specified MTBF. Consult factory for derating guidelines with reduced or reversed airflow
<b>Relative Humidity</b>	Up to 90% RH, non-condensing
<b>Operational Vibration</b>	2.0G peak, 5 – 500Hz along three orthogonal axis
<b>Storage Temperature</b>	AC: -30° to 85° C. DC: -40° to 85°C
<b>Altitude</b>	Operating to 10,000 ft; Storage to 50,000 ft.
<b>MTBF</b>	Designed for 150,000 hrs at 25°C
<b>Calibration</b>	Modules will maintain the output voltage and load capacity over the life of the equipment. Annual re-calibration or other maintenance service is not required
<b>INTERCONNECT</b>	
<b>Input/ Output Connectors</b>	47 circuit sequential contact, hot pluggable type. 2 AC input, 1 PE contact rated 40.0A. 20 DC output power contacts rated 28.0A each, 24 signal contacts rated 3.0A each. Ratings continuous, all contacts under load. UL94V-0 glass filled thermoplastic material, secured to the main circuit board assembly in the rear of the unit. Positronic Ind. P/N PCIH47M400A1 Mates with PI P/N PCIH47F300A1.
Use of the specified mating connector is required to insure proper "make/break" sequential contact sequence	
<b>SAFETY, REGULATORY AND EMC</b>	
Designed to comply with the relevant industry standards of the authorities having jurisdiction	
<b>AC</b>	Recognized to U.S. and Canadian Bi-National Standard UL 60950-1, 1st. Ed., 2007, and CSA C22.2 No. 60950-1-03, 2007 (cCSAus Mark). CE Marked
<b>DC</b>	Pending JE engineering evaluation of the final design configuration, this model series may be submitted for certification to U.S. and Canadian Bi-National Standards; and for approval to IEC Standards. CE Mark pending final configuration acceptance
<b>EMI Filtering</b>	Meets FCC Class A, and CISPR EN 55022 Level A, radiated and conducted
<b>Transient Protection</b>	MOV. Withstands transients/bursts as specified by EN 61000-4-4. AC: Level 2; DC: Level 1
<b>Touch Current</b>	Typical 0.7mA @ 50/60Hz, 230V AC per UL 60950 test procedures (Sec. 5.0)
<b>Dielectric Withstand</b>	Meets IEC 60950 regulations
<b>Routine Factory Tests</b>	Di-electric strength (hi-pot) input-to-chassis and input-to-outputs: AC: 2121V DC; DC: 1500V DC; MegOhm to 500V output-to-chassis

\*Specifications subject to change without notice.

## I/O CONNECTOR FUNCTIONS

PIN#	SEQ <sup>(2)</sup>	FUNCTION	
01-04	2	+5.0V	V1 Output
05-12	2	GND	V1+V2 Return
13-18	2	+3.3V	V2 Output
19	2	GND	V3 Return
20	2	+12.0V	V3 Output
21	2	-12.0V	V4 Output
22,23	2	N/C	No Connection (Reserved)
24	2	GND	V4 Return
25,26	2	N/C	No Connection (Reserved)
27	<b>3</b>	R/EN	Remote Enable. Close circuit to GND
28	2	N/C	No Connection (Reserved)
29	2	V1-ADJ	V1 Remote Voltage Adjust
30	2	+S1	+5.0V (V1) Remote Sense
31	2	N/C	No Connection (Reserved)
32	2	V2-ADJ	V2 Remote Voltage Adjust
33	2	+S2	+3.3V (V2) Remote Sense
34	2	S-RTN	Sense Return for V1, V2, V3
35	<b>3</b>	ISHR-1	+5.0V (V1) Current Share
36	2	+S3	+12.0V (V3) Remote Sense
37	2	N/C	No Connection (Reserved)
38	2	DEG	Thermal Degrade Signal.
39	2	R/INH	Remote Inhibit. Close circuit to GND
40	2	N/C	No Connection (Reserved)
41	<b>3</b>	ISHR-2	+3.3V (V2) Current Share
42	2	PF	Power Fail Signal
43	2	N/C	No Connection (Reserved)
44	<b>3</b>	ISHR-3	+12.0V (V3) Current Share
45	<b>1</b>	PE	Protective Earth (chassis) Ground.
46	2	Input Pwr	AC: Neutral (N/ACC) Input Power; DC: +Vin.
47	2	Input Pwr	AC: Line(L/AC) Input Power; DC: -Vin.

\*(1) Contact mating sequence. 1= First to make/ last to break

## LIMITED WARRANTY POLICY

All Jasper Electronics (JE) standard model power supplies and products are guaranteed to be free of defects in workmanship and materials for a minimum of two (2) years from the date of original shipment, when operated within specification. Non-standard (custom) power supplies and products may be warranted on an individual basis. The unused portion of this warranty is fully transferable with the original equipment in which the power supply is installed. Please see our website for full warranty statement.

## MARKING AND LABELING

Dual labels. A 2.40"x1.60" adhesive label is factory applied to the top cover. Imprinted with JE model identification data (black-on-white), including JE name, safety certified model name, input/output ratings, manufacturing facility identification code, safety and RoHS Marks. Open space to apply any future authorized product safety certification marks.

A second 2.35"x1.18" adhesive label is applied directly adjacent by the distribution center just prior to shipping. It includes the specific model configuration code, JE part number, revision letter code, serial number and 4-digit (week/year) manufacturing date code.

Space is available on labels for modified or custom models for a user specified part number or model description. Use of non-standard JE labels, or user required marking, such as bar codes, user revision codes, user name or logo, etc, is possible but may incur additional costs.

## PACKAGING AND SHIPPING

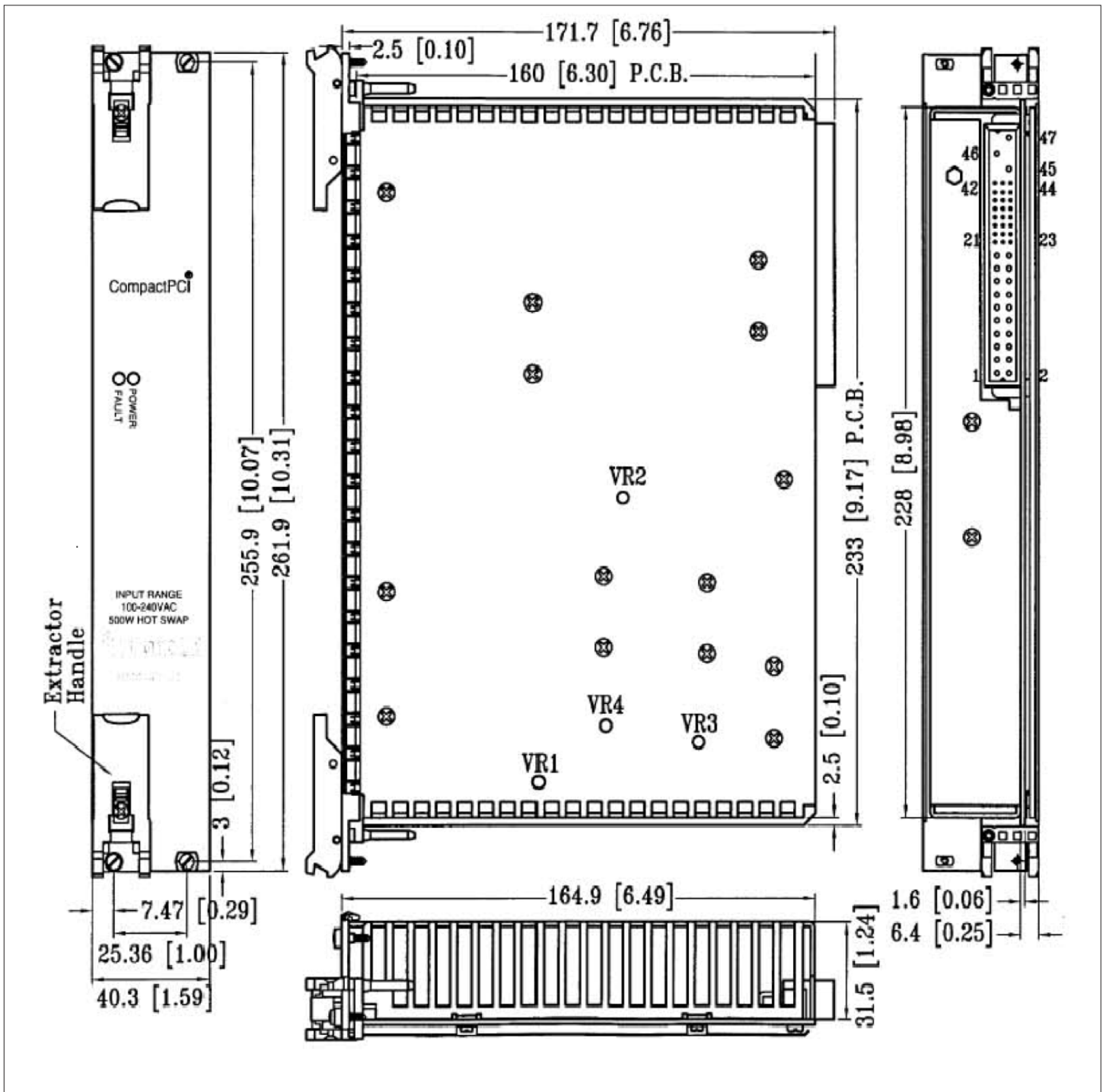
Every reasonable precaution is taken to ensure that the customer receives Jasper Electronics products in good condition. Each item was new when it left the factory and was packed in a container approved by the carrier.

JE makes shipments FOB from the Anaheim, CA, factory or other subsidiary facilities. When placed on board the carrier's vehicle, the equipment becomes the customer's property. The customer is responsible for examining each container when it arrives at the customer's facility, and for immediately reporting any damage to the delivering carrier. The customer shall make any and all subsequent claims for redress of in-transit damage directly to the carrier that delivered the shipment to the customer's facility and not to JE.

## CONFIGURATION OPTIONS

OPTION	CODE
(1) Connector Type	4 = 47 pin PICMG standard. No other options currently available.
(2) Latch Type	T = Telecom Type VII. N = None provided
(3) On/ Off Switch	Blank = Not included (standard). I = Included option. Not available with option N latch
(4) Overlay	S = Standard, with JE logo, model designation, etc. B = Blank overlay applied; no logo, model designation, etc. N = No overlay provided; M = Custom overlay – User specified. May require a factory assigned custom model code (5).
(5) Custom Configuration	M = Modified, followed by a factory assigned 4-digit number to identify a user specified configuration. Such models may include special or non-standard features and/or options, or be in a configuration differing sufficiently from the design of the approved similar standard model from which it is derived to require re-evaluation of all or part of the design to insure continuing compliance with all safety requirements. Option codes 2, 3 and 4 may not be present in the model description as these requirements are generally included in the user specification documentation on file with the factory. Consult the factory for exact requirements. <i>(May incur additional cost. Consult factory.)</i>
(6) RoHS Compliant	G = Required code. All Jasper products in this series are fully compliant with the requirements of Directive 2002/95/EC Restrictions of Hazardous Substances (RoHS) and are identified with the letter code "G" in the JE part number and model description on the unit labels and related documents (sales orders, etc). All materials, processes and packaging used in the assembly and shipping of this product comply. Examples: PCI504-1022-4-TSG (AC input, std model) DPCI504-1022-4-M4662G (DC input, custom model)

# COMPACTPCI® 500W OUTLINE DRAWING



# INNOVATIVE SPECIALTY DC POWER SYSTEMS

*Standard and Custom Power Supplies from 5W to 10KW*

## TRAFFIC CONTROL POWER SUPPLIES



- 70-400+ Watts / 120 and 220 VAC Models Available
- CALTRANS TEES, NYSDOT, CDOT, GDOT Compliant for 332, 334, 336, 342, 344, and 346 Series cabinets
- RoHS and NEMA Compliant
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## CUSTOM POWER DISTRIBUTION ASSEMBLIES (PDAs)



- Compliant with TEES 2020
- 1U smaller than the PDA2-LX and PDA3-LX
- User accessible slots as specified
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## COMPACT PCI



- AC or DC input, 175W - 500W DC output, active PFC
- 3U x 8HP, 6U x 8HP sizes
- PICMG 2.11 compliant, UL/CSA, NEMKO/TUV/CE certified, ROHS compliant
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Industrial Computing, Military, Satellite Comm, Test, Transportation, Telecom, Aerospace**

## SPECIALTY HOT-SWAPPABLE POWER SUPPLIES



- 200-1500W, Universal Input, 5-54VDC Output
- Hot Swap. N+1, 90+% Efficiency
- 1U Form Factors
- 30+ Variations for Various Applications Including Nuclear
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## RACK POWER SYSTEMS



- 200W-1500W, 2-8 slots, single or mixed output voltages, up to 10KW total
- Single, dual, or individual unit AC or DC input
- Internally or externally redundant DC outputs
- Standard 19" and 23" size or user-specified configurations also available
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## CUSTOMS & MODIFIED STANDARDS



- 75W-2KW
- Single to 7 outputs
- Designed and built to custom or semi-custom specifications
- Ruggedization against shock/ vibration/ humidity optional
- Custom electrical specs, chassis, paint, labeling, connectors, interface all available

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## LOW NOISE CONVECTION / CONDUCTION COOLED POWER SUPPLIES



- 200W-500W, 90—264VAC full range input with 12-54 VDC Output
- Wide operating temperature range / high efficiency
- Small form factors
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, IT, Sensitive Electronics**

## MEDICAL ADAPTERS



- 6W-250W, Efficiency levels V & VI
- Desktop, Wall-mount, and Interchangeable AC plug types
- Large selection of output connectors – additional cable lengths available
- UL60601 (medical) approved adapters available
- Ruggedization against shock/ vibration/ humidity optional

