

Raritan Power Management Solutions

The Challenges

Life in the data center isn't getting any easier. Today, both IT and facilities managers are facing a number of unprecedented challenges:

- ▶ **Rising energy costs.** Energy costs are higher than ever. In fact, data center facilities costs, including the costs of energy, have grown rapidly in recent years, from the traditional one to three percent of IT's total budget, to around five to fifteen percent.
- ▶ **A lack of knowledge.** It's more difficult to stay on top of conditions and events that are affecting the performance of the equipment.
- ▶ **Identifying areas for improvement.** You may know there's a problem, but what is the most efficient way to address it?
- ▶ **Maintaining uptime and improving productivity.** With staff stretched to the limit, avoiding issues is becoming a major goal.
- ▶ **Identifying potential cooling issues.** Without detailed environmental information, it's hard to pin down hot-spot locations and measure whether changes are helping or exacerbating the problem.

What Our Solutions Offer

With our energy management hardware and software, IT administrators and facilities managers can:

- ▶ **Save power and money**
 - Ensure that servers are not idle, consuming energy
 - Track improvements from energy-saving initiatives
 - Set cooling to ensure proper equipment operation while minimizing energy consumption
 - Deploy new devices in cool spots or areas with sufficient cooling capacity
 - Use outlet-level metering to baseline energy usage by IT device
- ▶ **Better understand and manage the current IT environment**
 - Prioritize and sequence outlets powering on, so devices do not trip circuit breakers due to inrush currents
 - Create and manage user groups, bulk configure rack PDUs and consolidate PDUs across multiple data centers
- ▶ **Make informed capacity and usage decisions**
 - Determine whether there's enough power at the rack to support adding devices
 - Identify underutilized servers that are candidates for virtualization or decommissioning
 - Balance power loads across racks and circuits
 - Measure actual peak current and compare it to branch circuit capacity
- ▶ **Improve uptime and staff productivity**
 - Gather actual peak and average data for trending and reporting over time
 - Bill back customers with a detailed view of data center energy consumption by user-defined groups, e.g., department, type of equipment or applications
 - Turn on and off individual outlets remotely to shorten downtime and eliminate truck rolls
 - Simplify administration with control of outlet groups via a single IP address
 - Use remote power monitoring and management to improve mean time to repair (MTTR)
 - Use environmental monitoring to ensure that the data center itself promotes improved mean times between failures (MTBF)
 - Set outlet-level and PDU-level threshold monitoring alerts before potential outages occur
 - View data center power consumption via a single Web dashboard for simple power monitoring across racks, offices and data centers
- ▶ **Prevent servers from shutting down or failing**
 - Monitor the health and status of equipment and become aware of potential problems before they occur
 - Identify hot spots in racks and throughout the data center before they damage or destroy servers
 - Use environmental sensors to ensure the data center is being run in an energy-efficient manner and in ways which contribute to improved reliability

Power IQ Specifications Charts

Virtual Appliance

	Number of devices managed	VMWare Virtual Appliance	CPU	RAM	Disk	Media	Host OS
PWIQ20-VA	20	ESX or ESX3i	Single Core	2GB	80GB	DVD	Any
PWIQ50-VA	50	ESX or ESX3i	Dual Core	2GB	80GB	DVD	Any
PWIQ100-VA	100	ESX or ESX3i	Dual Core	2GB	80GB	DVD	Any
PWIQ200-VA	200	ESX or ESX3i	Dual Core	3GB	80GB	DVD	Any
PWIQ300-VA	300	ESX or ESX3i	Dual Core	3GB	80GB	DVD	Any
PWIQ400-VA	400	ESX or ESX3i	Quad Core	4GB	80GB	DVD	Any
PWIQ500-VA	500	ESX or ESX3i	Quad Core	4GB	80GB	DVD	Any
PWIQ1000-VA	1000	ESX or ESX3i	Quad Core	4GB	80GB	DVD	Any



Hardware Appliance

	Number of devices managed	Rack Space	Dimensions (WxDxH)	Weight	Power	Operating Temperature	MTBF	KVM Admin Port	Serial Admin Port	Console Port
PWIQ20-E1	20	2U	687mm (W) x 475mm (D) x 88mm (H); 27.05" (W) x 18.70" (D) x 3.46" (H)	20kg; 44.1 lbs	Dual Supply (2 x 500 watt)	10-40 C; 50-104 F	53,564 hours	DB15 + PS2 or USB Keyboard/ Mouse	DB10	3 x USB 2.0 ports
PWIQ50-E1	50									
PWIQ100-E1	100									
PWIQ200-E1	200									
PWIQ300-E1	300									
PWIQ400-E1	400									
PWIQ500-E1	500									
PWIQ1000-E1	1000									

Sensors

DPX-T1 <ul style="list-style-type: none"> • Temperature sensor • 3 m cord 	DPX-T1H1 <ul style="list-style-type: none"> • Temperature and humidity sensor • 3 m cord 	DPX-T2H2 <ul style="list-style-type: none"> • Dual temperature and humidity sensors 3 m apart • 6 m cord 	DPX-ENVHUB4 <ul style="list-style-type: none"> • 4 port (RJ-12) sensor expansion hub
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DPX-T1H1



DPX-T2H2



DPX-ENVHUB4

PX Specifications Chart

Model	Switched Receptacles	Input Voltage Phase	Maximum Amps Derated VA	Rack Space	Plug Type	Dimensions (WxDxH)	Weight
DPCR8A-16	8 x IEC C-13	230 VAC, 1 PH	16A 3.7kVA	1U	IEC 60309 16A	440 x 167 x 44mm; 17.32" x 6.57" x 1.73"	3.6 kg; 8.0 lbs
DPCS12A-16	12 x IEC C-13	230 VAC, 1 PH	16A 3.7kVA	Zero U	IEC 60309 16A	57 x 50 x 1253mm; 2.24" x 1.97" x 49.33"	3.5 kg; 7.7 lbs
DPCS20A-16	20 x IEC C-13	230 VAC, 1 PH	16A 3.7kVA	Zero U	IEC 60309 16A	57 x 50 x 1798mm; 2.24" x 1.97" x 70.79"	5.2 kg; 11.3 lbs
DPCR20A-32	20 x IEC C-13	230 VAC, 1 PH	32A 7.4kVA	2U	IEC 60309 32A	440 x 274 x 88mm; 17.32" x 10.79" x 3.46"	6.1 kg; 13.4 lbs
DPCS20A-32	20 x IEC C-13	230 VAC, 1 PH	32A 7.4kVA	Zero U	IEC 60309 32A	57 x 50 x 1869mm; 2.24" x 1.97" x 73.58"	5.2 kg; 11.3 lbs
DPCR20A-16	20 x IEC C-13	230 VAC, 1 PH	16A 3.7kVA	2U	IEC 60309 16A	440 x 274 x 88mm; 17.32" x 10.79" x 3.46"	6.1 kg; 13.4 lbs
PX-5314	12 x IEC C-19	400 VAC, 3 PH	16A per phase 11.1kVA	Zero U	IEC 60309 16A	52 x 65 x 1539mm; 2.06" x 2.57" x 60.59"	5.6 kg; 12.3 lbs
PX-5528	18 x IEC C-13 6 x IEC C-19	400 VAC, 3 PH	32A per phase 6 x 16A circuit 22.2kVA	Zero U	IEC 60309 32A	52 x 65 x 1780mm; 2.06" x 2.57" x 70.08"	10.8 kg; 23.8 lbs
PX-5318	12 x IEC C-19	400 VAC, 3 PH	32A per phase 6 x 16A circuit 22.2kVA	Zero U	IEC 60309 32A	52 x 65 x 1780mm; 2.06" x 2.57" x 70.08"	10.8 kg; 23.8 lbs
DPCS16A-32-BS4343	12 x IEC C-13 4 x IEC C-19 all individually fused	230 VAC, 1 PH	32A 7.4kVA	Zero U	IEC 60309 32A	57 x 75 x 1463mm; 2.24 x 2.95 x 57.60"	4.42 kg; 9.74 lbs

Add 88mm / 3.5" (2U) to the height of the Zero U units for the PX power cable's radius of curvature. Allow approximately 114mm (4.5") additional depth to accommodate the 1U and 2U brackets, device plugs and cables. Meter accuracy +/- < 5%. Mounting brackets are included for 1U and 2U models.



Plugs and Receptacles Configuration Chart

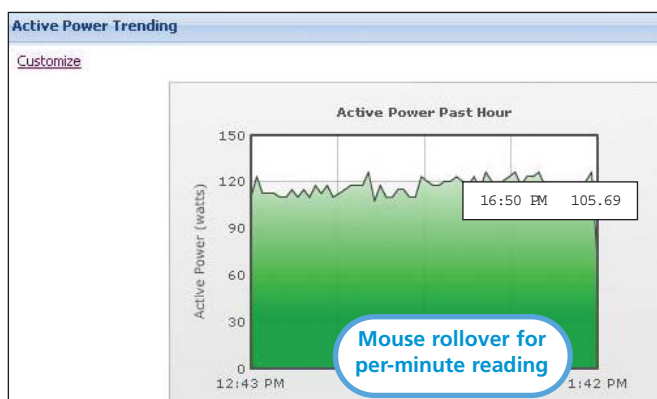
IEC			
RECEPTACLE	PLUG	RECEPTACLE	PLUG
IEC 6H-R 16 Ampere 230 Volt European CE Mark	IEC 6H-P	IEC 6H-R 32 Ampere 230 Volt European CE Mark	IEC 6H-P
IEC C-13 10 Ampere 250 Volt International	IEC C-14	IEC C-19 16 Ampere 250 Volt International	IEC C-20



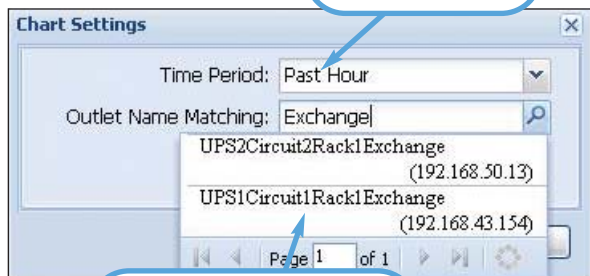
Raritan Power Management Solutions

Raritan Power IQ™ energy management software offers you:

- ▶ Power and environmental data aggregation for APC® switched and metered rack PDUs and Raritan PX™ intelligent rack PDUs
- ▶ Trending, analysis and reporting by customer or department, IT device or group of devices and rack, row and data center
- ▶ Rack PDU health monitoring
- ▶ An open data model for easy integration with enterprise reporting systems



Past hour, past minute, past month



Web server with dual power supply & redundant circuit

The screenshot shows a table titled "PDU Listing" with columns: IP, Name, Location, Status, Manufacturer, Model, and Firmware. The table contains 14 rows of data. A callout bubble says "Sortable display of PDUs".

IP	Name	Location	Status	Manufacturer	Model	Firmware
192.168.58.16	Phase_A_Ckt_14	Rack 6R	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.17	Phase_C_Ckt_18	Rack 6L	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.18	Phase_B_Ckt_16	Rack 5R	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.19	Phase_C_Ckt_17	Rack 5L	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.20	Phase_B_Ckt_9	Rack 4R	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.21	Phase_C_Ckt_11	Rack 4L	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.22	Phase_C_Ckt_12	Rack 3R	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.23	Phase_A_Ckt_13	Rack 3L	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.24	Phase_A_Ckt_2	Rack 1R	OK	Raritan	PX-Default	1.1.0-6684
192.168.58.25	Phase_B_Ckt_3	Rack 1L	OK	Raritan	PX-Default	1.1.0-6684

Raritan PX intelligent rack PDUs provide:

- ▶ A wide selection including single-phase and three-phase models
- ▶ Server management techniques and provisioning for data center power and energy management using standards-based protocols
- ▶ Rich configuration and customization including provisioning outlets and restricting access to defined users and user groups
- ▶ Secure power with SNMPv3 encryption, 128-bit SSL, 256-bit AES encryption, strong passwords, permissions, authentication and authorization via directory services including LDAP and Active Directory®
- ▶ Easy plug-and-play deployment of sensors to monitor rack temperature and humidity



So where do you go from here?

Take the next step and learn more about our power management products:

- ▶ Read more about our solutions at www.raritan.eu/products/power-management/
- ▶ Test drive our products at www.raritan.eu/resources/demos/
- ▶ Ask for an onsite product evaluation

About Raritan

Raritan is a leading provider of secure IT infrastructure management solutions that provide IT directors, managers and administrators the control they need to increase data center productivity, enhance branch office operations and increase overall power management efficiency. In over 50,000 locations around the world, our integrated secure in-band and out-of-band server access, control and power management products help companies better monitor and manage server access, utilization and energy consumption. Our intelligent PDUs offer remote power control and monitoring at the rack and device level, empowering data

center owners with information to improve uptime and capacity planning, and efficiently utilize energy to save power and money. Raritan's OEM division provides embedded hardware and firmware for server and client management, including KVM over IP, IPMI, intelligent power management and other industry standards-based management applications.

Raritan has 38 offices worldwide, serving 76 countries. For more information, please visit Raritan.eu