Rack Power Distribution For Critical IT Equipment

Emerson Network Power Rack PDU Solutions

EMERSON
Network Power

Enhanced Performance And Management Of Dynamic IT Spaces

Enhance Business Agility, Efficiency and Availability with Emerson Network Power Rack PDUs

Data center investments are sizable, and each component of the power chain -from the building entrance to the rack power distribution - is crucial to enabling equipment availability. Enable your IT investment – and your business – to stay protected with Emerson Network Power's family of rack PDU offerings.

Emerson Network Power's next generation of rack PDUs provides the industry's highest availability and most intelligent power metering and distribution – complete with the simplified energy management, modular design and cost savings that ensure your data center – and your business – can operate at peak velocity and resiliency.

Our complete portfolio of rack PDUs offers value beyond just power distribution. It easily integrates to your data center infrastructure management systems to make your organization more resilient, enhance your business velocity and provide the technological support you need to grow your company.


DCIM software

Rack PDUs

Connected IT infrastructure
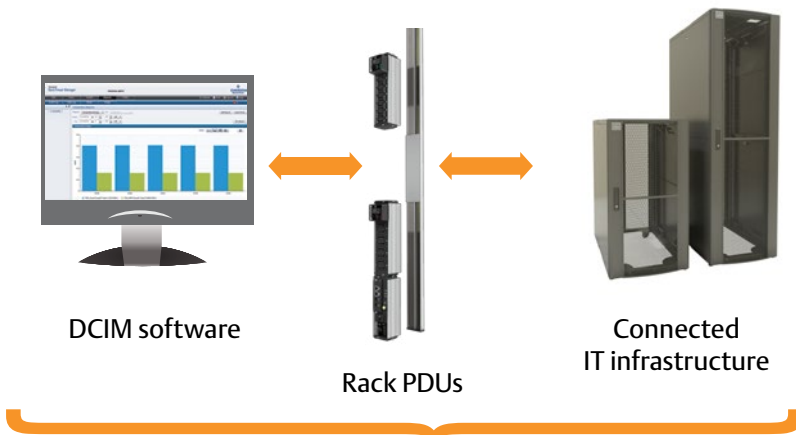
MPX™ and MPH2™ Rack PDUs

Intelligent, real-time infrastructure

- Communicate the status of rack-level power and environmental information to a centralized Data Center Infrastructure Management (DCIM).
- Allow monitoring and control to the receptacle level.

Optimized level of visibility and control

- Provides the information needed to make informed decisions and enhance business agility.

SEE

VALIDATE

ANALYZE

ACT

KNOW

PLAN

SEE

DECIDE

ACT
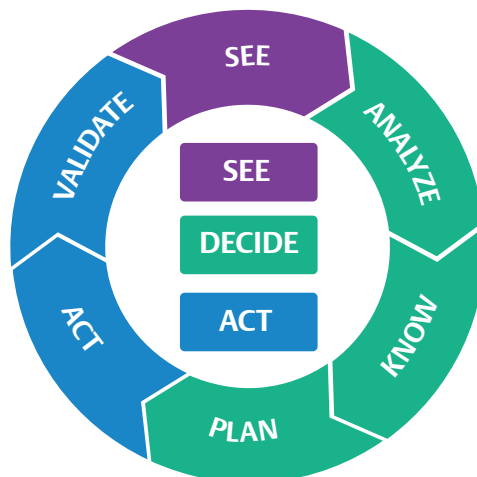
How You Benefit from Emerson Network Power Rack PDUs

Designed For High Availability

Emerson Network Power rack PDUs are designed specifically to accommodate higher power densities and be resistant to higher temperatures, commonly found in modern data center racks. System is designed to optimize basic power availability. They are easily upgradable to minimize downtime and carry manufacturer-provided support to ensure your own SLAs.

- High temperature rating
- Modular hot swappable controller card
- 100% rated magnetic hydraulic circuit breakers
- MPX™ rack PDU system-modular, adaptive design
- Bistable / normally closed relays

Optimized Energy And Capacity Management

By providing highly accurate and comprehensive energy metering from the aggregate to receptacle levels, MPX and MPH2™ rack PDUs provide visibility to control energy usage by IT equipment, right-size your power infrastructure and eliminate unnecessary capital expense. These rack PDUs also have the lowest energy consumption in this category.

- Metering of key electrical parameters with +/-1% accuracy
- Lowest PDU power consumption in the industry of all switched rack PDU's
- Power and environmental trend reports through several Emerson Network Power DCIM solutions

Simplified Integration With Management Tools

MPX and MPH2 rack PDUs offer a simplified approach to implementation and change management that translates to real cost savings and operational advantages. They support all major industry-standard management, authentication and encryption standards and protocols, and they fully integrate into Emerson Network Power's industry-leading KVM, serial console and infrastructure management systems. Plus, they integrate rack level power and environmental monitoring information from the rack PDUs with higher level data center management software provided by Emerson or third parties.

- Up to 4 units sharing an IP address within Rack PDU Array™
- Integration with Emerson Network Power KVM, serial console and infrastructure management appliances and software
- Integration with Emerson Network Power software stack
- IPv6 support
- Support of remote authentication protocols (LDAP, Active Directory, Radius, Kerberos, TACACS+) and encryption

Compatibility With Racks And Power Chain

Deployable in most industry racks, Emerson Network Power rack PDUs are simple to install and move. When Emerson racks are purchased, the rack PDUs may even be pre-installed to save time and cut costs. All major global voltage and amperage combinations typically used in a data center or remote site are available—an Emerson Network Power expert can assist in selecting the right rack PDU for your power chain needs.

- Ability to be preinstalled in Emerson Network Power rack solutions
- Available in popular voltage and amperage combinations

MPX™ - Adaptive Rack PDU:
Respond To Change While Watching Your Bottom Line

Confidently take on the uncertain future of connected power requirements with MPX, the most responsive and adaptive rack PDU available. With MPX rack PDU technology, you can respond to rack equipment changes and dynamic capacities by leveraging:

- **Hot-swappable modular output power**
- **Hot-swappable modular communications**
- **Modular input power**

MPX Benefits
- **Adaptive** capacity, distribution, monitoring, control and management of critical devices
- **Flexibility** to respond to constant change—redeploy modules to suit changing needs
- **Buy only what you need** and build on your investment
- **Secure communication**

Reconfigurable Power Capacity & Distribution
The MPX rack PDU has a scalable design that allows onsite configuration to fit immediate IT equipment needs. It is the perfect choice to respond to the needs of a growing data center. Relocate or add IT equipment to support changing needs, by easily reconfiguring the power input and distribution.

Fits Needs Now And Later
The MPX rack PDU provides a wide selection of single phase and three-phase power input configurations—with the ability to field change while maintaining distribution infrastructure.

Designed for Critical Environments
- **Critical rack space operating temperature**—up to 55˚C / 131˚F to support hot internal rack environments
- **Accurate power metering** of +/-1% voltage & current for assured oversight
- **Energy and power metering** down to the individual receptacle
- **Comprehensive alarming including notification** of overloaded branch circuits
- **Environmental sensing** with threshold and alarm set-points
- **Notification** on the loss or removal of individual rack equipment loads

Click to play MPX animation

Power Rail Chassis (MPX PRC) distributes power and communications to all of the support modules. Available in two separate heights to accommodate varying rack heights

Branch Receptacle Modules (MPX™ BRM) provide output power and branch circuit over protection. Elementary, branch metered and outlet metered & switched versions available

Power Rail Spacer reserves the unused space until an MPX module is needed

MPX PEM variable capacity module, for 1 or 3 phase applications. Detachable power cord supports changing input power requirements

SN Sensors: consolidate environmental monitoring of temperature and humidity with rack level power

MPX PEM fixed capacity module for 3-phase applications

BDM™ local display module, advanced diagnostics, displayed at a location that is convenient for the customer. Features include specific information on alarms, specific labels for outlets

Power Entry Module (MPX PEM) available in variable capacity and fixed capacity versions

Communications Module (RPC2) mounts in the Power Entry Module and provides upgradable network communications, sensor and local display interface

MPH2™—Managed Rack PDU: Advanced Monitoring And Control Support

MPH2 is the most intelligent, high-availability line of managed rack PDUs. It offers remote monitoring and control capabilities as well as environmental input options, with multiple power input selections and output configurations.

It is available in the following four versions:

- Outlet Level Metered and Switched
- Outlet Level Metered
- Rack PDU Metered and Outlet Switched
- Rack PDU Metered

MPH2 Benefits

- **Monitors electrical and environmental parameters** with set threshold and alarm tools
- **Controls and manages individual receptacles** and/or groups of loads and devices
- **Allows you to predict failing conditions** before they occur and proactively manage connected equipment for maximum uptime
- **Energy and power metering** to maximize the data center power and cooling infrastructure
- **Lowest power consumption** of all switched rack PDU designs ensures lower operating costs for datacenter
- **Up to four MPH2 rack PDUs may be interconnected** as a Rack PDU Array™, consolidating user IP connections and device monitoring.

Designed for Critical Environments

- **Industry leading operating temperature** —up to 60˚C / 140˚F to support hot Internal rack environments
- **Bi-stable relays ensure basic power distribution** in the event that intelligence is compromised
- **Accurate power metering** of +/-1% voltage & current for assured oversight
- **Energy and power metering** down to the individual receptacle
- **Comprehensive alarming including notification** of overloaded branch circuits
- **Environmental sensing** with threshold and alarm set-points
- **Notification** on the loss or removal of individual rack equipment loads

MPH2 Savings for a Typical Data Center

	Typical 24 Outlet Rack PDU	MPH2
Rack PDU power consumption (Watts)	23	7.5
Rack PDU annual energy consumption (kWh) —24x7x365	202	66
Overall contribution to datacenter energy consumption (kWh)*	383	125
Cost of energy consumption (based on average cost of 10¢/kWh)	$38	$13
Annual savings per pdu with MPH2		$26

Annual savings per rack with MPH2	**$52**
Annual savings within the datacenter with MPH2	**$5,160**

Based on a a comparison of switched rack PDU models for a typical 100 rack data center with a PUE of 1.9.

* per Energy Logic calculations

Click to play MPH2 animation

Communications Module (RPC2™): Provides upgradable network communications, sensor and local display interface

BDM™ local display module: Advanced diagnostics, displayed at a location that is convenient for the customer. Features include specific information on alarms, specific labels for outlets

Onboard display: Provides easy access to vital information at the rack

Slim profile breakers: 100% rated hydraulic magnetic slim profile. CB's provide reliable resettable branch circuit protection without nuisance tripping

Locking outlets and locking power cord: Prevents accidental unplugging of IT devices

SN Sensors: consolidate environmental monitoring of temperature and humidity with rack level power

Flexible power cord entry: Simplifies installation of higher amperage units
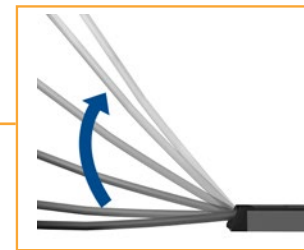
Corded and hardwired options: provide flexibility of wiring to both overhead and raised floor power distribution

7

Web UI

CLI

Seamless DCIM Manageability and Integration

MPH2™ and MPX™ intelligent rack PDUs can be managed both locally and remotely. Metering of all electrical information down to the outlet, phase, bank or rack PDU level as well as integration with environmental sensors makes these rack PDUs the backbone of rack level power consumption and environmental information. Support for all major industry-standard management, authentication and encryption standards and protocols ensure that these products seamlessly fit into any existing network and security architecture.

Flexible Local & Remote Management

The MPH2 standard onboard display provides all pertinent information required at the rack. **The optional BDM local display** is available for MPH2 or MPX, and provides flexibility in location of the display for most convenient visibility.

Remote communications at a rack PDU level is enabled by the modular, hot swappable **RPC2™ card,** providing seamless upgradeability and serviceability. RPC2 enables:

- **Support up to 4 PDUs within a Rack PDU Array™:** Minimizes IP addresses
- **Support up to 10 environmental sensor probes:** Consolidated rack level power and environmental monitoring
- **Support for Web UI, CLI, SSH and Telnet:** Provides Windows, Linux and network administrators their preferred way to interact with the rack PDU
- **Support for all major remote authentication & encryption protocols:** Ensures seamless integration into any corporate security architecture
- **SNMP v1, v2 and v3 support:** Ensures secure communications through network management systems
- **IPv4 and IPv6 support:** Ensures continued IP support for rack PDUs
- **Embedded data log:** Enables equipment or rack level baseline power consumption study
- **Embedded event log:** Easier troubleshooting and auditing

Remote monitoring interface capabilities include:
- Snapshot of all electrical parameters at outlet, branch, phase and aggregate level
- Snapshot of environmental sensor readings and status
- Threshold configuration, alarm creation and notifications
- Power control of individual or group of outlets
- Status information and configuration of all outlets
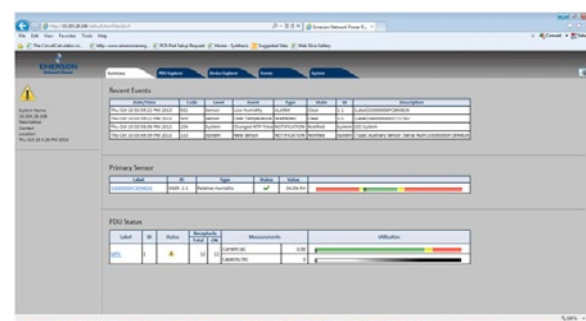- Network management settings

Centralized Management of all rack PDUs within a datacenter is provided by **Avocent Rack Power Manager**
- Centralized power consumption and environmental reports at all levels within datacenter
- Centralized power control of individual or group of outlets
- Mass configuration capabilities
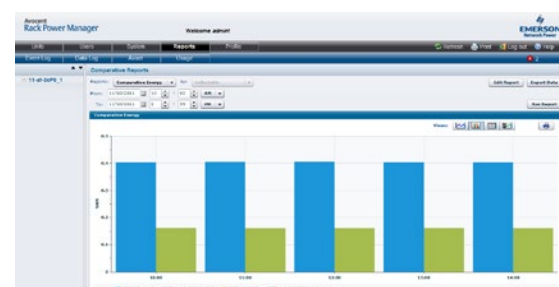- Centralized authorization, authentication and auditing of all rack PDUs and pertinent data

Web User Interface

Command Line Interface

Avocent® Rack Power Manager

Leveraging Your Rack PDU Investment

MPX™ and MPH2™ rack PDUs fully integrate into Emerson Network Power's industry-leading KVM, serial console and infrastructure management systems. Plus they integrate rack level power and environmental monitoring information from the rack PDUs with higher level data center management software provided by Emerson or third parties. By making the information available through these intelligent rack PDUs easily consumable, Emerson Network Power ensures that customers invest in a comprehensive, easy to use power distribution and management solution.

Integration with **Avocent® Advanced Console Server**, **MergePoint™ Unity KVM Switches** ensures:
- Out of band management path for rack PDUs
- Rack PDUs are a part of consolidated rack level access and control solution
- Minimize the number of IP addresses required for rack PDU management

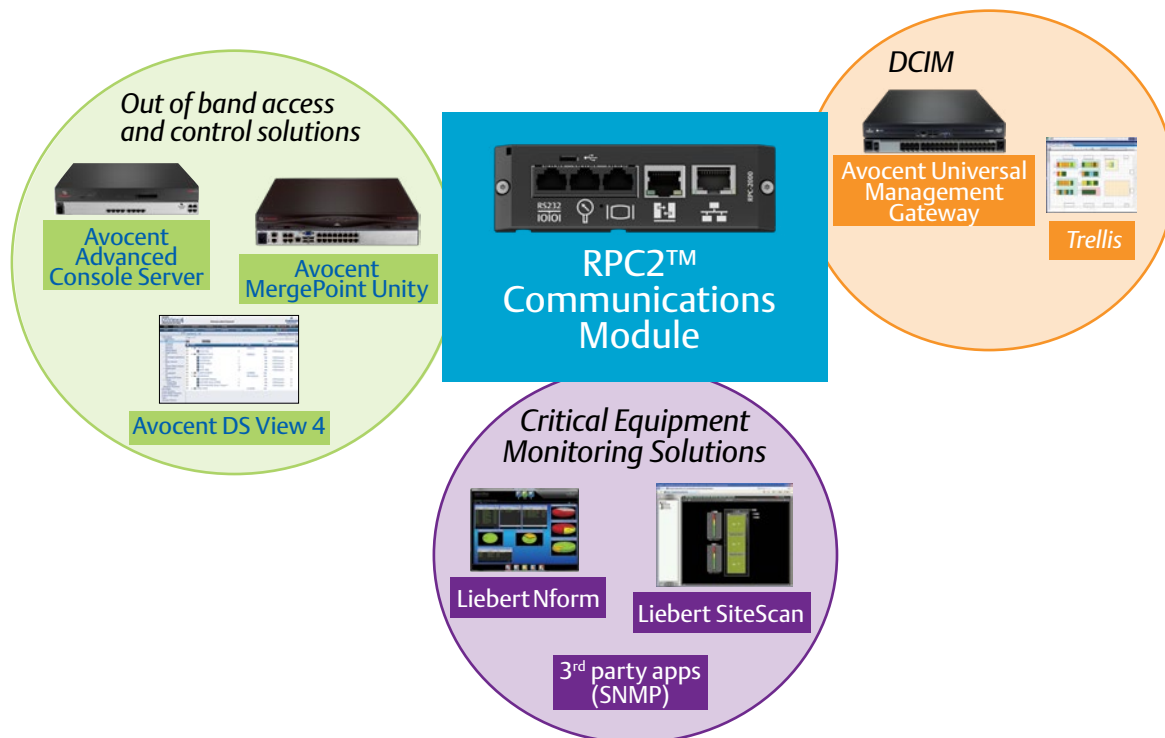Integration with **Avocent DSView4™** software ensures:
- Rack PDUs are a part of consolidated datacenter level access and control solution
- Easy association of IT equipment with the rack PDU outlets they are connected to
- Rack PDUs are a part of consolidated authentication, authorization and audit solution for datacenters

Integration with **Liebert® Nform™** and **Liebert SiteScan®** ensures:
- Rack PDUs are a part of consolidated facilities level monitoring solution for datacenters
- Real-time monitoring and control of virtually any piece of critical support equipment
- Data analysis and trend reporting
- Event management

Integration with the *Trellis™* platform and **Universal Management Gateway appliances** ensures that rack PDUs are a part of a comprehensive DCIM solution that includes:
- Inventory Management of all IT and facilities assets
- Monitoring of all facility critical devices and service processor-enabled IT devices
- Capacity & Change Management
- Energy Consumption Management
- Power System Management

Out of band access and control solutions

Avocent Advanced Console Server

Avocent MergePoint Unity

Avocent DS View 4

RPC2™ Communications Module

DCIM

Avocent Universal Management Gateway

Trellis

Critical Equipment Monitoring Solutions

Liebert Nform

Liebert SiteScan

3rd party apps (SNMP)

DI-STRIP®: Most robust and comprehensive line of basic rack PDUs in easy to use configurations.

Basic Rack PDUs are the right answer for data center users selecting robust, economical and flexible rack power solutions.

DI-STRIP rack PDUs meet a broad range of power distribution requirements for IT and other applications. Designed especially to handle the growing number of electronic components that can be housed within network cabinets and server racks, the space saving product line is available in a range of configurations.

- Flexibility with multiple configurations and input power options
- Critical rack space operating temperature—up to 55˚C / 131˚F to support hot Internal rack environments
- Simple and quick installation on the rack's extrusion requires minimal space

Flexibility to meet a broad range of requirements

Available in vertical zero U and rackmount form factors

Input is single or three phase power via single plug connection

Slim form factor allows easy installation

	MPX™	MPH2™	DI-STRIP®
Mounting	Preinstalled Toolless brackets Universal Mounting bracket Ability to ship rack PDU preinstalled in Emerson Racks		
Input Power Options North America	100 - 120V 1-ph 20A/30A 200 - 240V 1-ph 20/30A 200 - 240V 3-ph 20/30/50/60A 208/120V 3-ph 20/30A 415V/240V 3-ph 20A/30A		100 - 120V 1-ph 15/20/30A 200 - 240V 1-ph 20A/30A
Input Power Options International	230V 1-ph 16A/32A 230/400V 3-ph 16A/32A/63A		230V 1-ph 16A/32A 230/400V 3-ph 16A/32A
Input Wiring Options	10 ft. pluggable power cord	10 ft. pluggable power cord or Hardwired	8/10 ft. pluggable power cord
Max. Capacity North America	17.2 kW	17.2 kW	4.9 kW
Max. Capacity International	27.7 kW	22.2 kW	22.2 kW
Outlet Options	NEMA 5-20; IEC 320C13; IEC 320 C19; Schuko; French UTE; Schuko; Switzerland CH SEV 1011; GST 18	NEMA 5-20; IEC 320C13 IEC 320 C19 Locking capability on all outlets	NEMA 5-15; NEMA 5-20; IEC 320C13; IEC 320 C19; French UTE; Schuko; Switzerland CH SEV 1011; GST 18
Maximum Outlets	Basic BRM's: 42 Rack PDU Metered BRM's: 36 Outlet Metered & Switched BRM's: 36	Strip Metered: 42 Outlet Metered and / or Switched: 24	Max. 48
Maximum Operating Temp. Range	0°C to 55°C (32°F to 131°F)	0°C to 60°C (32°F to 140°F)	0°C to 45/55°C (32°F to 113/131°F)
Storage Temperature Range	-25°C to 85°C (-13°F to 185°F)	-25°C to 85°C (-13°F to 185°F)	-20°C to - 85°C (-4°F to -121°F)
Relative Humidity	5% to 95%	5% to 95%	5% to 95%
Overcurrent Protection	Software Electronic Overcurrent Protection 100% Rated 20A Branch Overcurrent Protection - Hydraulic Magnetic Circuit Breakers		Hydraulic Magnetic Circuit Breakers
Idle Power Consumption	3 W – 22 W	3W - 5W	N/A
0U Units Width x Depth	75 mm x 104 mm (2.95 in x 4.09 in)	56 mm x 50 mm (2.2 in x 1.96 in)	45 mm x 46 mm (1.77in x 1.81in) and others
0U units Length	1035 mm / 1880 mm (40.7 in / 74 in)	916 mm / 1004 mm / 1737 mm/ 1827 mm (36 in) / (39.5 in) / (68.4 in) / (72 in)	333 mm - 1833 mm (13 in - 72 in)
Standard Warranty	2 years; Extended Warranties Available		
Agency Approvals	UL, CSA, CE, RoHS, REACH, FCC Class A, CB, WEEE, ISTA		UL, CSA, CE, BG, CB, RoHS, REACH, WEEE
Metering Levels	Aggregate, Branch, Phase, Outlet		
Parameters Measured	Volts, Current, kW, KVA, kWh, Power Factor, Crest Factor, Frequency		
Metering Accuracy	+/-1%		
Switching Capability	On, Off, Recycle, Lock, Unlock, Outlet Grouping Capability		
Modularity	Power Entry Module Branch Receptacle Module RPC2™ communications module	RPC2 communications module	
Local Management	Optional Local Display	Onboard Display, Optional Local Display	
Remote Management	Onboard Web Interface; CLI; SNMP; SSH; Telnet Integration with Avocent® ACS, Avocent Universal Management Gateway & Avocent MergePoint™ Unity Integration with DSView®, Rack Power Manager, Nform™ and the *Trellis*™ platform		
SNMP version support	v1, v2 and v3		
Authentication	Local Remote: Active Directory, LDAP, TACACS, Radius, Kerberos		
Encryption	MD5, AES, DES		

All systems are RoHS compliant.

RoHS
2002/95/EC

SO WHAT SHOULD YOU DO NEXT?

Emerson Network Power's more than 50 years of experience in data center infrastructure design, deployment and application ensures your next rack PDU purchase will keep you up and running regardless of changes to your data center environment.

Go to our **PDU quick form** to request more information.

*Ensuring The High Availability Of
Mission-Critical Data And Applications.*

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