Packet Power™
Wireless Ethernet Gateway Version 4
User's Manual

Version 1.1

Packet Power, LLC
2716 Summer St. NE
Minneapolis, MN 55413
1-877-560-8770
Email: info@packetpower.com
www.packetpower.com

NOTES

- ☐ Read all instructions carefully prior to installation.
- ☐ No field-serviceable parts. Do not attempt to disassemble the product as potentially severe electrical shock may result. Installation and maintenance must be performed by qualified personnel.
- ☐ Follow basic safety precautions to reduce the risk of electrical shock and damage to equipment.
- ☐ Store in a clean, dry location. Clean with a dry cloth. Intended for indoor use only, do not install in a wet location. Adhere to all local electrical codes and guidelines.

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System Overview

The Ethernet Gateway version 4 is the central Gateway by which all Packet Power monitoring nodes (environmental and power) communicate. This guide is intended to provide a high level overview of how to commission a Gateway module. Refer to the support section of www.packetpower.com for additional support.

Gateway Types: There are various Gateway models. These include the standard Gateway designed to communicate exclusively with the Packet Power EMX portal, Modbus TCP/IP output versions (enterprise and solo), and SMNP output versions (solo and enterprise). All Gateway versions can communicate with the EMX portal simultaneously (i.e. a Modbus version can provide ModBus TCP/IP output as well as communicate with the EMX portal simultaneously).

Gateway Models

Part Number	SNMP	Modbus TCP/IP	Usage
GW03-0000	No	No	Use with Packet Power EMX software (local or cloud)
GW03-00SS	Yes	No	SNMP Solo: single-gateway deployments of 300 monitoring units or less
GW03-00SE	Yes	No	SNMP Enterprise: multi-gateway sites.
GW03-00MS	No	Yes	Modbus Solo: single-gateway deployments of 300 monitoring units or less
GW03-00ME	No	Yes	All models can concurrently send data to EMX (local or cloud) if desired.

All models support Virtual IP addresses and can concurrently send data to EMX (local or cloud) if desired.

Gateway Facts: One Gateway can support up to 150 nodes (node count will affect polling time). The network is self-configuring and will auto recognize new nodes added. Multiple Gateways can be used within a network for capacity or redundancy and will automatically load balance the nodes.

Updates: The Gateway firmware is capable of being remotely updated over the network. Consult the support section of the website for additional details.

Security: The Packet Power network is designed to be the most secure monitoring system available with many inherent security features exclusive to the architecture that limit any possibility of penetration through the wireless nodes onto the host network. Additionally the Gateway can be equipped with 128 bit encryption. Contact Packet Power for additional details.

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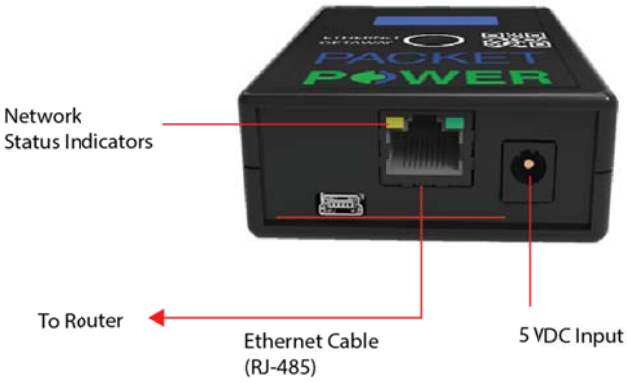
Device Setup

Connect the Gateway to a router (using a standard network cable) with network access using the Ethernet port on the back of the Gateway.

Connect the power supply provided or any 5 VDC source to the DC input of the Gateway. The Gateway can be powered using PoE (Power over Ethernet) using a splitter and 5VDC PoE source.



Once energized the Gateway will indicate it's firmware version, then device ID number (also found on the top label of the Gateway) followed the IP address (may be blank if operating DHCP mode); note that the IP address may take up to two minutes to display.

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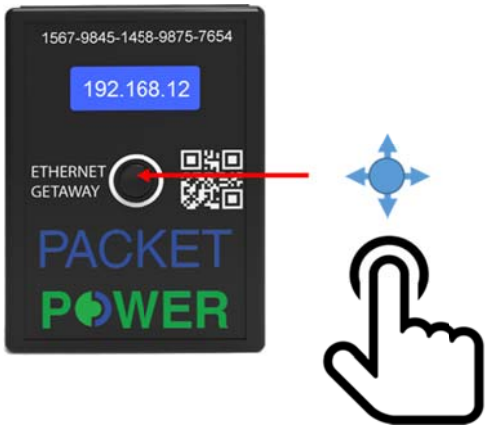
Gateway Interface

Menu and Navigation

To access the menu for the Gateway, press and hold the selector button / joystick on the front of the device for three seconds. To navigate the menu, move the joystick in a corresponding direction and push to enter a selection.



Setting and IP Address

To configure the IP address of the Gateway, enter the setup menu by pressing and holding the "selection button" for three seconds. Use short clicks of the button to advance through the menu until the [-> Set IP] option appears. Click and hold [-> Set IP]. The LCD will show DHCP:On -or- DHCP:Off. Click and hold the button to toggle between DHCP on and off. To set a static IP address click and hold DHCP:Off. The display will then show CP: Off <- . Click and hold the button and the IP address will appear. Use short clicks to scroll through specific digits of the IP address. Click and hold the button to change the underlined number of the IP address. Once the correct IP address is entered you can exit the IP address console by advancing to the end of the screen and holding the selector button when the back arrow character <- is highlighted.

See Menu Map file for details.

To properly configure the IP address, the Gateway, Netmask and DNS server address must also be entered. To change these parameters use the same menu navigation style as described above. After the DNS Server address is set you will need to reboot to have implement your changes. Do this by pressing HOLD when "Reboot" is displayed. "Booting" will show on the display while the unit reboots and implements your changes.
To leave the configuration menu without having changes take effect, click and HOLD the "Exit".
You can find additional information, including details on the SNMP MIB and Modbus register map, at www.packetpower.com/support.

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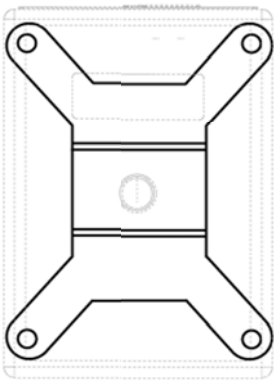
Gateway Placement and Mounting Bracket

The Gateway mounting bracket is designed to allow optimal placement of Gateway and Environmental Monitor modules away from metallic surfaces and optimize signal strength. It can be secured to mounting structures using bolts, screws or adhesive tabs provided.



Device Placement

- Never inside of a metal structure (exterior of the rack)
- Ideally with-in 30-100 feet of another Packet Power device (gateway or monitoring module)
- 2-4” (5-10 cm) away from a large metallic surface or mounted on a non-metallic platform (use the mounting bracket for optimal placement
- Higher is better; always try and locate the monitoring node at the highest point that allows an unobstructed path to another monitoring node or gateway

Gateway Placement

- Gateway module(s) should be located 10-30 meters from one or more monitoring nodes (ideally line of site).
- Locate the gateway at a height above monitoring nodes when possible
- Use the same guidelines noted in device placement (do not locate inside metallic cabinets or directly on metal surfaces)
- Use the Gateway mounting bracket for optimal placement and signal strength Redundant Gateways are advised for any critical environment
- One Gateway can support up to 300 Packet Power monitoring devices; additional Gateways will improve polling speeds

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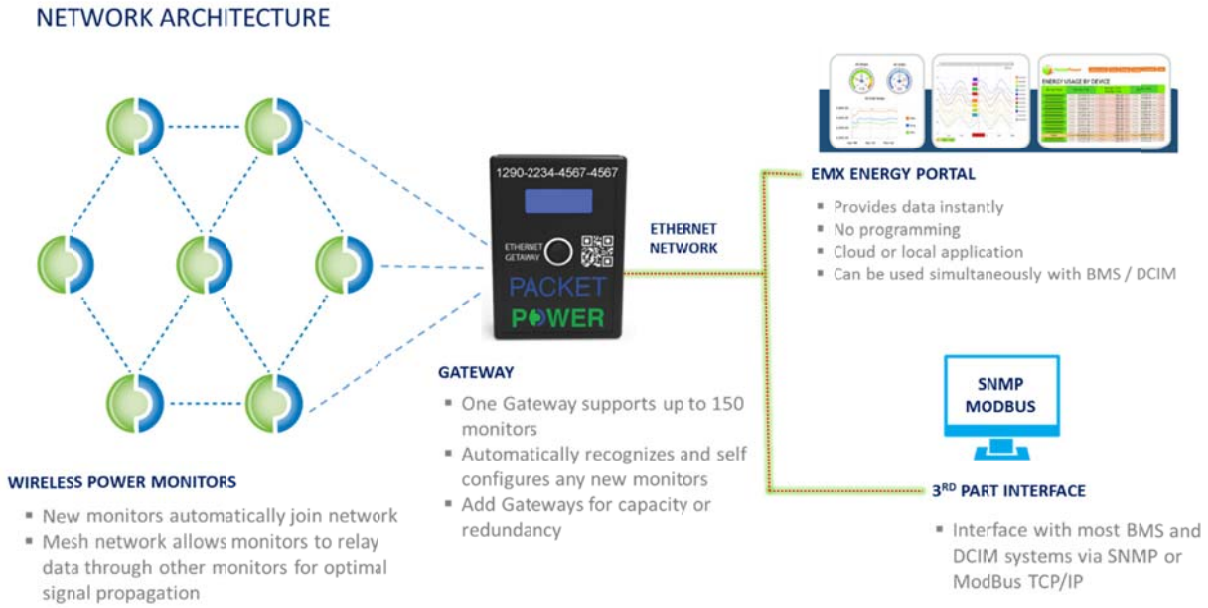
Communications

Information gathered by the Wireless DC Monitors is transmitted via a Packet Power radio network operating at 2.4 GHz. The network operates in a mesh topology. Each device in the network must be within range of at least one other device (either another monitoring node or the Gateway) in the network. The effective range of the radio in the Wireless DC Monitors varies depending on several factors, including the environment in which the product is used. Typically, each device has an effective range of 10 to 30 meters. The Wireless DC Monitors will not transmit effectively if it is installed in an enclosure that entirely blocks radio signals such as fully enclosed metallic enclosures.

Every site where a Wireless DC Monitor is deployed must have installed at least one compatible Packet Power Gateway and associated software to collect data and prepare it for transmission to approved monitoring and analysis applications. It is not necessary for all Wireless DC Monitors to communicate directly with the Gateway. As long as each monitor can communicate with at least one other monitor in a sequential relay mode, and one monitor in the network can also communicate with the Gateway, information from all monitors will reach the Gateway.

The rate at which power monitoring information is gathered from a cable depends primarily on the ratio of the number of monitors to the number of gateways. As an example, at a ratio of 100 monitors per Gateway, a Gateway should read from each cable every 5 to 15 seconds. The system will automatically reallocate network traffic across Gateways when new Gateways or devices are added. Ideally one Gateway shall be used for a maximum of every 150 Wireless DC Monitors reporting to the Gateway.



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MODULE IDENTIFICATION

Each monitor is assigned a specific identification code in the form of a 16 digit alpha numeric code which can be seen on the front of the module as well as a QR code which can be read to save the module identification.

on a module.

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Technical Specifications

COMMUNICATIONS

Operating frequency	From 860, 930MHz and 2.4 GHz (specific frequency used varies by region)
Wireless protocol	Proprietary frequency hopping, self-configuring, load-balancing mesh network
Wired network protocol (Gateway)	TCP/IP (one IP address needed per Gateway) with SNMP and Modbus TCP/IP options
Firmware updates	Wireless
Typical transmission range	10 to 50 meters indoors from any one device to any other
Antenna	Fully enclosed, fixed configuration
Monitoring Unit to Gateway Ratio	From 100 to 300 monitoring units per gateway depending on desired data collection rate and Gateway model
Gateways per site	Unlimited
Multi-site support	Yes
Encryption	Optional 128-bit
Compatible devices	All Packet Power modules may be combined in the network

OPERATING ENVIRONMENT

Operating temperature	0° to +40° C (+32° to +104°F)
Operating humidity	10% to 90% non-condensing
Environmental rating	Indoor use / NEMA 1
Mounting	Typical: on top of server cabinet, under a cable raceway, under a raised floor

DISPLAY

LCD	LCD display for status and configuration details
LED	Indicates general device status

SIZE AND WEIGHT

Ethernet Gateway	76mm x 94mm x 31mm; Weight: 65g (3 oz)

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POWER SUPPLY

External Power Supply	100- 240VA/C input voltage, 50-60Hz (5 VDC output) (72mm x 43mm x 29mm)
Safety Standards	EN60950 UL60950 IEC60950
Plug Types	NEMA 5-15, CEE-7 Schuko, AS/NZS 3112 2000, BS 1363A, C14, BS 546A
Power Consumption	3W
Power Over Ethernet	Available. Requires an external PoE splitter

CERTIFICATIONS

Certifications	FCC, Industry Canada, CE; consult Packet Power for additional certifications

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