MAGNUM ENERGY

ME-MW-W Series

MagWeb

Owner's Manual

Disclaimer of Liability

The use of this manual and the conditions or methods of installation, operation, use, and maintenance of the ME-MW-W is beyond the control of Magnum Energy, Inc. Therefore, this company assumes no responsibility and expressly disclaims any liability for loss, damage, or expense whether direct, indirect, consequential, or incidental that may arise out of or be in anyway connected with such installation, operation, use, or maintenance.

Due to continuous improvements and product updates, the images shown in this manual may not exactly match the unit purchased.

Restrictions on Use

The ME-MW-W may only be used in life-support devices or systems with the express written approval of Magnum Energy. Failure of the ME-MW-W can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. If the ME-MW-W fails, it is reasonable to assume that the health of the user or other persons may be endangered.

IMPORTANT PRODUCT SAFETY INSTRUCTIONS

This manual contains important safety instructions that must be followed during the installation and operation of this product. Read all instructions and safety information contained in this manual before installing or using this product.

- All electrical work must be performed in accordance with local, state, and federal electrical codes.
- This product is designed for indoor/compartment installation. It must not be exposed to rain, snow, moisture, or liquids of any type.
- Use insulated tools to reduce the chance of electrical shock or accidental short circuits.
- Remove all jewelry such as rings, watches, bracelets, etc., when installing or performing maintenance on the ME-MW-W and the inverter system.
- Always disconnect the batteries or energy source prior to installing or performing maintenance on the ME-MW-W and inverter system. Live power may be present at more than one point since an inverter utilizes both batteries and AC. Turning off the inverter may not reduce this risk. As long as AC power is connected, it will pass through the inverter regardless of the power switch on the inverter or the ON/OFF INVERTER push-button on the remote.

Safety Symbols

To reduce the risk of electrical shock, fire, or other safety hazard, the following safety symbols have been placed throughout this manual to indicate dangerous and important safety instructions.

WARNING: This symbol indicates that failure to take a specified action could result in physical harm to the user.

CAUTION: This symbol indicates that failure to take a specified action could result in damage to the equipment.

Info: This symbol indicates information that emphasizes or supplements important points of the main text.

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1.0 Introduction

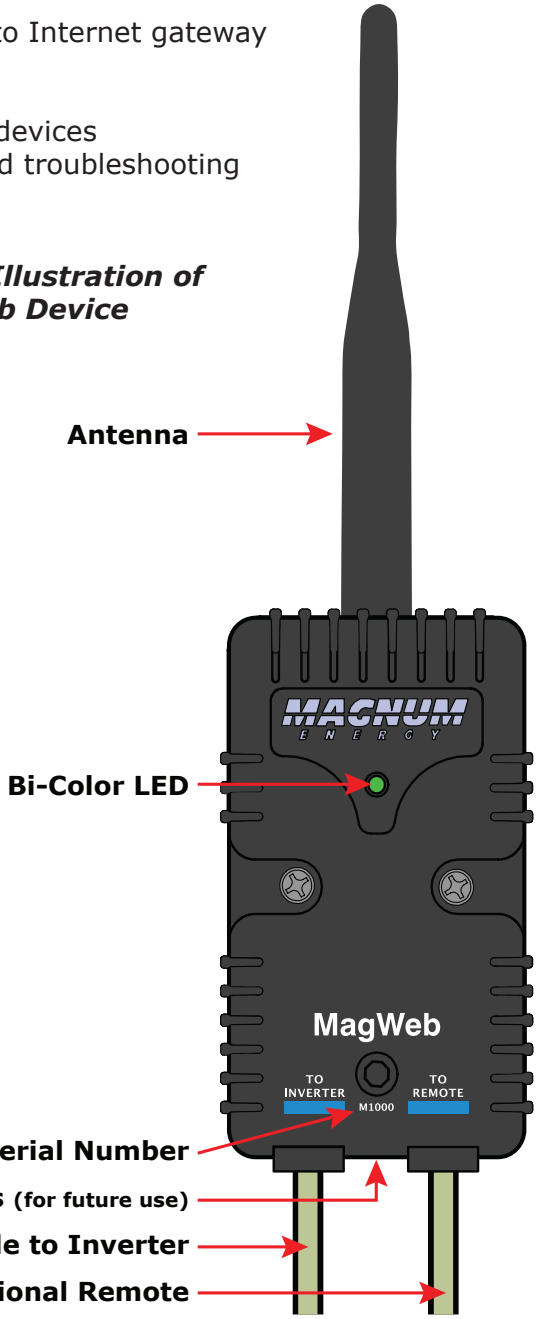
The MagWeb (ME-MW-W) is a powerful and cost effective tool for remotely monitoring Magnum brand inverters and accessories. The MagWeb installs on the Magnum network and provides live Internet monitoring of the inverter, battery monitor, and automatic generator start module. Using your always on Internet connection, the MagWeb makes live and historical conditions available to you through a web browser and our **data.magnumenergy.com** service.

The MagWeb uses the sensors and controllers already built into Magnum products. There are no external sensors to install, configure, or calibrate.

1.1 Product Features

- Wireless data link from MagWeb to Internet gateway
- No sensors to install
- No configuration required
- Automatically detects connected devices
- Aids remote site management and troubleshooting

Figure 1-1, Illustration of MagWeb Device



1.2 Compatibility and Measurement Channels

Info: All measurements and information are provided by the connected equipment. The MagWeb collects and transmits this information. The MagWeb is compatible with RD/ME/MS/MS-PAE Inverters versions 2.6 and greater and MM/MMS 1.0 and greater. Availability, accuracy and resolution of the measurements are dependent on the particular model(s) of Magnum equipment connected. Contact Magnum Energy to determine if a particular measurement on your Inverter or accessories is compatible with the MagWeb.

1.2.1 Inverter Only

Not all models provide all measurement channels.

- Inverter model and revision
- Inverter stack mode
- Status including fault(s)
- DC Volts
- DC Amps
- AC Volts out
- AC Amps in and out
- AC Frequency
- Invert and Charge LEDs
- Battery Temperature
- Transformer Temperature
- FET Temperature

1.2.2 Inverter + Remote

Compatible with all versions of Magnum Remote Control (ME-RC50), Magnum Advanced Remote Control (ME-ARC50), and Magnum Router (ME-RTR). For PAE systems using the Magnum Router, the current MagWeb firmware will only monitor one inverter and one of each accessory.

Monitored data includes all standard inverter channels plus:

- Remote revision
- Inverter search watts
- Battery size and type
- Charge rate and AC input amps
- Low voltage (AC and DC) cutout
- Battery Type and Custom Absorb, Float, and Equalize Voltages
- Absorb done time

1.2.3 Inverter + Remote + BMK

All inverter and remote channels and:

- Battery Monitor revision
- BMK status including fault(s)
- State of Charge
- DC Volts
- DC Amps
- DC Volts minimum and maximum
- Battery Efficiency Settings
- Amp hours in and out
- Resettable and Total Amp hours

1.2.4 Inverter + Remote + BMK + AGS

All inverter and remote channels and BMK and:

- AGS Status including fault(s)
- AGS Temperature
- AGS Voltage
- Gen Runtime
- AGS Revision
- AGS Start/Stop Settings

2.0 Installation

Before installing the MagWeb device, read this entire section so you can thoroughly plan the details to ensure the overall system requirements are accomplished. To assist in the planning and designing of your installation, review the basic system diagram in Figure 2-1.

Info: Installations should be performed by qualified personnel, such as a licensed or certified electrician. It is the installer's responsibility to determine which safety codes apply and to ensure that all applicable installation requirements are followed. Applicable installation codes vary depending on the specific location and application.

The MagWeb device is connected to the inverter using the supplied four conductor remote cable. If an ME-RC50, ME-ARC50, ME-RTR, or other remote is installed in the system, it is connected to the MagWeb device. Power is supplied to the MagWeb device from the Magnum inverter or ME-RTR.

The ME-MW-W, or MagWeb wireless device, requires a nearby ME-MW-W wireless gateway to connect to your Ethernet network and the Internet. This device is plugged into a wired Ethernet connection using the supplied Ethernet cable. Power is supplied by an included AC to DC wall adapter.

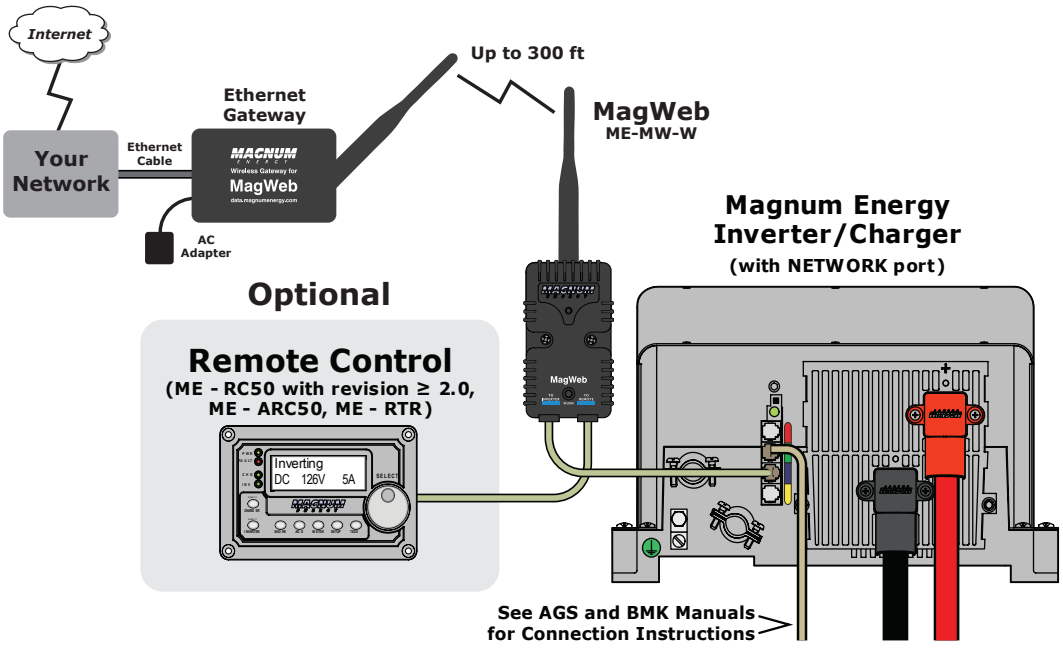


Figure 2-1, MagWeb ME-MW-W System Diagram

2.1 Required Components and Tools

2.1.1 List of Supplied Components in the ME-MW-W:

- ME-MW-W Owner's Manual
- ME-MW-W MagWeb wireless device (with two #8 x 3/4" Phillips mounting screws)
- ME-MW-W MagWeb wireless gateway
- 6ft four conductor communications cable
- 6ft eight conductor CAT5E ethernet cable
- AC to DC adapter for MagWeb wireless gateway
- 2.4 GHz rubber duck antennas, one for MagWeb wireless device and one for MagWeb wireless gateway

Info: The four conductor communications cable is twisted-pair, telephony standard with RJ11 connectors on each end. A standard telephone cable may be substituted if the provided remote cable is not able to be used.

The eight conductor CAT5E ethernet cable is a standard twisted-pair, ethernet cable with RJ45 connectors on each end. A standard CAT5E ethernet cable up to 100 meters may be substituted if the provided cable is not able to be used.

2.1.2 List of Other Required Equipment and Materials:

- Magnum inverter with a network port
- Always on Internet connection
  - that can support 2.5 megabytes per day outgoing data
  - that allows connection to public internet host

2.1.3 Tools Required to Install the ME-MW-W:

- #2 Phillips screwdriver

2.2 MagWeb Wireless Device

Select a location that is dry and away from extreme temperatures to mount the ME-MW-W MagWeb wireless device. Use the two supplied #8 x 3/4" screws to securely affix the module. Allow ample room to view the LED on the MagWeb wireless device, access the two RJ11 ports, and connect the antenna. Unless the MagWeb wireless gateway will be located in the same room, you must keep the MagWeb wireless device antenna outside of a metallic enclosure or compartment.

CAUTION: Do not mount the ME-MW-W MagWeb wireless device in a closed battery compartment, or in an area where water or any other liquid can enter the device and cause shorting or corrosion. Failure due to improper mounting is not covered by the warranty.

CAUTION: Before beginning the installation, ensure all AC power is disconnected from the inverter, and all battery supply cables are disconnected from the battery bank or switched off with an appropriately rated circuit breaker. There should be no flashing or lit LEDs on the Magnum inverter or any accessories.

CAUTION: When connecting battery power to the inverter, all battery negative connections must be connected prior to the battery positive connections. When removing battery power from the inverter, the battery positive should be removed before any battery negative connections are disconnected. This is to prevent any communication chips/lines from becoming the DC return path to the battery – causing permanent damage to all connected accessories on the network.

Summation: Ensure all Battery Negative circuits are always connected before connecting or disconnecting Battery Positive.

2.2.1 MagWeb Device Connection to Single Inverter

Use the supplied four-conductor communications cable to connect the ME-MW-W MagWeb device port marked "INVERTER" to port marked "REMOTE" on the Magnum inverter.

2.2.2 MagWeb Device with Single Inverter and Remote Control

The ME-MW-W MagWeb wireless device, using the supplied cable, can be near the remote or near the inverter. To mount the MagWeb wireless device near the inverter, use the supplied 6ft four conductor remote cable from the inverter "REMOTE" port to the MagWeb wireless device "INVERTER" port. Use the longer 50ft cable supplied with the remote control to run from the MagWeb wireless device "REMOTE" port to the remote control. To mount the MagWeb wireless device near the remote, swap the 6ft remote cable with the 50ft remote cable.

2.2.3 Antenna Connection

Attach one of the supplied rubber duck antennas to the antenna port on top of the ME-MW-W MagWeb wireless device. Tighten finger tight. In high vibration environments, a very small amount of low strength thread locking compound may be used.

2.3 MagWeb Wireless Gateway

Select a location that is dry and away from extreme temperatures to place the ME-MW-W MagWeb wireless gateway. Allow room to view the LEDs on both ends and affix with the cables without kinks or sharp bends. Unless the MagWeb wireless device will be located in the same room, you must keep the MagWeb wireless gateway antenna outside of a metallic enclosure or compartment. For best range, the MagWeb wireless gateway and antenna should be mounted clear of obstructions and as high as possible.

CAUTION: Do not mount the ME-MW-W MagWeb wireless gateway in a closed battery compartment, or in an area where water or any other liquid can enter the device and cause shorting or corrosion. This failure is not covered by the warranty.

2.3.1 Antenna Connection

Attach one of the supplied rubber duck antennas to the antenna port on top of the ME-MW-W MagWeb wireless device and tighten finger tight. In high vibration environments, a very small amount of low strength thread lock may be used.

2.3.2 MagWeb Gateway Connection to Local Area Network and Internet

The ME-MW-W MagWeb wireless gateway should be attached to the Local Area Network (LAN) / Ethernet network using the supplied eight conductor CAT5E patch cord. This connection may be made directly to a network access device such as a router, or it may be through a wall jack that connects to a network access device. In all cases, the total length of Ethernet cable run is limited to 100 meters. The Ethernet cable must be connected to the Ethernet network before the MagWeb wireless gateway is powered up.

2.3.3 Power Connection

The ME-MW-W MagWeb wireless gateway is powered by the provided AC to DC adapter. Plug adapter into wireless gateway and then a 120 VAC outlet.

Alternatively, you may power the wireless gateway from a 7 to 36 volt DC power source capable of supplying 2 watts. You will need to supply a fused 2.1 x 5.5mm power cable. The center conductor is positive and the outer conductor is negative.

2.4 Local Area Network Configuration

The MagWeb wireless gateway communicates with Magnum Energy's servers by establishing an outgoing TCP/IP connection when data is received. At the default 30 second data interval, the MagWeb will send approximately 2.5 megabytes of data per day.

By default, the MagWeb wireless gateway determines network configuration using DHCP or BOOTP. This information includes the MagWeb wireless gateway's LAN IP address and router IP address. Most networks provide DHCP service and therefore the MagWeb wireless gateway usually does not require any configuration.

For details on configuring the MagWeb wireless gateway for non-DHCP networks or special configuration, consult the troubleshooting section of this manual.

2.5 Registration on data.magnumenergy.com

Visit **http://data.magnumenergy.com/** for up to date instructions on registering and creating an account.

3.0 Using data.magnumenergy.com

Instructions for viewing data from your MagWeb device is available at **http://data.magnumenergy.com/**.

4.0 Using the LED Indicator to Determine the MagWeb's Status

There is a bi-color LED indicator on the front of the MagWeb device to indicate the MagWeb's status. When the MagWeb device is first powered up, the LED blinks red and green while going through a self-test. Once the self-test is complete, use the table below and the LED indicator on your MagWeb device to determine the MagWeb's operating status.

If the MagWeb device does not function correctly, use Table 4-1 to help find a solution.

4.1 MagWeb Wireless Device

Table 4-1, MagWeb LED Indicator Guide

LED Status	Meaning
OFF	Ensure the cables are correctly seated into the MagWeb device.
Red ON, **Green** ON, **Red** On, **Green** ON	Power-up sequence (1 second interval between each color). The MagWeb device is performing a self-test – this occurs when first connected to power.
Green ON	Normal operation: the MagWeb device is correctly transmitting and receiving with network devices.
Green BLINKING	Remote not connected or not able to communicate with remote display. Ensure the correct remote cable is connected between the MagWeb and Remote. If the remote/router display is off; refer to the remote/router owner's manual for troubleshooting.
Red ON	The power-up sequence failed. Contact Magnum Energy.
Red BLINKING	No communication, or an unrecognizable communication on the network. Check the communication cable; ensure it is connected correctly. Important: Ensure the RJ11 connectors are pushed into the correct port; you should feel/hear a "click" when the connection is made.

4.2 MagWeb Wireless Gateway

4.2.1 LEDs Next to Antenna

In normal operation, the yellow LED will blink to indicate reception of data. With a single MagWeb, this LED should blink once every 30 seconds. In normal operation, the green LED will not blink. If the yellow LED never blinks and no data is showing on **data.magnumenergy.com**, then consult the troubleshooting guide.

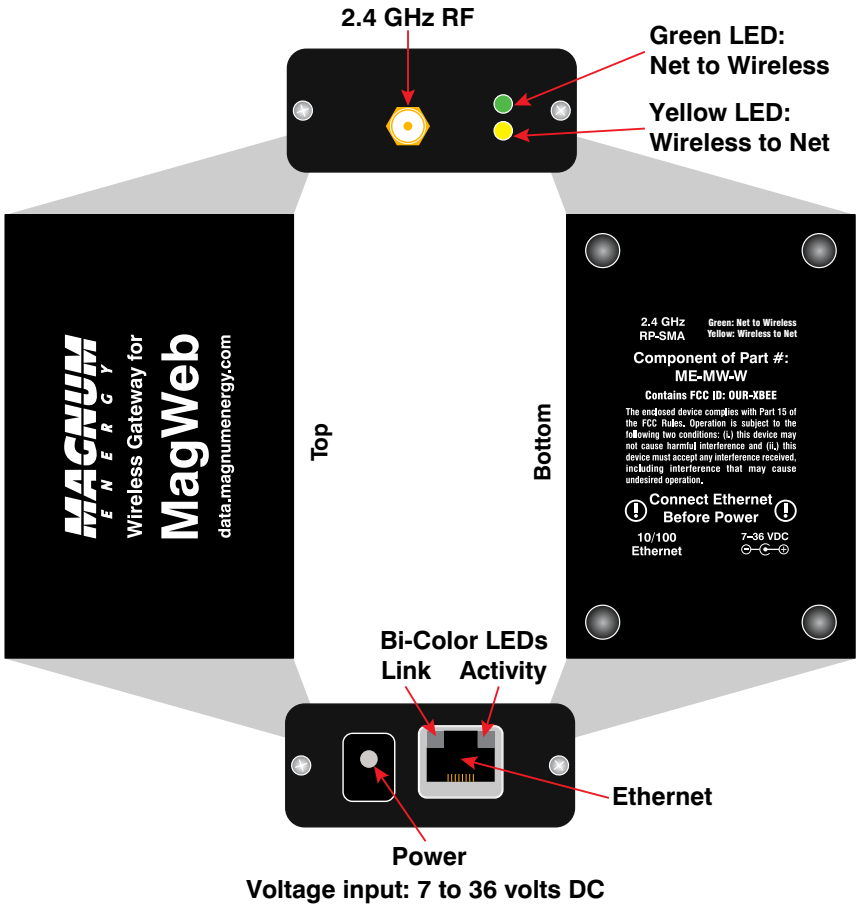


Figure 4-1, MagWeb Wireless Gateway LED Diagram

4.2.2 LEDs Above Ethernet Port

Normal operation is Amber or Green for LINK LED and periodically flashing of the ACTIVITY LED.

Table 4-2, Functions of MagWeb Wireless Gateway LEDs above Ethernet Port

Link LED – Left Side	
Color	**Meaning**
Off	No Link
Amber	10 Mbps
Green	100 Mbps

Link LED – Right Side	
Color	**Meaning**
Off	No Activity
Amber	Half Duplex
Green	Full Duplex

5.0 Troubleshooting

Info: Before using the information below to troubleshoot, review Tables 4-1 and 4-2, LED Indicator Guides.

5.1 Troubleshooting Checklist

The MagWeb is designed to be simple to install and easy to use. Most issues will arise when a minor hook-up problem exists. Check the following items before seeking further help:

- Is the MagWeb wireless gateway connected to an always on internet connection?
- Did you connect the wireless gateway's Ethernet cable before turning the power on?
- Is it attached to a DHCP network to assign the address?
- Did you check your internet connection by plugging a laptop into your always on internet connection? (See instructions below.)
- Is the power supply properly attached and plugged into a viable outlet?
- Are the antennas securely attached to the MagWeb device and the wireless gateway?
- Did you refer to Tables 4-1 and 4-2 to learn what the LED signals were communicating to you?

5.2 Troubleshooting Questions and Answers

What is this device on my network?

The MagWeb device allows remote monitoring of Magnum Energy inverters and accessories. Physically, it is a small black box with ethernet cable, wireless antenna, power adapter, and four LEDs.

How does it communicate?

When the first wireless data is received from the MagWeb, the gateway will open a TCP/IP connection to Magnum Energy's data server. This connection requires very little bandwidth — about 2.5 megabytes per day.

*Why can't I see my device on **data.magnumenergy.com**?*

The most likely cause is an insufficient wireless signal from the MagWeb. The recommended maximum distance between the MagWeb and the wireless gateway is 300 feet. (This distance may be greater in open spaces or less where obstructions exist.)

How can I improve wireless performance?

- Make sure the MagWeb device's antenna is tightly connected.
- Make sure the wireless gateway's antenna is tightly connected.
- Move the MagWeb device and wireless gateway closer together.

How can I check the wireless gateway for data reception?

In addition to checking for data on http://data.magnumenergy.com, you can watch the yellow LED on the wireless gateway to check for data reception. You should see the yellow LED flash faintly every 30 seconds. (See Figure 4-1)

I am a network administrator. How do I adjust network settings?

For most applications, you do not need to adjust network settings. The MagWeb wireless gateway will automatically receive its network settings using DHCP or BOOTP.

If you need to modify any settings, you may telnet to the device on port 9999.

How can I make sure my wireless gateway is connected to the internet?

Unplug ethernet cable from the MagWeb Wireless Gateway and plug ethernet cable into your laptop computer. Make sure wireless and cell phone network connections are turned off.

Verify that you can reboot your computer and then use a web browser to visit **http://data.magnumenergy.com/**. If you cannot, then the network connection will not work for the gateway. The most likely problem is a network log-in requirement or a firewall that does not allow outgoing data connections.

What if I still have questions?

Visit **www.magnumenergy.com** or call Magnum Energy at 425-353-8833.

6.0 Specifications

Sample Rate		
Fixed 30 second sample interval		
2,800 measurements per day		
Communication - 802.15.4 XBee Wireless		
For use with our **data.magnumenergy.com** service		
US Version:	2.4 GHz, 63 mW (+18 dBm)	(300' indoor range, 1 mile outdoor range)
International Version:	2.4 GHz, 10 mW (+10 dBm)	(200' indoor range, 2,500' outdoor range; special order)
Low Power Version:	2.4 GHz, 1 mW (+0 dBm)	(100' indoor range, 300' outdoor range; special order)
Direct Sequence Spread Spectrum (DSSS)		
RP-SMA connector and included rubber duck antenna		
Requires 802.15.4 XBee to Ethernet wireless gateway		
Wireless Agency Approvals:		
■ United States (FCC Part 15.247)		
■ Industry Canada (IC)		
■ Europe (CE)		
■ Japan		
■ Australia		
Power Draw		
MagWeb		**Wireless Gateway**
< 0.1 watts average from Magnum bus		< 4 watts average from 120 VAC
Materials		
MagWeb Case		**Wireless Gateway Case**
Plastic		Anodized aluminum
RoHS COMPLIANT All parts are RoHS compliant, no lead used in manufacture		
Weight and Dimensions		
Shipping Weight: 3 pounds		
Kit Includes		
MagWeb 802.15.4		**Wireless 802.15.4 Gateway**
■ Manual		■ Antenna
■ Communications Cable (4-conductor, 10' twisted pair, telephone standard)		■ Ethernet Cable, 10'
■ Mounting Screws		■ AC Adapter, Energy Star, North American Plug
■ Antenna		
Remote Requirements		
ME-RC50, ME-ARC50 or ME-RTR are required when monitoring device(s) other than inverter		

7.0 Limited Warranty

Magnum Energy, Inc., warrants the ME-MW-W MagWeb device to be free from defects in material and workmanship that result in product failure during normal usage, according to the following terms and conditions:

1. The limited warranty for this product extends for 12 months from the product's original date of purchase.

2. The limited warranty extends to the original purchaser of the product and is not assignable or transferable to any subsequent purchaser.

3. During the limited warranty period, Magnum Energy will repair, or replace at Magnum Energy's option, any defective parts, or any parts that will not properly operate for their intended use with factory new or remanufactured replacement items if such repair or replacement is needed because of product malfunction or failure during normal usage. The limited warranty does not cover defects in appearance, cosmetic, decorative or structural parts or any non-operative parts. Magnum Energy's limit of liability under the limited warranty shall be the actual cash value of the product at the time the original purchaser returns the product for repair, determined by the price paid by the original purchaser. Magnum Energy shall not be liable for any other losses or damages.

4. Upon request from Magnum Energy, the original purchaser must prove the product's original date of purchase by a dated bill of sale, itemized receipt.

5. The original purchaser shall return the product prepaid to Magnum Energy in Everett, WA. After the completion of service under this limited warranty, Magnum Energy will return the product prepaid to the original purchaser via a Magnum-selected non-expedited surface freight within the contiguous United States and Canada; this excludes Alaska and Hawaii.

6. If Magnum repairs or replaces a product (with either a new or remanufactured product), its warranty continues for the remaining portion of the original warranty period or 90 days from the date of the return shipment to the original purchaser, whichever is greater. All replaced products and parts removed from repaired products become the property of Magnum Energy.

7. This limited warranty is voided if:

   - the product has been modified without authorization
   - the serial number has been altered or removed
   - the product has been damaged through abuse, neglect, accident, high voltage or corrosion
   - the product was not installed and operated according to the owner's manual

BEFORE RETURNING ANY UNIT, CONTACT MAGNUM ENERGY FOR A RETURN MATERIAL AUTHORIZATION (RMA) NUMBER.

7.1 How to Receive Repair Service

If your Product requires warranty service or repair, contact either:

1. An Authorized Service Center, which are listed on the Magnum Energy Website at http://www.magnumenergy.com/ServiceCenters.htm, or
2. Magnum Energy, Inc. at:

   Telephone: 425-353-8833
   Fax: 425-353-8390
   Email: warranty@magnumenergy.com

If returning your Product directly to Magnum Energy for repair, you must:

- return the unit in the original, or equivalent, shipping container
- receive a Return Materials Authorization (RMA) number from the factory prior to the return of the Product to Magnum Energy for repair
- place RMA numbers clearly on the shipping container or on the packing slip

When sending your Product for service, please ensure it is properly packaged. **Damage due to inadequate packaging is not covered under warranty.** We recommend sending the Product by traceable or insured service.

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