

# Plug&PlaySolarKits

Solar for Everyone.

Powered By **Prometheus  
SOLAR**

## Grid-Tied (GT) Roof-Mount



**User Manual** Rev. 2.1

## **Disclaimer of Liability**

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# INTRODUCTION

The Plug and Play Solar Kits GT is a solar energy appliance that provides easy, affordable and portable grid-tied or off-grid solar power to supplement your home or business energy needs through the use of an outlet. The system can be as small as one solar panel or as large as the user desires, simply by purchasing additional “Add-On” panels. The GT can be set up in almost any sunny spot and can be moved to new locations easily, making it perfect for those who rent or intend to relocate. **Plug and Play has eliminated all the difficult, frustrating and confusing aspects of home solar!** The system is easy to install and there’s no need for professional installation.

## IMPORTANT SAFETY INFORMATION

Plug and Play Solar Kits makes every effort to make its products as safe and reliable as possible. The goal is to have satisfied customers who enjoy their Plug and Play Solar kits for years to come. However customers are required to read the following warnings and disclaimers pertaining to our products and their use:

- Plug and Play Solar kits are subject to all applicable local codes and the National Electric Code (NEC), ANSI/NFPA 70. Check with your local permitting authority prior to performing any electrical installations including the installation of your Plug and Play Solar kit. Additional requirements for installing your Plug and Play Solar kit may be levied by your local permitting authority. **It is your responsibility to verify all code requirements with your local authority prior to purchasing your Plug and Play Solar kit.**
- Plug and Play Solar kits are subject to all interconnection requirements levied by your local electrical utility company. It is your responsibility to ensure your Plug and Play Solar kit meets all requirements for interconnection prior to purchase. You must also verify the rules and regulations in regards to net-metering agreements and excess power generation from your Plug and Play Solar kit. Grid interactive solar devices such as the Plug and Play Solar kit that are not pre-approved and/or inspected by your local utility may result in fines or even permanent service disconnection from the electrical grid. Plug and Play Solar Kits assumes no responsibility for fees, fines or electrical service interruption as a result of the interconnection of your Plug and Play Solar kit.
- Plug and Play Solar kits have been built as an appliance with the intended purpose of grid-tied or off-grid solar energy production. Any use other than this voids all warranties and Plug and Play Solar Kits accepts no responsibility for any adverse outcomes.

- The outdoor outlet used to plug in the Plug and Play Solar kit(s) **MUST** be a dedicated outlet on its **own dedicated 15A or 20A circuit**. This dedicated circuit and outlet should be installed by qualified and/or licensed personnel only. **No other loads or outlets are allowed on this dedicated solar circuit!** The maximum allowed for each outlet is six units which includes the GT and five add-on units. For every six units purchased, an additional dedicated 15A or 20A circuit and outdoor outlet must be used to accommodate the additional units.
- Some GFCI(Ground-Fault Circuit Interrupter) outlets can be sensitive to the power produced by the GT. To avoid nuisance GFCI tripping, it may be necessary to replace an existing GFCI outlet with a standard 15A or 20A outlet.
- Do not plug anything into your Plug and Play Solar kits other than additional Plug and Play solar kits as described in the product Step by Step Set Up section of this manual.
- Plug and Play Solar Kits GT units are not intended for installation on pitched roofs. Roof mounting can be dangerous and difficult; Plug and Play solar accepts no responsibility for any injuries sustained during installation. Plug and Play Solar Kits accepts no responsibility for any damage to the unit or your property during the product installation.
- Do not mount Plug and Play Solar kits to any other unstable structure. Plug and Play Solar kits are intended for ground, flat-roof and deck use only. Mounting a Plug and Play Solar kits to any other structure voids all Plug and Play Solar Kits warranties and Plug and Play Solar Kits accepts no responsibility for any injuries or damage that occurs as a result of doing so.
- Do not submerge any portion of the Plug and Play Solar Kits in water. All Plug and Play Solar kits are intended for outdoor use and are created to withstand adverse weather conditions. However no part of the Plug and Play Solar kit is intended for submersion in water. Please monitor your Plug and Play Solar kit during wet weather to ensure that no part of the unit is submerged in standing water, especially all power cords. Complete submersion in water voids all warranties.
- Any mechanical or electrical modifications to the Plug and Play solar unit(s) voids all warranties.
- Do not attempt to move a Plug and Play Solar kit unless you are physically able to do so. Plug and Play Solar kits are made of high quality materials that can be heavy and awkward to move. Plug and Play Solar Kits accepts no responsibility for any injury sustained while working with or moving the unit(s).

# THE PLUG&PLAY SOLAR KIT SYSTEM

The Plug and Play Solar Kits GT is the first solar product of its kind to combine interactive features and simplicity of use. Each unit arrives fully assembled and only needs to be plugged into a dedicated outdoor outlet in order to start producing solar power! Once it's plugged in, the user can truly "play" with the GT by using the interactive wireless meter to help find ideal placement and tilt-angles.

Each lead unit comes with a wireless meter that has three displays. The displays show:

1. Kilowatts generated
2. Amount of carbon dioxide reduced
3. Average dollars saved.

This innovative interactive feature makes it easy for the user to adjust the placement and tilt-angle of the panel to find the optimum output for the panel(s) – something that is not possible with traditional rooftop solar.

The Plug and Play Solar GT is similar to any other appliance that plugs into a standard household 120Vac outlet. The only difference is that the unit *produces* power instead of consuming it! When plugged in, a single unit will provide up to 240 Watts to anything currently using power within your house. For example, if the house is consuming a total of 1,000 Watts of power, the GT will provide up to 240 Watts of that power, reducing your electricity from the utility company to only 760 Watts. The GT therefore slows your meter and reduces your electricity bill. In some conditions, it may be possible for the GT unit to provide enough power to stop your meter or even spin your meter backward! In this case, you can consult your local utility about selling power back to the utility company or receiving credits on the power you've produced. This is often called "net-metering." In order to net-meter, you may need to have your utility's approval prior to connecting your GT unit.

- The GT is perfectly safe when unplugged from the dedicated outlet. The unit is designed to immediately shut down when unplugged.
- All electrical components contained within the GT unit are individually UL listed. The unit as a whole is not UL listed.
- The GT, when installed in an ideal shade-free area in Arizona, will produce an average of 1.2 kWh's a day, or 438 kWh's per year. This is enough energy to offset a large capacity refrigerator or five 20-Watt light bulbs for 12 hours per day.
- Up to six GT units can be connected together on one 15A or 20A dedicated outdoor outlet. Consult Plug and Play Solar Kit's technical support if you would like to use more than six units.

# INSTALLATION

## PRIOR TO INSTALLATION

**IMPORTANT NOTE: PLEASE DO NOT PLUG THE UNIT INTO OUTLET UNTIL SET UP IS COMPLETE!**

**Upon delivery:** Each Plug and Play Kits GT unit is packaged securely in recyclable materials and shipped via FedEx. It is important to visually inspect each unit upon arrival. Please examine each box for any visible damage while the FedEx driver is still present. In the case of visible damage, you'll need to report it right away to the FedEx driver. Although damage is rare, all boxes must be opened and the product inspected within 24 hours of delivery, so please check it out right away! Should there be any hidden damage from shipping, Plug and Play Solar Kits must be notified within 24 hours by email so that we can make a claim with FedEx and have a replacement unit on its way as quickly as possible.

**PLEASE NOTE. WE WILL NEED PHOTOS OF THE DAMAGE TO COMPLETE THE CLAIM!**

### Items Required For Installation:



7/16 Combination Wrench



7/16 Ratchet Wrench



Utility Knife



Drill with Phillips Driver

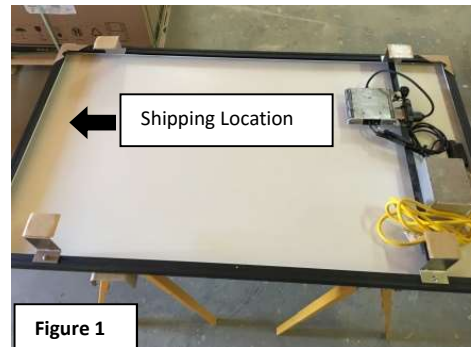
# INSTALLING THE SOLAR PANEL(S)

**PLEASE READ THROUGH ALL THE DIRECTIONS BEFORE PROCEEDING WITH STEP 1.**

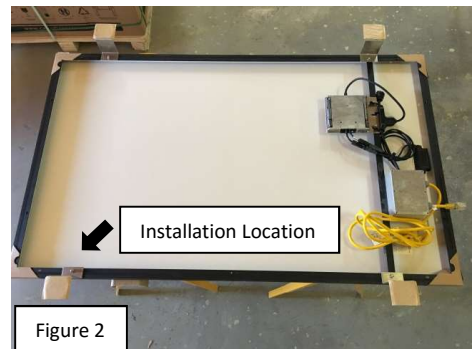
1. Selecting a location on your roof. The ideal location is a flat surface, free of shade, as close as possible to a dedicated outdoor outlet.

**NOTE: It is highly recommended that you perform these setup instructions with two people.**

2. Remove the unit from the box and remove all packing materials.
3. Place the unit(s) on the ground. Lay the unit glass-side down being very careful not to damage the glass.
4. Find the bolts which attach the “Z” brackets to the base of the unit. The unit is shipped with the legs attached to the base in the “shipping” position. (See Figure 1).

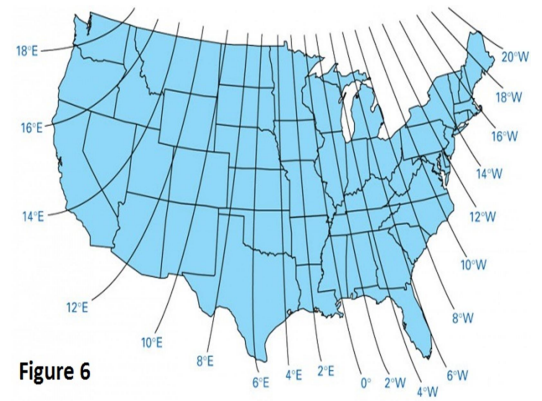


5. Loosen the bolts and rotate the “Z” brackets so that flaps are facing out and tighten them. (See Figures 2)





7. Point the *front true* south, as this direction provides the most sunlight during the day. If you need information on how to find **true** south for your location please visit <http://www.solaripedia.com/files/447> and use the chart provided below.(See Figure 6)



8. Insert the provided ¼” by 2” lag bolts through the pre drilled holes in the Z bracket and attach to the roof trusses.(Optional – you can pre-drill the bolt locations with a 1/8”- 3/16” drill bit)

9. Remove the zip ties on the 30’ cord and plug the GT into a **dedicated** outdoor weatherproof outlet like the one shown below. (See Figure 8) **WARNING! Ensure there are no other electrical loads connected to the circuit your GT is plugged into. Connecting loads to this circuit may result in fire or damage to the circuit. Refer to the “IMPORTANT SAFETY INFORMATION” in this manual for more details.**



10. After an **NEC required five minute wait period**, your GT will sync with the utility grid and begin producing clean electricity for your home. You can now use the included wireless monitor to analyze the performance of your GT. (See Figure 9) Please refer to the included ELITE Wireless Electricity Monitor quick start guide for information on how to set up and use your wireless monitor.



## INSTALLING ADD-ON SOLAR PANEL(S)

**WARNING! No more than five Add-On units can be added to your GT.**

1. For each additional GT Add-On unit, follow steps 1-8 for setting up the unit. Make sure to place each additional unit so that it is in reach of the previously placed unit and does not cast shade on any of the other units.
2. Once all units are set up, begin connecting the units together. Remove the protective cap from your GT female receiver plug. (See Figure 10)



Figure 10

3. Ensure the foam gasket is fully secured on the male plug of the Add-On unit. (See Figure 11)



Figure 11

4. Plug the Add-On unit's male plug into the GT unit's female connector. (See Figure 12)



Figure 12

5. Fasten the included green weatherproof cover around each end of the connection and twist the bottom cover into the top until it is fully seated. (See Figures 13&14)
6. Repeat steps 1-5 until all Add-On units are connected.

**NOTE: Only the GT unit should be connected into the dedicated outlet. Add-On units simply daisy chain to one another and connect into your GT female connector.**

**NOTE:** When installed correctly, the GT wireless meter will read the total power produced from the GT and all Add-On units connected to it.



Figure 13

Figure 14

# MONITOR SETUP

## LINKING TRANSMITTER AND MONITOR

1. Ensure three AA batteries are inserted in the wireless energy monitor. Observe polarity when inserting the batteries.

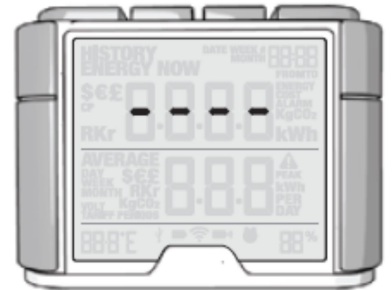
2. Press the **link** button on the back of the wireless energy monitor and hold for two seconds. The transmission signal symbol will flash for one minute or until the transmitter and monitor are linked.

3. While the transmission signal symbol in the display flashes, push the **link** button on the transmitter and wait until the transmission signal symbol becomes solid.

**Note:** The default value for the transmission frequency is ten seconds. This means the transmitter is sending information to the display every ten seconds. You can change the frequency from 10s to 15s or 20s by pushing and holding the transmitter button for two seconds.



Transmission Signal Symbol



Dashes indicate signals not linked



Potable display unit link button



Transmitter link button

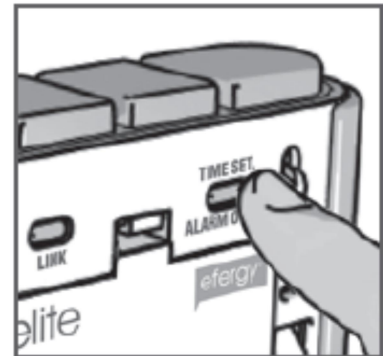
## SETTING THE TIME AND DATE

The elite monitor needs to know the time and date in order to provide you with the correct information.

Set the time and date as follows:

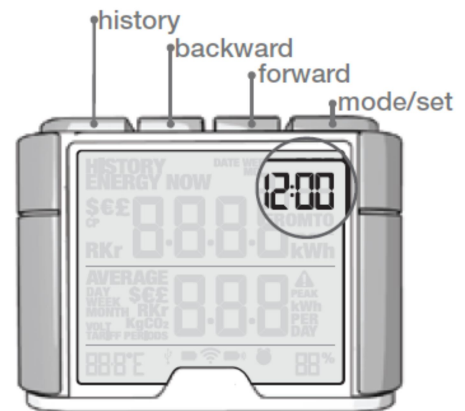
1. On the reverse of the monitor you will find the **time set button**. Press and hold for two seconds. The time setup will flash on the monitor.

2. Set the hour to the correct time by using the **backward** and **forward** buttons. Press the **mode/set button** once to save the hours. Repeat for minutes, using the **mode/set button** to confirm. Once the correct time and date have been set, push the **history button** to save and move onto the date setup.



Hold for 2 seconds

3. Set the month by using the **backward** and **forward** buttons. Press the **mode/set button** to confirm and move onto the day and year. Repeat the same process and then press the **mode/set button** to save and exit.



# SETUP INSTRUCTIONS

The elite monitor needs to know unit cost per kWh charged by your electricity supplier, along with voltage and alarm settings. The following steps will move through each of these settings.

Press and hold down **mode/set button** for three seconds to enter the setting mode.

## 1 – Voltage

Press and hold **mode/set button** for two seconds. Default voltage is set at 120V. Use **backward** and **forward** buttons to change the voltage. Press **mode/set button** to save your setting and move into currency selection setting.



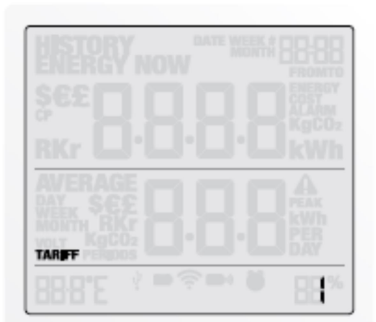
## 2 - Currency Selection

Select the currency using **backward** and **forward** buttons. Default currency will be “\$”. Push **mode/set button** to confirm and to move onto tariff selection set up.



## 3 - Single Tariff Set Up

On release you will see the 1 in the lower right hand corner of the monitor. If you are charged one single tariff push **mode/set button** to confirm.



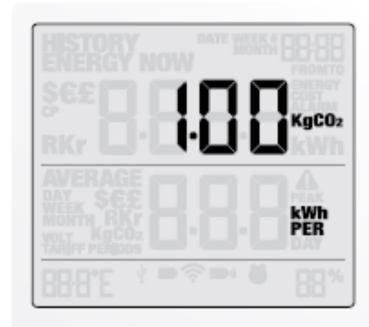
## 4 - Electricity Cost

Default cost is set at 0.1\$/kWh. Use **backward** and **forward** buttons to change the cost per kWh. Press mode/set button to save your setting.



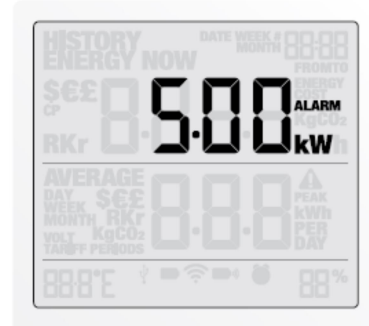
## 5 - Carbon Emissions Ratio

Now set your carbon emissions ratio. This value can be increased or decreased using **backward** and **forward** buttons, press the **mode/set button** to store the value. The North American average is 1.04kg.CO2/kWh and is set as the default value.



## 6 - Alarm

Default alarm is set at 5kW. If the alarm function is switched on, and you are using more than 5kW the alarm will sound and a red light will glow from the bottom of the wireless energy monitor. The value can be decreased or increased using the **backward** and **forward** buttons. Press the **mode/set button** to store the value. Press the **history button** to exit the function setting mode. To activate and deactivate the alarm at any time push the **alarm button** on the reverse of the wireless monitor.

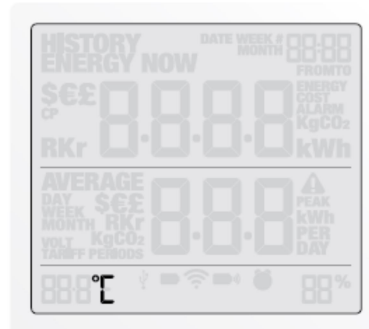


## 7 – Temperature

The temperature setting can be changed between Fahrenheit and Centigrade by pressing the **backward** and **forward** buttons.

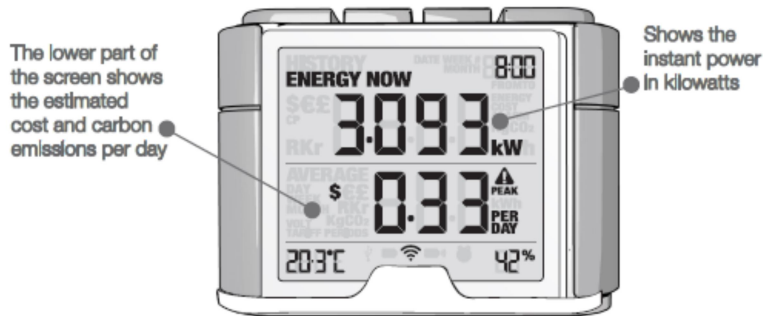
**Note:** Throughout the setup process, push history button at any time, your settings will be saved & you will exit the function setting mode.

**Note:** Twenty seconds of inactivity in setting mode will return the monitor to normal display mode without saving changes.



## INSTANT MODE

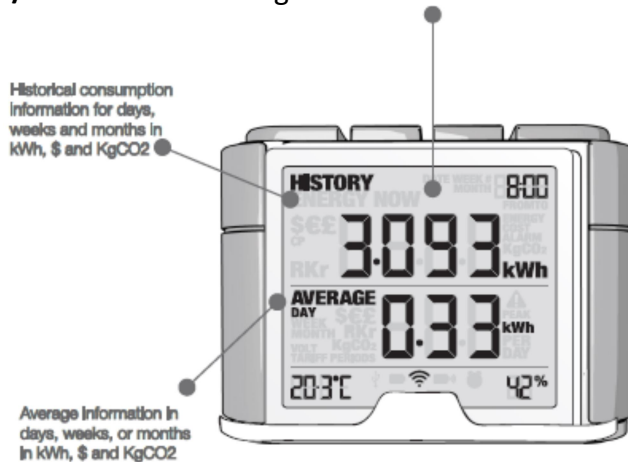
Push the mode/set button to change information displayed from kW to cost (displayed in \$).



## HISTORY MODE

Push the **history button** to access daily, weekly, and monthly stored data. Use the **backward** and **forward** buttons to scroll between dates and compare consumption data.

Press **mode/ set button** to change information from kWh to costs and Co2 emissions.



# TROUBLESHOOTING TIPS

## WIRELESS ELECTRONIC MONITOR

### **If I remove the batteries will I lose the information on the monitor?**

The monitor has an internal memory, so if you need to change or remove the batteries and the information stored on it will not be lost.

### **How do I reset the monitor (clear the stored data and start again)?**

Press and hold the mode/set and history buttons simultaneously for two seconds.

### **How far does the device transmit?**

The transmitter works up to around 230ft/40m within the home. The 433MHz range is well suited for in-home use. This can cover three floors and is also ideal for buildings where electricity meters are situated outside.

### **I have three dashes (- - -) showing on the monitor. What does this mean?**

Move the monitor closer to the transmitter and press the link button. If the dashes remain on the monitor this would indicate that the transmitter and receiver are not communicating. Please contact our customer services to help solve the problem.

### **The backlight appears to work sometimes and then not others. Is it broken?**

No. The backlight is on a timer to save battery life. The monitor should work at darker periods during the day when any buttons are pressed. The LED backlight will be activated from 18:00 to 6:00 hours.

**For more information about the elite go to [www.efergy.us](http://www.efergy.us)**

## M250 MICROINVERTER

Adhere to all the safety measures described throughout this manual.

**WARNING:** Do not attempt to repair the Enphase Microinverter; it contains no user-serviceable parts. If it fails, contact Enphase customer service to obtain an RMA (return merchandise authorization) number and start the replacement process.

### STATUS LED INDICATIONS AND ERROR REPORTING

#### **Startup LED Operation:**

The status LED on the underside of each M250 lights green about six seconds after DC power is applied. It remains lit solid for two minutes, followed by six green blinks. After that, red blinks indicate that no grid is present if the system is not yet energized.

Six short red blinks after DC power is first applied to the microinverter indicate a failure during microinverter startup.



## Post-Startup LED Indications:

Use a handheld mirror to view indicator lights on the undersides of the microinverters:

- **Flashing Green:** Indicates normal operation. The microinverter is receiving messages from the Envoy and senses that the utility grid is within voltage/frequency specifications.
- **Flashing Orange:** Indicates that the microinverter is not receiving messages from the Envoy, but is otherwise operating normally. The microinverter senses that the utility grid is within voltage/frequency specifications.
- **Flashing Red:** Indicates that the microinverter is not operating normally. The microinverter does not sense that the utility grid is within voltage/frequency specifications. The microinverter cannot produce power until this is resolved.
- **Solid Red:** DC resistance low fault. Troubleshoot as described in the following section.

## DC Resistance Low Fault:

A solid red status LED when DC power has been cycled indicates the microinverter has detected a DC Resistance Low event. The LED will remain red and the fault will continue to be reported by the Envoy until the error has been cleared.

An Envoy is required to clear this condition. The condition usually clears with operator intervention unless conditions causing the event have not been remedied or if the failure is permanent.

Follow the instructions in the Envoy Communications Gateway Installation and Operation Manual at <http://www.enphase.com/support> to clear this condition. Or, for assistance, contact Enphase customer support at [support@enphase.com](mailto:support@enphase.com).

## Other Faults:

All other faults are reported to the Envoy. Refer to the Envoy Communications Gateway Installation and Operation Manual at <http://www.enphase.com/support> for troubleshooting procedures.

# TECHNICAL INFORMATION

## Canadian Solar CS6P-265P PV Module

Operating Temperature:	-40°C to ~ +85°C
Cell Type:	60-cell poly-crystalline
Frame:	Black anodized aluminum
Physical Dimensions:	64.5" x 38.7" x 1.57"
Compliance:	IEC 61215, IEC 61730, UL1703, MCS, CE, CEC listed

## Enphase M250 Microinverter

Max Continuous Output Power(AC):	240 Watts
Nominal Output Current:	1.0 A
Nominal Output Voltage(AC):	240 VAC
Operating Voltage Range(AC):	211-264 VAC
Nominal Frequency Range:	59.3 - 60.5 Hz
Peak Inverter Efficiency:	96.5%
CEC Weighted Inverter Efficiency:	96.5%
Operating Temperature:	-40°C to +85°C
Compliance:	UL 1741/IEEE 1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01

## ELITE Wireless Electricity Monitor

Model Name/Number:	EMWEMI
Frequency:	433MHz
Transmission Time:	10s. 15s. or 20s.
Transmission Range:	230ft – 328ft 40m – 70m
Voltage Range:	110V – 600V
Measuring Current:	50mA – 120A*
*Please note the CT sensor is compatible with 200A mains cables.	
Carbon Ratio:	1.04 kg. CO <sub>2</sub> / kWh
The LED backlight will be activated from 18:00Hrs to 6:00Hrs.	

## Transformer

Max Continuous Output Power(AC):	240 Watts
Nominal Output Voltage(AC):	120 VAC
Compliance:	UL 506, CSA C22.2 No. 66, ROHS, Class B Insulation

# CUSTOMER SERVICE

## WARRANTY

25 year manufacturer's warranty on Module and Microinverter.\*  
10 year product warranty on parts and workmanship.\*

\*The above stated warranty does not apply to products which have failed due to improper installation, misuse, alteration, unauthorized repair or modification, or acts of God. Purchaser is responsible for transportation and handling costs of the equipment to and from the distributor or dealer for warranty replacement or repair. The above warranty does not include incidental or consequential damages and Prometheus Solar disclaims any liability for any such damages. All implied warranties, if any, are limited in duration to the above stated warranty period. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages or a duration for an implied warranty, so the above limitations may not apply to you. All liability is limited to the original purchase price of the Module.

Designed and assembled in Flagstaff, Arizona

# Prometheus SOLAR

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[www.plugandplaysolarkits.com](http://www.plugandplaysolarkits.com)



**Email your questions to:**

info.usa@efergy.com for US

sales@energymonitoring.ca for Canada

**Email your technical questions to:**

help@efergy.com for US

support@energymonitoring.ca for Canada

**We aim to answer all your emails within 48 hours**

www.efergy.us for US

www.energymonitoring.ca for Canada



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