

# PACKET POWER

## SMART POWER CABLES

### THE EASY WAY TO MONITOR POWER

Smart Power Cables offer the simplest and most cost effective way to measure power in a data center



### EASY SETUP

Smart Cables automatically form a self managing wireless network, eliminating tedious network configuration associated with legacy solutions.

### INSTANT INFORMATION

Gain access to energy usage data immediately through Packet Power's easy to implement EMX Energy Portal or from your existing monitoring system.

### RETROFIT OR NEW BUILD

Easily make existing "dumb" devices smart or buy already integrated into leading busway, rack power strip and under-floor whip systems."

### BUILT FOR ENTERPRISE ENVIRONMENTS

The Packet Power wireless network is specifically designed for enterprise environments with an "out of band" secure protocol, and seamless scalability that can support thousands of devices.

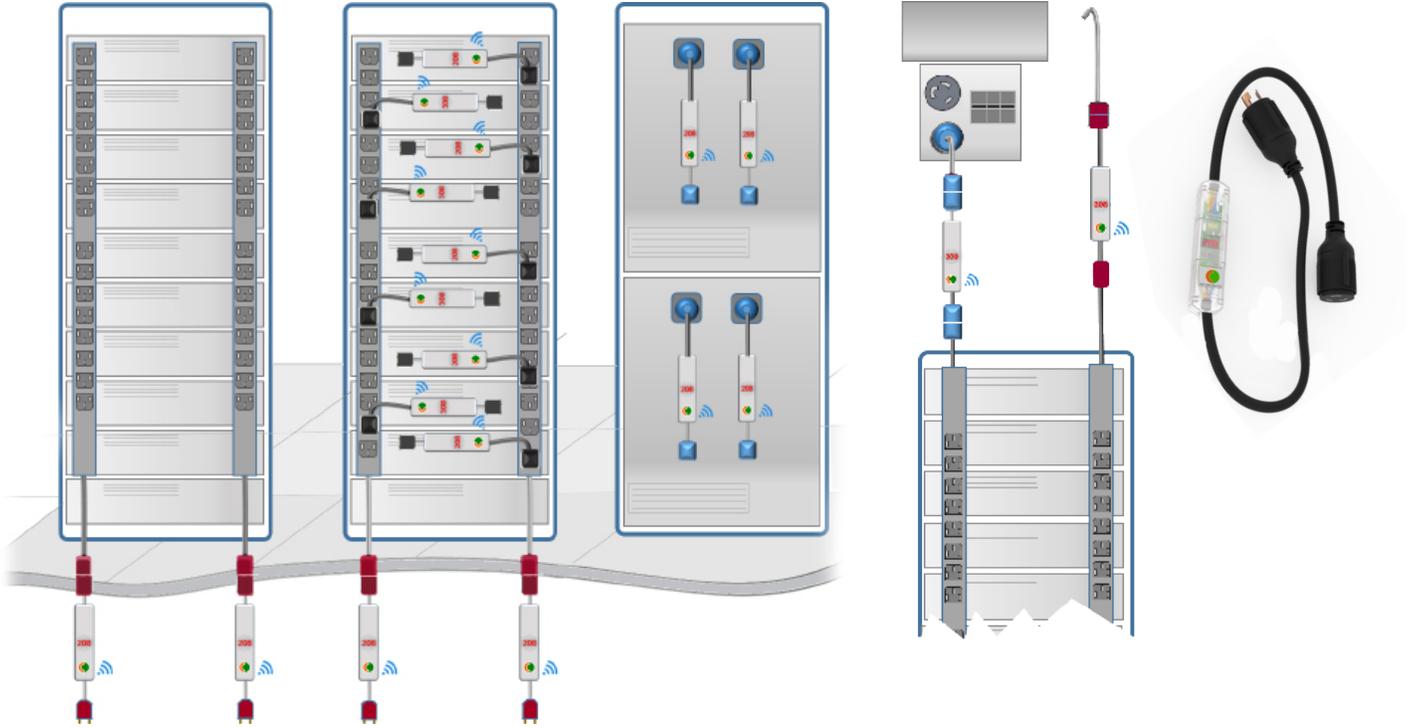
### OVERVIEW

- ▶ Captures detailed power information in real time
- ▶ 10 amp to 63 amp capacity in single and three phase versions
- ▶ Supports all IEC, NEMA, regional and specialized plug and connector formats
- ▶ Fail-safe design will not disrupt the flow of power and maintains key data during power disruptions
- ▶ Local LED display
- ▶ Easily monitor SANs, mainframes and switches
- ▶ Advanced network security features throughout the system
- ▶ Also available in integrated busway, underfloor whip, rack power strip and power panel formats

### BENEFITS

- ▶ Simple "plug and play" installation
- ▶ Scales easily from a few devices to thousands
- ▶ Works with hardware from any vendor
- ▶ Avoids hundreds of dollars per rack in costs tied to wiring racks for monitoring units.
- ▶ Automatically integrates with Packet Power's environmental monitoring solutions.
- ▶ Provides the accuracy and flexibility needed to easily allocate energy costs
- ▶ Secure network isolates monitoring devices from primary data networks
- ▶ Provides instant access to data when used with our cloud service
- ▶ Integrates easily with third party BMS and DCIM systems via SNMP or Modbus TCP/IP
- ▶ Certified for use in North America, the European Union and many other countries world wide

## Smart Cable Applications



SMART POWER CABLE

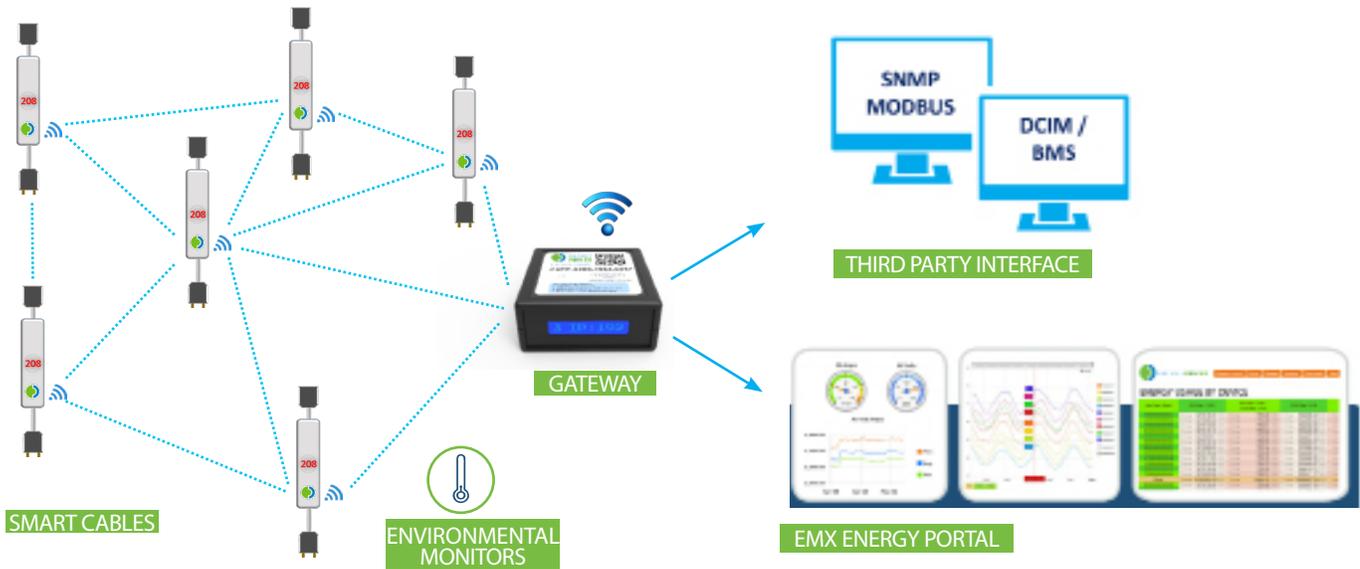
UNDER FLOOR CABLES

DEDICATED DEVICES

LARGE APPLIANCES (SAN / MAINFRAMES)

BUSWAY TAP-OFFS / OVERHEAD CABLES

## Packet Power Architecture



SMART CABLES

ENVIRONMENTAL MONITORS

GATEWAY

THIRD PARTY INTERFACE

EMX ENERGY PORTAL

Packet Power makes it easy to manage your monitoring network. The Ethernet Gateway automatically detects any new monitoring devices, seamlessly adding them to the network. The monitors communicate via a mesh network routing traffic through any nearby monitors to find the optimal path to a Gateway. This robust and resilient technology results in a wireless network that is as reliable as a wired network but much easier to install, manage and secure. Gateways, which can each support up to 200 monitoring units, can be added to expand capacity and provide redundancy.

- No costly network cable drops
- Uses your existing PDU
- Installs in minutes
- Self configuring
- Instantly ready to monitor
- Secure
- Scalable
- Works with any hardware or DCIM / BMS system



## Smart Cable Models



### Single Phase

- ▶ 10-32 A
- ▶ 100-240 VAC
- ▶ 3-wire cords 10-14 AWG (2.5-4mm<sup>2</sup>)
- ▶ Available in most plug and receptacle types



### Three Phase

- ▶ 16-63 A
- ▶ 208-415 VAC
- ▶ 4-10 AWG (4-16mm<sup>2</sup>) 3,4,5 wire cords
- ▶ Available in most plug and receptacle types



### OEM / Hardwired

- ▶ Hardwired cables for overhead busway and OEM applications

SMART POWER CABLE

## Turn basic PDUs into “Smart PDUs” in minutes

- 1 Plug Smart Power Cable into PDU



- 2 Connect wireless Gateway



- 3 Start Monitoring



- 1 Plug the Smart Power Cable in between the load and its power source: The “Smart Cable” automatically begins to send monitoring information.
- 2 Connect the Ethernet Gateway module to your network. The Smart Cables and Gateway automatically detect each other and form a self configuring wireless network.
- 3 Access data in Packet Power’s EMX energy portal or in your existing application via Modbus or SNMP.

**COMMUNICATIONS**

Operating frequency	860 to 920MHz and 2.4 GHz (frequencies vary by region)
Wireless protocol	Frequency hopping self-configuring load-balancing mesh
Wired network protocol	SNMP and Modbus TCP/IP protocols
Firmware updates	Wireless
Typical transmission range	10 to 30 meters indoors between any two devices in mesh network
Antenna	Fully enclosed, fixed configuration
Cable to Gateway ratio	Up to 200 cables per gateway with unlimited Gateways per system
Multi-site support	Yes
Encryption	128-bit

**ENVIRONMENTAL**

Operating temperature	-7° to +45°C (+20° to +113°F)
Operating humidity	5% to 95% non-condensing
Water and dust resistance	Indoor applications
Maximum operating altitude	2,000 meters (6,600 feet)
Power usage	Smart power cable: 0.6W Ethernet Gateway: 0.7W

**OUTPUTS**

LED status indicators	Red / Orange Power / Status (Red/Orange); Communication (Green)
Local display	3 Digit LED (cycles Amps, Volts, Watts by phase) <sup>1</sup>
Monitored points	Voltage (V), Current (A), Power (W), Energy (Wh), Apparent Power (VA), Power Factor (PF), Frequency (Hz), all measurements +/- 1%, Temperature (+/-2°C)

**SIZE AND WEIGHT**

S Models under 16A	150 cm (60 in), 0.45kg (1 lbs)
S Models 16A and above	120 cm (48 in), 0.75 – 1.0kg (1.5 to 2 lbs)
R Models	Approx 120 cm (48 in), 1.5 to 3 kg (3.5 to 7 lbs)

**CERTIFICATIONS (ELECTRICAL SAFETY AND RADIO EMISSIONS)**

UL/ANSI61010-1,CAN/CSA-C22.2No.61010-1(ETL),FCCClassB,CE(IEC/EN61010-1:2001,ETSIEN300220-2,ETSIEN301489-3,IEC/EN61326-1),ICASA, and certain country-specific requirements in Australia/New Zealand and the UAE.

**MODELS**

Model	Voltage (V)	Amperage (A)	Type
S	100-240	10, 15, 16, 20, 30, 32	Single phase
R	120 / 208, 208-240, 240 / 415	16, 20, 30, 32, 50, 63, 100	Single Phase, Three Phase L-L and L-N

**CONNECTOR TYPES**

Model	NEMA	IEC	Other*
S (all single phase)	5-15 / L5-15 5-20 / L5-20 L5-30 6-15 / L6-15 6-20 / L6-20/L6-30	60320 C13 / C14 60320 C19 / C20 60309 2P+E 6h	Schuko CEE7-7, AS/NZA 3112 2000, BS 1363A (UK), BS 546A (India, S Africa), Whip, others on request
R – single phase		60309 2P+E 6h 360_6W	CS6361/6360, CS8264/8265, 3720/3913, 3750/3933, 3720U-1/3913U-1, 3720U-2/3913U-2, 9_23U2, 9_23U0, 9_33U0, 9_53U2, 9_63U2
R – 3-phase Wye	L21-20 L21-30 L22-22** L22-30**	60309 3P+N+E 6h 60390 3P+N+E 9h 60309 3P+N+E 9h 516_6W, 532_6W, 530_6W, 560_6W, 563_6W	9_54U2, IBM D/3760, 3934, CS8365/8364, 7428, and others on request
R – 3-phase Delta	L15-20 L15-30	420_9W, 430_9W, 460_9W	

\* All cables are also available in a whip format (with no connectors). A “\_” in a cable name indicates a placeholder for a P or C (e.g. 360\_6W represents both 360P6W and 360C6W). Custom cables available. <sup>1</sup> Local LED numeric display on “P” and “R” versions.

\*\* L22-xx cables supported for use on 240/415 systems



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