

# GREEN POWERLINK ZIGBEE IN-HOME ENERGY MONITOR SOLUTION

## User Manual



All Versions

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# INTRODUCTION

Thank you for purchasing the GREEN POWERLINK Energy Saving Solution, an innovative product which is designed to manage home electricity usage efficiently and reduce home electricity bill.

In an effort to reduce your electricity bills, why not first check out what appliance uses most energy in your home.

The New GREEN POWERLINK Energy Monitor allows you to take control of home electricity usage while saving you money in the process.

With GREEN POWERLINK, you can see how much electricity you are using and with greater awareness you'll become more energy efficient.

Fully educated with the critical energy information, you are naturally motivated to adopt new energy saving habits and reduce harmful carbon emission for our environment.

The GREEN POWERLINK is the total solution for green inspiration, energy conservation, and surge protection for your everyday life.

# HARDWARE FEATURES

ZigBee Tracking Energy Monitor	ZigBee Tracking Smart Socket
 <p><b>R9P0160000</b></p>	 <p><b>R9P136A600</b></p>
<ul style="list-style-type: none"> <li>* Link up to 9 PowerLink energy tracking devices</li> </ul>	<ul style="list-style-type: none"> <li>* Surge Protected Outlet</li> <li>* 180J Surge Protection</li> </ul>
<ul style="list-style-type: none"> <li>* ZigBee Link: 2.4GHz (IEEE 802.15.4)</li> <li>* Wireless Range: 100 ft in open area</li> <li>* Display instant energy consumption in Watts, Cost, CO2</li> <li>* Display forecasted energy usage in KWH, Cost, CO2 by day/month/year</li> <li>* Display accumulated energy usage by day/month/year</li> <li>* Surge counter displays the frequency of surge occurrences</li> <li>* Energy Display Power Supply : 9V AC/DC adaptor (included)</li> </ul>	<ul style="list-style-type: none"> <li>* ZigBee Link: 2.4GHz (IEEE 802.15.4)</li> <li>* Transmission Time: 6 seconds</li> <li>* Wireless Range: 100 ft in open area</li> <li>* ZigBee Function: Router</li> <li>* ZigBee Profile: Smart Energy 1.0</li> <li>* ZigBee Cluster: Simple Metering</li> <li>* Green Surge Protected LED Indicator</li> <li>* Manual ON/OFF Button w/ Green LED Indicator</li> <li>* Security: AES 128 bits (Optional)</li> <li>* Meet IEC 62053-21 class I standard (1~1.5%)</li> </ul>

<b>ZigBee Tracking Smart Strip</b>	<b>ZigBee Tracking Smart Meter</b>
<p style="text-align: right;"><b>R9P624NI00</b></p> 	<p style="text-align: right;"><b>M9PC020000</b></p> 
<ul style="list-style-type: none"> <li>* 6 Surge Protected Outlets</li> <li>* 540J Surge Protection</li> <li>* Green Surge Protected LED Indicator</li> <li>* Red Grounded Fault LED Indicator</li> <li>* Transmission Time: 6 seconds</li> <li>* ZigBee Function: Router</li> <li>* ZigBee Cluster: Simple Metering</li> <li>* Manual ON/OFF Button w/ Green LED Indicator</li> <li>* Meet IEC 62053-21 class I standard (1~1.5%)</li> </ul>	<ul style="list-style-type: none"> <li>* Transmission Time: 6 seconds</li> <li>* ZigBee Function: Router</li> <li>* ZigBee Cluster: Simple Metering</li> <li>* Installation type: 1-phase &amp; 3-wire</li> <li>* CT Meter Input Voltage: 100~240V</li> <li>* CT Meter Input Current: 60A</li> <li>* CT Meter Frequency: 50/60Hz</li> <li>* CT Meter Accuracy: &lt;1% at PF=1</li> <li>* Power Supply: Power acquired from electrical meter</li> </ul>
<ul style="list-style-type: none"> <li>* ZigBee Link: 2.4GHz (IEEE 802.15.4)</li> <li>* Wireless Range: 100 ft in open area</li> <li>* ZigBee Profile: Smart Energy 1.0</li> <li>* Security: AES 128 bits (Optional)</li> </ul>	

## INSTALLATION

### Wireless Setup Range

The energy monitor and smart socket/strip/CT meter communicate with wireless technology. To ensure the communication with no interruption, please locate and setup energy monitor, smart socket/strip/CT meter within 100 Ft of range.

### Install Smart Socket

The single outlet smart socket allows the user to track electricity consumption of individual home appliance and protect it against surge and voltage spikes.

1. Plug in the smart socket to a powered AC outlet.
2. Plug in the appliance into the smart socket outlet.
3. The outlet power can be manually turned ON/OFF by pressing the "Manual ON/OFF" button on the smart socket. You may also control the outlet power remotely by using the energy monitor (see the operation instruction).
4. Perform initial energy monitor and smart socket pair up (see the operation instruction).

**PROTECTED LED LIGHT**  
This LED light illuminates to indicate that the surge protection is active and protecting equipments from power surges.



**Manual ON/OFF” button**

### Install Smart Power Strip

The smart power strip allows the user to track electricity consumption of group home appliances in the same area and protect it against surge and voltage spikes.

1. Plug in the smart power strip to a powered AC outlet.
2. Plug in the appliances into the smart power strip outlets.
3. The Energy Saver outlets on the power strip can be manually turned ON/OFF by pressing the “Manual ON/OFF” button on the power strip. You may also control the energy saver outlets remotely by using the energy monitor (see the operation instruction).
4. Perform initial energy monitor and smart power strip pair up (see the operation instruction).

**PROTECTED LED LIGHT**  
This LED light illuminates to indicate that the surge protection is active and protecting equipments from power surges.

**GROUNDLED LED LIGHT**  
This LED light illuminates to indicate that the surge protector is plugged into a properly grounded outlet.

**ALWAYS ON OUTLETS**  
are also available for devices which are always kept on and need continuous power.



**Manual ON/OFF” button**

## Install CT Smart Meter in the circuit breaker panel

The CT smart meter allows the user to measure entire electricity power consumption from electrical panel.



### Caution

Your safety is very important to us. Please read these cautions regarding the installation of your CT Smart Meter.

- Electrical panel contains live electrical wires and components even when the main circuit breaker has been switched off. Do not attempt any installation unless you are familiar where these electrified areas are.
- Any work on or near electrical panel could induce danger or fatal electrical shock. It is highly recommended that all work should be done only by qualified electricians or certified electrical specialist.

## Prepare the electrical circuit breaker

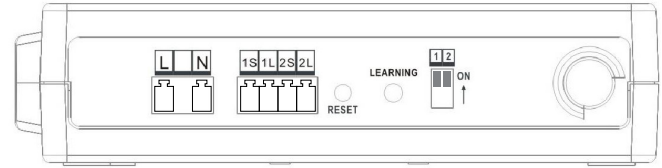
### WARNING:

- Before you start, you must turn off all power in the electrical circuit breaker by turning off the main breaker or main switch.
- Some wires and components could still be live even when the main breaker or switch is turned off. Please identify these wires and components before installation and pay attention to these areas at all time.

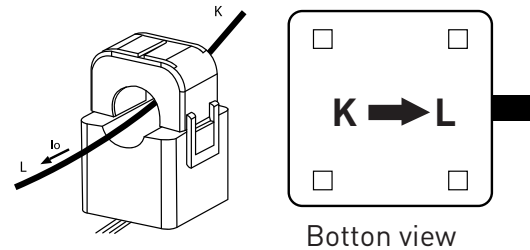
1. Turn off all power by turning off the main breaker or main switch.
2. Remove the cover of electricity circuit breaker panel.

## Connect the CT clamps & voltage wires to the current & voltage input terminals

Before installation, please connect the CT clamp wires to the current input terminal following the sequence 1S(red) 1L(black) 2S(red) 2L(black). Then connect the voltage wires to the voltage input terminal following the sequence L(red) N(black).



Before you clip on the CT over the power line, please make sure the power current flow direction follow the "K→L" indication mark on the CT

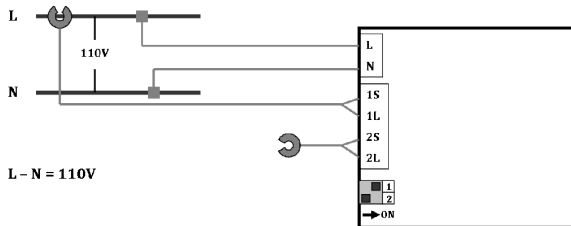
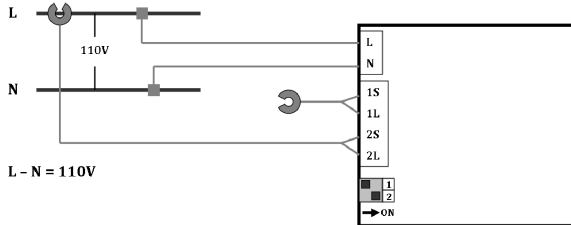


## Wiring Diagram

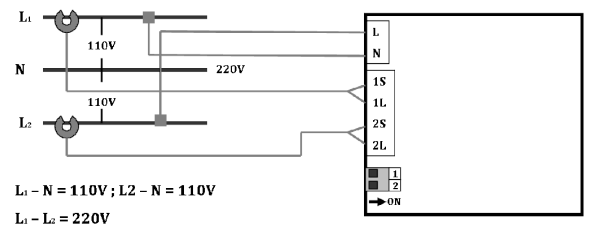
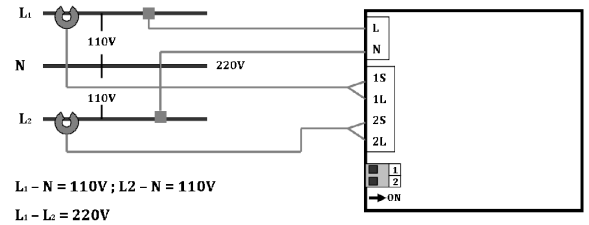
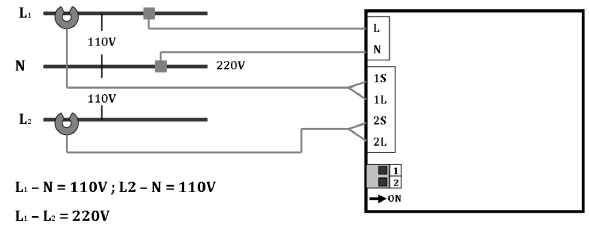
Refer to the following wiring diagram and dial the mode switch that matches your electrical panel type. Then install CT clamp over the power line and voltage wires to L and N voltage terminals.

Once the CT smart meter is installed in the electrical panel, turn on the main breaker and perform initial energy monitor and CT smart meter pair up [see the operation instruction].

### 1 Phase & 2 Wire - 1CT



### 1 Phase & 3 Wire - 2CT



# INITIAL SETUP

## Install Battery in Energy Monitor

Open the battery compartment on the back of the energy monitor and install 4 x AA 1.5V alkaline batteries with right polarity.

**Warning:** Reversing the polarity may damage the product.

Once batteries are installed, the energy monitor will turn on and enter initial setup mode. Please proceed and refer to the next instruction for initial setup.

### Note:

Batteries are not included in the product kit.

Please do not mix and match different types / new & old batteries in use with the energy monitor.

## Use an AC/DC Adapter (Included)

The energy monitor can operate with the included 9V AC/DC adapter.

When the AC/DC adaptor is used in conjunction with batteries installed, the energy monitor will be powered by the AC/DC adaptor to save batteries life in the energy monitor.

## Wall Mount the Energy Monitor

1. Select a spot within the wireless range to mount the supplied wall bracket for the energy monitor.
2. The ideal locations for the energy monitor wall mount are entrance of a room or location where the energy monitor can be easily seen and accessed.
3. Use adhesive tape or supplied screws to securely attach the supplied wall bracket to a wall.

## Perform Energy Monitor Initial Setup

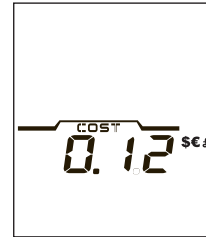
Perform the following initial setup steps for first time operation

1. Currency and Electricity Rate Setup
2. Carbon Emission Setup

**Note:** During anytime, you may press the SET button for 3 seconds to enter setup mode and change currency, electricity rate, and carbon emission rate.

## Currency and Electricity Setup

There are more than 4,000 electric utilities across the US and Canada. In the event your local utility uses a tariff calculation other than flat electricity rate, please key in the average rate that most nearly resembles your utility's tariff schedule.



1. The \$ symbol blinks first. Use the arrow key to select currency symbol in \$ / € / £ .
2. Press the SET button to proceed to Electricity Utility Rate setup.
3. The electricity rate value blinks. Use the arrow key to change the rate value.
4. Press the SET button to proceed to Carbon Emission setup.

Note: The default Currency is US dollar and default Electricity rate is 0.12 ¢ per KWH.



## Carbon Emission Setup

Carbon dioxide is emitted in the process of producing electricity by burning coal & fossil fuel. This is usually referred to CO2 footprint or carbon emission, which in turn has contributed global warming and caused abnormal weather.

The average carbon emission rate is 0.49Kg (1.08 lbs) of carbon emission for every 1 KWH of electricity produced. This can be changed depending upon your local electric utility. Please contact your local utility for carbon emission rate.



1. The **Kg** symbol blinks first. Use the **arrow key** to select the weight symbol in **Kg** or **LB**. Then press the **SET** button to proceed to carbon emission rate setup.
2. The carbon emission rate blinks. Use the **arrow key** to change the value. Press the **SET** button to finish initial setup.

Note: The default Carbon emission rate is 0.49Kg of carbon emission for every 1KWH of electricity produced.

## OPERATION

### Initial Smart Metering Devices and Energy Monitor pair up

The learning function allows you to expand more smart socket/strip/CT meter later on. You may purchase more compatible smart metering devices and pair up to 9 smart metering devices to the energy monitor.

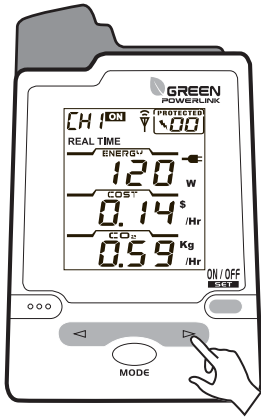
1. When pairing up smart metering devices and energy monitor, please bring energy monitor close to the smart metering devices.
2. On the energy monitor, use the arrow key to select from channel 1 to 9 which you wish to add the smart metering devices.
3. On the smart metering devices, press and hold the LEARNING button until the LED indicator light flashes then release the button.
4. Press the learning button on top of the energy monitor until it beeps once to confirm the smart socket and energy monitor has been successfully paired up.
5. If you hear 3 beeps buzzer from the energy monitor, this indicates the smart metering devices and energy monitor has not been successfully paired up. Please follow step3 to step5 to redo the pair up procedures.
6. Repeat step2 to step5 to add more smart metering devices to different channel on the energy monitor.

### Energy Monitor Display and Control

The user friendly energy monitor allows user to browse energy information and control smart socket and strip remotely.

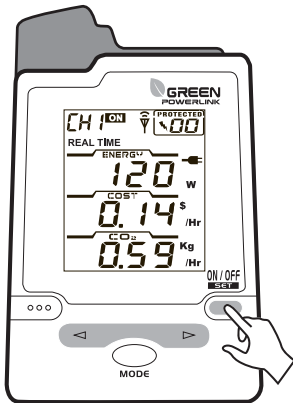
Discover home energy use by viewing real time, projection and accumulation energy information in Watts, KWH, Cost, and Carbon emission. Save money by adopting new energy saving habits and eliminating standby power waste.

## Change channels on the energy monitor



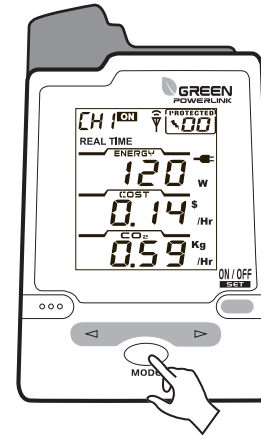
The energy monitor can monitor and control up to 9 smart metering devices. On the energy monitor, each CH number represents a smart metering device. Press the arrow key to change the channel from CH1 to CH9 to ALL channels. The energy monitor will not display energy information when the selected channel does not exit. When you select "ALL" channels, the energy monitor will display the sum total energy information of all available Channels.

## Turn ON/OFF the outlet of the smart socket

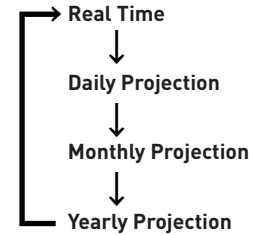


The energy monitor can display the ON/OFF Status of the energy saver outlets on the surge protector. To avoid turning on or off the energy saver outlets by accident, the ON/OFF function can only be accessed **in real time mode**. In real time mode, use the **ON/OFF** Key on the energy monitor to turn ON and OFF the energy saver outlets of the surge protector.

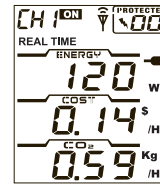
## View real time and projection energy consumption



The energy monitor provides real time and projection energy information. Press the **MODE** button to scroll thru different energy information display.

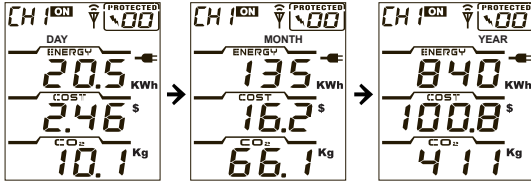


## View Real Time energy information for the channel



In Real Time Mode, the energy monitor will display instant energy consumption in Watts, energy cost in \$/hr, and carbon emission in Kg/hr.

## View projection energy information for the selected channel



The energy monitor reads your device energy usage continuously while your device is on and off, and calculates the projection energy information based on real time and historical measurements.

We suggest let the energy monitor measure device several typical use cycles, and the projection energy information will be more accurate.

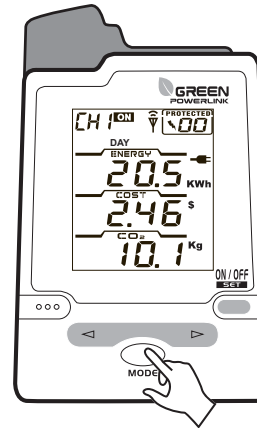
In Projection Mode, the energy monitor will display energy consumption in KWH, energy cost in \$, and carbon emission in Kg.

Use the **MODE** key to change from daily / monthly / yearly projection energy information.

## View accumulation energy consumption

The energy monitor provides energy usage accumulation display. This allows you to view total accumulation energy usage in day, month and year for each channel.

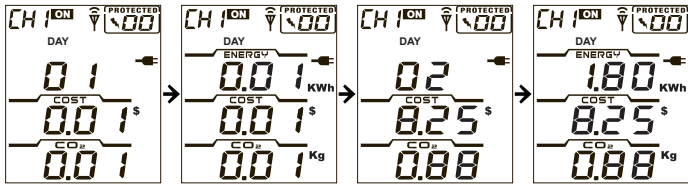
## Activate the energy accumulation mode for the selected channel



1. Select the channel you wish to acquire energy usage accumulation. You can activate the energy usage accumulation for each channel in different time.
2. In DAY mode, press the MODE button 3 seconds to activate the energy accumulation mode.

## View total day energy accumulation for the selected channel

In daily accumulation mode, the energy monitor will display the total accumulative energy information for the total duration days since accumulation mode is activated.

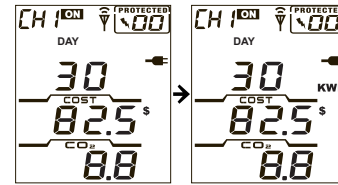


1. The energy monitor will first display DAY01 for 3 seconds, then display the total energy accumulation data for 10 seconds in repeat cycle.
2. After 24 hours, the energy accumulation display will advance to DAY 02 and display the total energy accumulation data.

**Note:** the plug icon flashes repeatedly as an accumulation mode indicator

## View total month energy accumulation for the selected channel

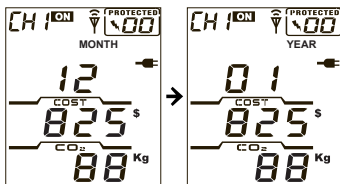
In monthly accumulation mode, the energy monitor will display the total accumulative energy information for the total duration months since accumulation mode is activated.



1. When the total energy usage accumulates over 30 days, it will move and store the total energy accumulation data in MONTH database, and the DAY accumulation data will be reset and re-accumulated.
2. Press the MODE button to switch and view the total energy usage accumulation for the past duration days and months.

## View total year energy accumulation for the selected channel

In yearly accumulation mode, the energy monitor will display the total accumulative energy information for the total duration years since accumulation mode is activated.



1. When the total energy usage accumulates over 12 months, it will move and store the total energy accumulation data in YEAR database, and the MONTH accumulation data will be reset and re-accumulated.
2. Press the MODE button to switch and view the total energy usage accumulation for the past duration days / months / years.

## Exit energy accumulation mode for the selected channel

1. In DAY accumulation mode, press the MODE button 3 seconds to exit the accumulation mode to projection mode.
2. The energy usage will still be accumulated and stored in device's database.

## Reset the Energy Monitor to Factory Default

Please follow the instruction below to reset the energy monitor to its factory default setting.

### Note:

By performing resetting energy monitor to factory default, all saved data, setup & channel settings will be erased.

1. Locate the reset point on top of the energy monitor.
2. Push a stylus or pen into the reset point for 5 seconds.
3. The energy monitor will be hard reset to factory default setting. Please perform all the necessary setup and channel setting.



**CAUTION:**

To assure continued FCC compliance:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

**FEDERAL COMMUNICATIONS COMMISSION  
INTERFERENCE STATEMENT**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.