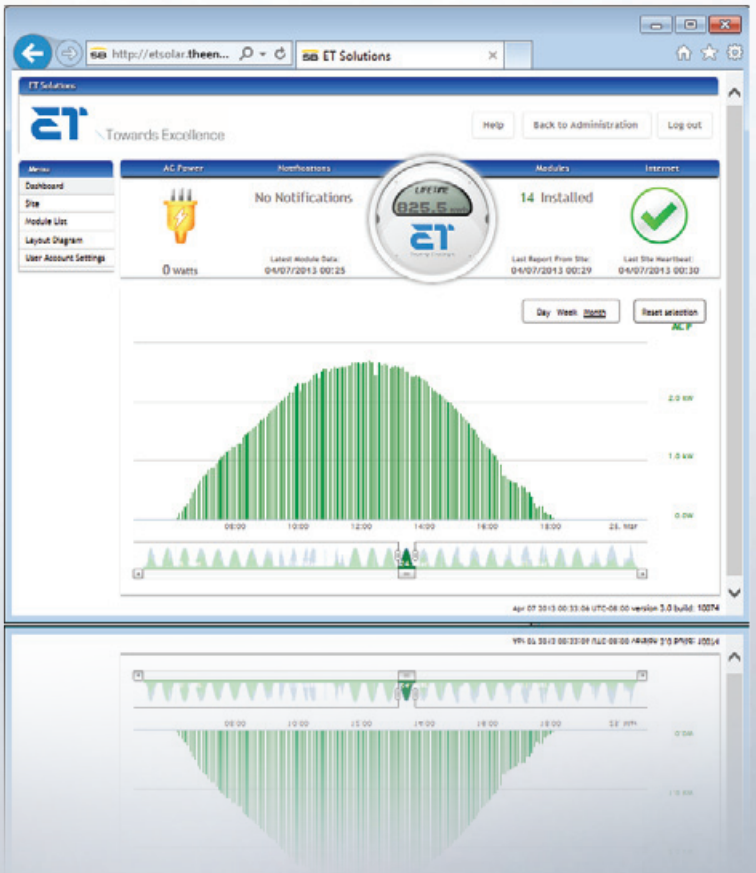
ET SOLAR
AC MODULE MONITOR SYSTEM

INSTALLATION AND CONFIGURATION GUIDE



Towards Excellence

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PN: ETM-0002-AC Rev. 02

Content

Read this First!

This document contains important information and instruction to safely install the Power Manager. Failure to follow these instructions can result in equipment damage or failure, and/or personal injury.

This manual applies to device firmware version 3.0.1 and later. To determine the version of firmware running on your Power Manager, use the Device Information menu in the LCD menu.

The following symbols are used throughout this document to alert you to important safety information that you will need during the installation:

	This symbol indicates that failure to follow instructions may result in serious hardware failure. Use caution when completing this task.
	This symbol indicates that failure to follow instructions may result in serious personal injury. Use extreme caution when completing this task.

The following labels are used on the Power Manager housing:

	IEC 60417-5172 symbol for double insulated equipment (CLASS II) which does not require a protective earthing (equipment grounding conductor) as a means of providing protection against electric shock.
	Take note and follow instructions. Failure to follow instructions could result in equipment damage, injury or property damage.
	This label warns of hazardous voltages behind the AC terminal cover that can cause serious injury or death if the cover is removed. This area is to be accessed only by qualified, trained personnel with the necessary skills and knowledge to work on this type of electrical equipment. Disconnect power before opening.

	This label warns of immediate danger due to exposed hazardous voltages that can cause serious injury or death. This area is to be accessed only by qualified, trained personnel with the necessary skills and knowledge to work on this type of electrical equipment. Disconnect power before opening.

Safety Instructions

Installation and field service is to be performed only by qualified, trained personnel with the necessary skills and knowledge to work on this type of electrical device. Field service is limited to the components contained in the lower compartment of the Power Manager.

- Perform all electrical installations in accordance with any local codes, the National Electrical Code (NEC) ANSI/NFPA 70 for US installations, or the Canadian Electrical Code Part I, CSA C22.1 for Canada.
- Suitable for use indoors or outdoors (Type 3R enclosure). Operating ambient from -20C to 50C.
- Before connecting power, the Power Manager must be securely mounted to an inside or outside wall following the instructions in this document.
- For permanently connected equipment, a readily accessible disconnect device must be incorporated external to the device.
- The Power Manager can be connected to a branch circuit with any standard size breaker rating up to 20A. The input operating current is less than 0.1 amp.
- The Power Manager contains internal transient surge protection for connection to the load side of the service entrance AC panel. For installations in areas at risk of surges generated by high voltage utilities, industry or by lightning, it is recommended that an external surge protective device be installed.
- Do not attempt to repair the Power Manager. If the Power Manager fails, please return the unit to your distributor for servicing. Tampering with or opening the upper compartment of the Power Manager voids the product warranty.
- For pluggable devices, the socket-outlet must be installed near the equipment and must be easily accessible.
- For Power Managers equipped with a non-detachable power supply cord and a Polarized NEMA 1-15P plug, the plug is used as the disconnect means.
- See "Service" for an additional safety warning for Power Manager service personnel.

FCC Compliance

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Safety Certification

ETL listed to UL60950-1 ITE and UL60950-22 for outdoor use.

This Power Manager is not a utility meter, disconnect device, or power distribution device.

Australian Certification

Regulatory Compliance Mark (RCM)

- EMC – ACMA compliance (IEC 61000-6-3 and EN 50065-1)

PLC is rated Class 122 Electrical Safety Certificate of Suitability (AS/NZS 60950-1)

- Includes IP44 (IEC60529)

1. Introduction

The ET Solar™ AC Module System consists of the following components:

- ET Solar™ AC Modules;
- The ET Solar™ Power Manager communication gateway;
- The ET Solar™ Power Portal;

The ET Solar™ AC Module System represents the latest advancements in PV system safety for both the installer and PV system owner. AC modules are shipped to the installer with the microinverter factory-installed on a standard photo-voltaic solar module. The attached microinverter shields the installer, service provider, and module owner from exposure to the potentially lethal DC voltages produced when multiple DC modules are connected in series. AC modules are quickly installed by plugging each module's fully insulated AC power cord into the insulated cord of the neighboring module. The reduced risk has the added benefit of reducing the overall installation and maintenance time.

AC modules also improve the energy production of the solar array. Each module has its own independently operating inverter, and therefore is controlled by its own Maximum Power Point Tracker (MPPT). Unlike PV arrays with a centralized inverter, the overall production of an AC array is not governed by the lowest producing module. This means that while one or more modules might have limited or no production due to shading, soiling, or malfunction, the remaining modules continue to produce at peak output levels.

ET Solar™ Power Manager

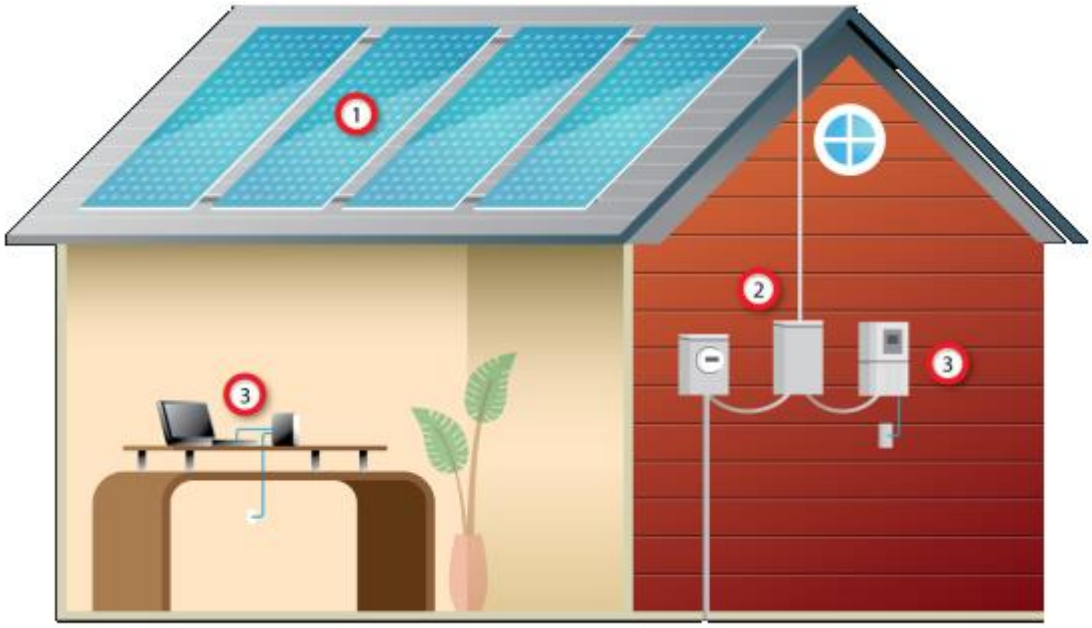
The Power Manager is a gateway device that uses Power Line Communications (PLC) to collect status and performance data from ET Solar™ AC modules. Using broadband Internet, the Power Manager then forwards the collected data to the ET Solar™ Power Portal at five minute intervals. Module owners, service providers, and module manufacturers access this consolidated data through the Power Portal Web site.

To enable Internet communication between the Power Manager and the Power Portal, the Power Manager must be connected to a 10/100Base-T network router using an Ethernet cable.

The Power Manager also includes a local web interface. Using a laptop or similar computer, installers or service providers can access this interface by connecting an Ethernet cable between the computer and the Power Manager's Ethernet port. From the Power Manager web interface, you can perform the following tasks:

- Create and view the module layout diagram
- Review site information (owner and location)
- View and export performance data for both the site and individual modules

The following diagram shows a typical configuration at a residence:



1	ET Solar™ AC Modules
2	The Power Manager is wired to a breaker in the aggregation or service panel.
3	Ethernet cable connecting the Power Manager to the network router enables the Power Manager to upload performance data to the Power Portal. See "Installing the ET Solar™ Power Manager" for information on connecting to the Power Manager's local web server.

ET Solar™ Power Portal

The ET Solar™ Power Portal is a web-based management system that enables module owners, installers, and module manufacturers to monitor system performance. Module manufacturers add installers to the system. Installers then add sites and owners. Each new user receives an email notification providing the Power Portal URL and a system-generated password. When you log into the system, change your password and review the role-based online help to learn the features and capabilities of the ET Solar™ Power Portal.

Automated Software Updates

When necessary, the Power Manager automatically downloads and installs enhancements, which can include defect fixes, to the software on the Power Manager or, on rare occasions, to the firmware on the ET Solar™. No manual intervention is required during the update process.

Overview of the ET Solar™ Power Manager

The ET Solar™ Power Manager is suitable for use indoors or outdoors in temperatures between -20°C and 50°C (-4°F and 122°F). The exterior housing is rated Type 3R/IP 47 for protection

against all weather conditions. The ET Solar™ Power Manager can be connected to standard Type 3R service panels by using 1/2" outdoor conduit.

Figures 1 and 2 below identify the exterior and interior features of the Power Manager.

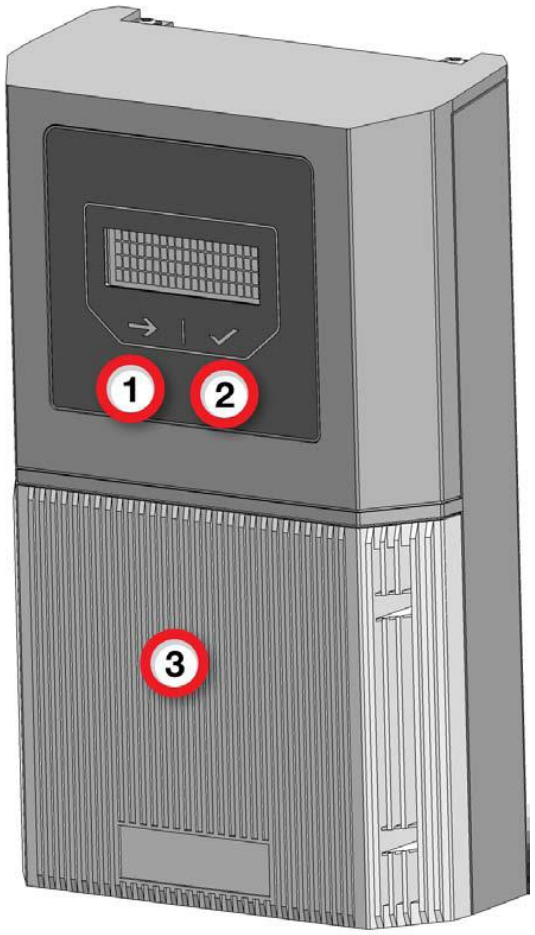


Figure 1: Exterior of Power Manager

1	NEXT button – Moves to the next item in the current menu
2	SELECT button – Displays additional submenus or information
3	Removable access cover – Provides access to the field accessible components of the Power Manager

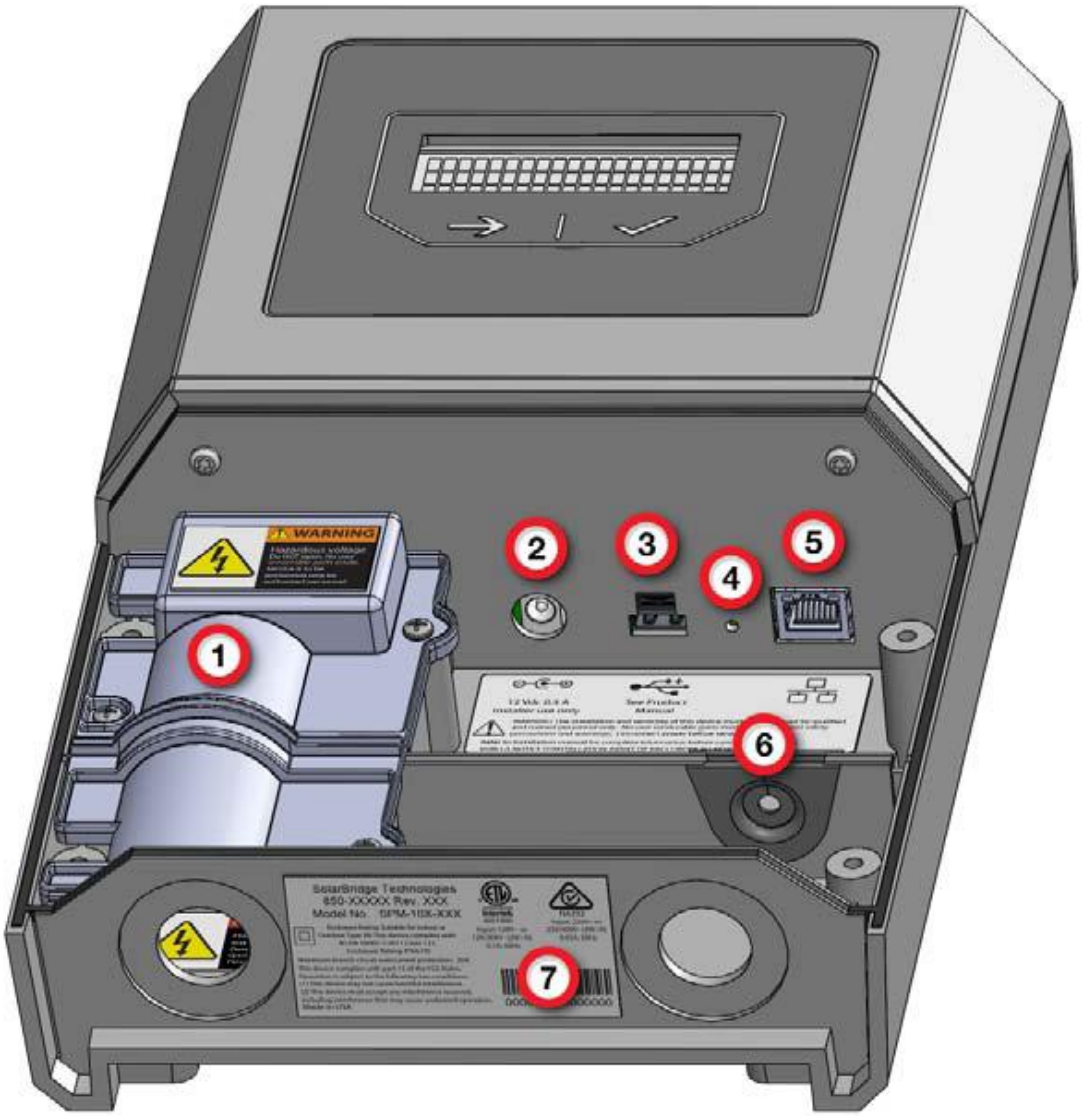


Figure 2: Interior of Power Manager

1	AC terminal block cover – Remove this cover to attach the wires that will connect the Power Manager to the site's electric service panel.
	Warning — This area is to be accessed only by qualified, trained personnel with the necessary skills and knowledge to work on this type of electrical equipment. Disconnect power before opening.
2	12-volt power port – A suitable 12-volt battery can temporarily power the Power Manager and enable you to verify the module installation before the Power Manager is wired to a permanent power source.
	Caution — For use by qualified installers only. Not a permanent power port.

3	USB port – Reserved for future use.
4	Reset port - Should the Power Manager become inaccessible, both from a remote computer and through the LCD, gently insert an appropriately sized object to restart the Power Manager.
5	RJ45 port – An Ethernet cable can connect the Power Manager to a nearby network router or to a service provider's laptop for local access to the Power Manager's web interface.
	 Local Ethernet port only. DO NOT connect any telephone lines to this port.
6	Rubber grommet – This grommet provides weatherproofing protection around the Ethernet cable.
7	Power Manager regulatory nameplate.

2. Before You Begin

NOTE: Installing the Power Manager must be performed by qualified personnel in accordance with local codes and NEC or CEC standards.

Before you begin installing the Power Manager, consider the following topics.

1. Verify Content of the Box

The Power Manager's shipping box should contain the following:

- ET Solar™ Power Manager
- Mounting bracket with screws to attach the ET Solar™ Power Manager to the bracket
- Safety Instructions
- Installation and Service Guide

2. Verify Site Readiness

For the Power Manager to forward status and performance data to the Power Portal and for the site owner to view the data on the Power Portal, the site requires the following:

- Broadband Internet connection
- Multi-port 10/100Base-T network router
- Ethernet cable connecting the router to the Power Manager

3. Choose a Mounting Location

An important step in installing the Power Manager is choosing the location. Close proximity to the site's electric service panel or module aggregation panel ensures the best communications between the Power Manager and the AC modules. The greater the distance between the Power Manager and the panel, the greater the risk of encountering limited or no communication with the modules.

Accordingly, ET Solar™ strongly recommends wiring the Power Manager's AC terminal block directly to a circuit breaker in the service or aggregation pane/switchboard used by the AC modules (Figure 3 and Figure 4). Mounting the Power Manager on an exterior wall, preferably away from direct sunlight, provides easy access for service providers.

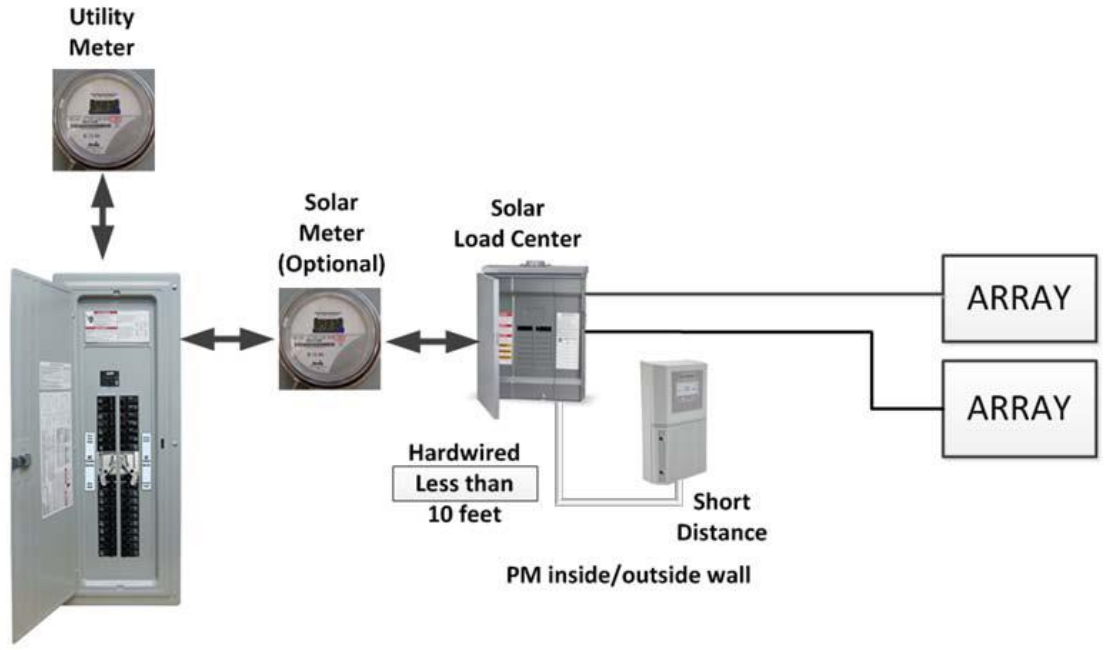


Figure 3: BEST PRACTICE: Wire Power Manager directly to service panel (U.S. and Canada)

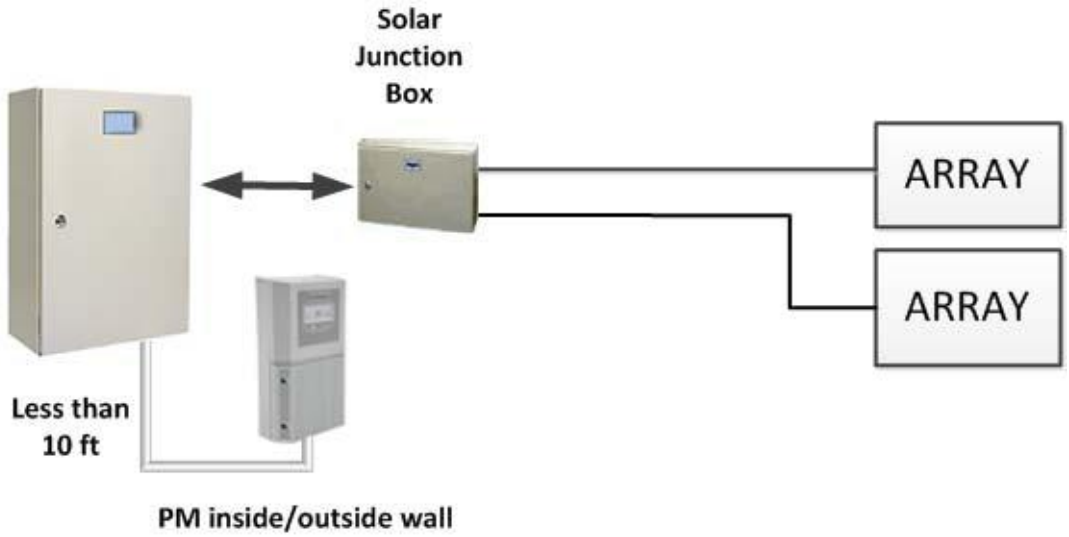


Figure 4: BEST PRACTICE: Wire Power Manager directly to switchboard (Australia)

Mounting Indoors (U.S. and Canada ONLY)

If mounted on an interior wall, the primary connection method should still be to wire the Power Manager directly to the first service panel/switchboard in which the AC modules are landed, often a dedicated PV sub-panel or aggregation panel.

However, in cases where this is not practical, attaching a polarized NEMA 1-15P style AC plug to the Power Manager, and connecting this directly to a standard NEMA 5-15R AC outlet is also permissible for indoor locations only. If a dual plug outlet must be used, the second plug receptacle must be capped to prevent use.

In keeping with best practices, ET Solar™ highly recommends that this outlet be the only one on a circuit dedicated to the Power Manager connection, and that the breaker for this outlet be

located adjacent to the AC module breakers in the PV sub-panel or aggregation panel.

NOTE: Use of an AC plug and outlet is supported for indoor installation only. Do NOT use an AC plug when mounting the Power Manager to an exterior wall.

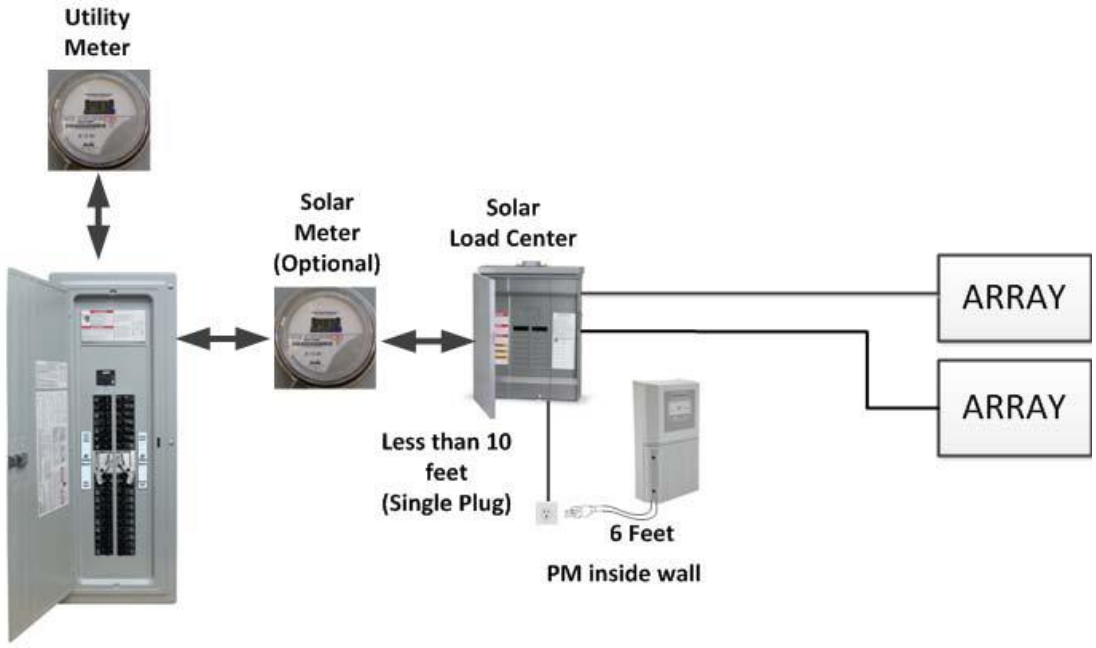


Figure 5: Wire outlet directly to service panel (U.S. and Canada)

⚠	The Power Manager's internal circuits are provided with overcurrent fault protection on the line side only, not on neutral. For protection against fire and to ensure proper power line communication (PLC) with the modules, a polarized plug must be used. It is important to ensure that neutral is connected to the correct terminal of the plug and to the Neutral location on the Power Manager's terminal block.

4. Verify Required Supplies

- Mounting hardware
  - Two #8 pan head screws.
  - Depending on the mounting surface, use appropriate fasteners and anchors capable of supporting 15 lbs of weight.
  - For wood, use screws with 3/4" thread length.
  - For outdoors, use galvanized or stainless steel.
  - Wiring supplies
    - **OUTDOORS:**
      - Wet rated wire, such as THWN
      - Outdoor-rated 1/2" conduit (metallic, non-metallic, or flexible)
      - Fittings suitable for Type 3R/IP 44 enclosures
    - **INDOORS:**

- Permanent Connection
- Follow local codes and NEC or CEC guidelines for permanent connection to a wiring box or electric service panel.
- AC Outlet Connection using only listed/certified wiring devices
  - NEMA 1-15P polarized plug
  - SJO two-conductor power cord
  - Plastic strain relief grommet for 1/2" conduit hole on bottom of the Power Manager (suitable for the diameter of the power cord)

3. Installing the ET Solar™ Power Manager

This chapter provides detailed instructions for installing a Power Manager on an exterior wall with a permanent connection to the module aggregation panel. These instructions can also be used to install the device indoors with a permanent connection to an interior service panel. Where applicable, notes and tips are included for installing indoors with an AC plug.
The Power Manager requires less than 0.1 amp of operating current. It can, therefore, be connected to any standard breaker up to 20A.
Installing the ET Solar™ Power Manager requires the following basic steps:

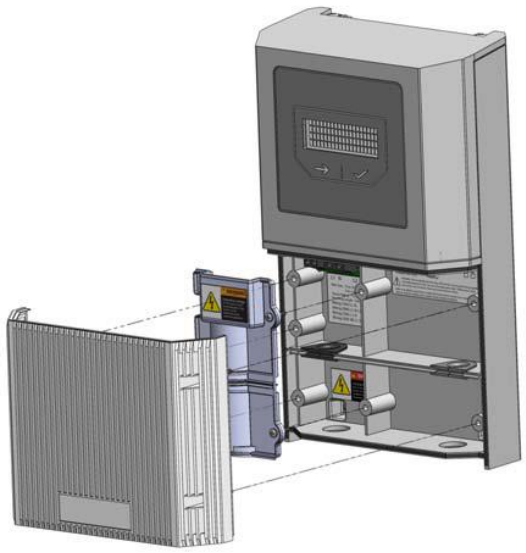
1. Mount the Power Manager on the wall.
2. Connect the Power Manager to the power source.
3. Configure the Power Manager.
4. Establish Internet connection.

Mounting the Power Manager to the Wall

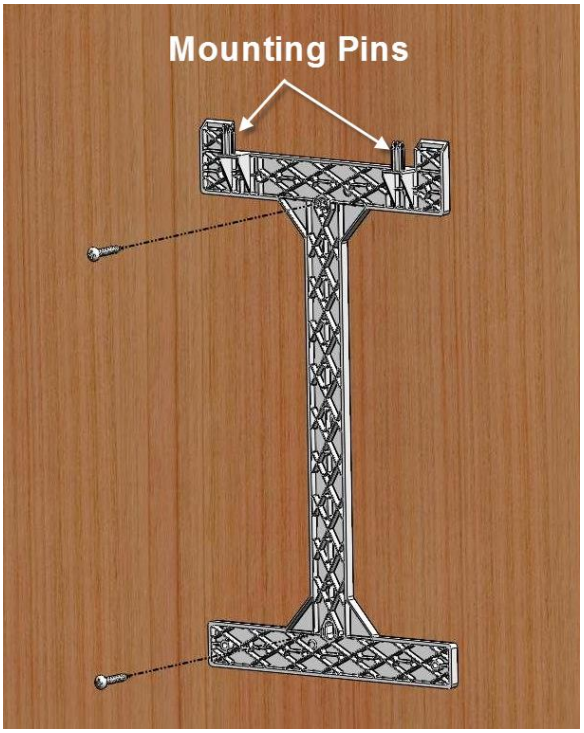
The procedure in this section lists the steps for hanging the Power Manager to an exterior wall. Use #8 pan head screws to attach the mounting bracket. Screws to secure the Power Manager to the mounting bracket are included.

NOTES:
1. Use fasteners and, if necessary, screw anchors suitable for the building surface to which the Power Manager is being attached.
2. If installing outdoors, use galvanized or stainless steel screws.
3. If installing on wood, use screws with a 3/4" thread length.
4. The fasteners and screw anchors must be capable of supporting three times the weight of the Power Manager (15 lbs).

1. Remove the Power Manager's front cover and the AC terminal block cover.

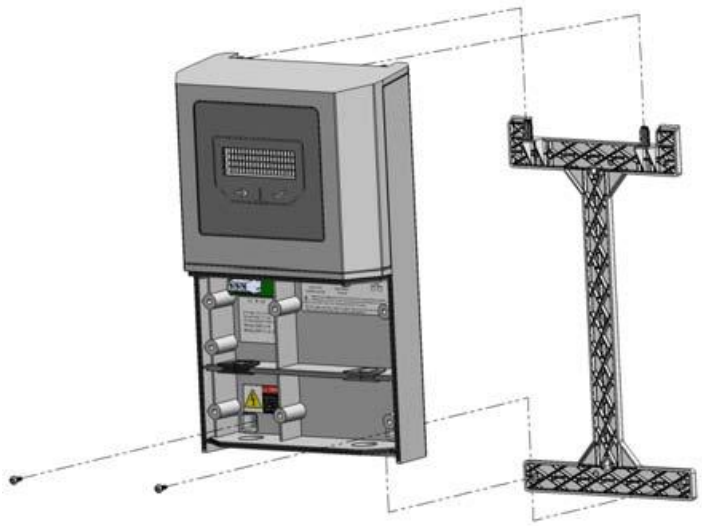


2. With the top of the mounting bracket at eye level and the mounting pin pointing up, secure the bracket to the wall with two #8 pan head screws and suitable screw anchors.



3. Hang the Power Manager on the mounting bracket.
4. Secure the Power Manager in place by inserting the provided screws in the anchor holes inside the Power Manager.

NOTE: When installing indoors with an AC plug, insert the anchor screw in the lower right only. This ensures the module owner does not open the AC terminal cover to relocate the Power Manager.



Wiring to a Power Supply

NOTE: Wiring and connecting the Power Manager must be performed by qualified personnel in accordance with local codes and NEC or CEC.

The Power Manager communicates with the AC modules using Power Line Communication (PLC) protocol. For optimal communications, connect the Power Manager to a dedicated, single-pole 20 A (max) rated breaker in the same service panel containing the 20 A dual-pole breaker for the modules.

The following list provides general guidelines of the materials needed to hardwire a Power Manager to an outdoor service or aggregation panel. Requirements in local codes and NEC or CEC standards take precedence over this list.

- Insulated, high-temperature, wet-rated wire
- Appropriate conduit and fittings for Type 3R/IP 44 enclosures

The figure below identifies the terminal configuration located under the AC terminal block cover of the Power Manager.

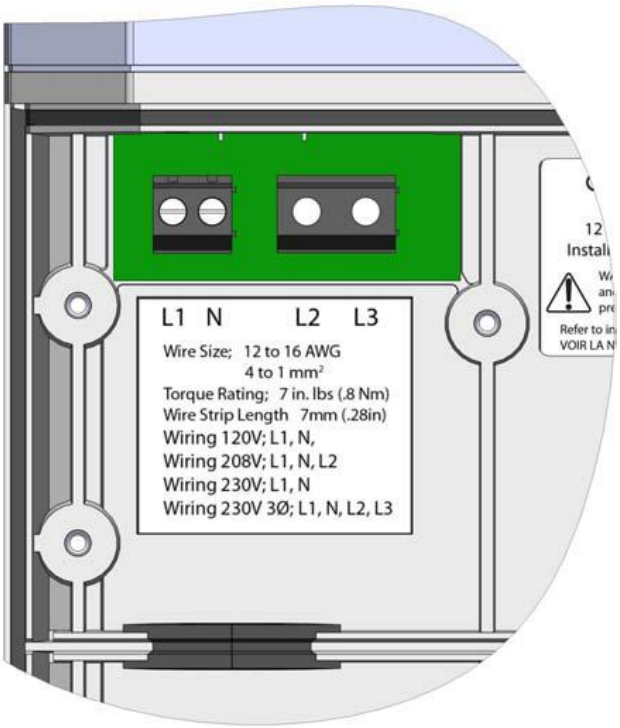


Figure 6: Power Manager Wiring Terminals

The procedure in this section lists the steps for wiring the Power Manager directly to an outdoor service or aggregation panel.

1. Attach appropriate trade size conduit and fittings.
2. Thread enough wire through the bottom left opening of the Power Manager housing and through the conduit to reach the service panel and allow easy connection.
3. Remove the rubber grommet and feed the wire through the rubber membrane.
4. Thread a sufficient length of wire through each hole and replace the grommet in the Power

Manager.

5. Strip wires as necessary and connect the Power Manager as follows:

For this voltage ...	Connect to these terminals ...
120 V	L1, N
208 V	L1, N, L2
230 V	L1, N
230 V 3-phase	L1, N, L2, L3

(U.S. and Canada) For indoor installations using a NEMA 1-15P style AC plug, wire as listed above.

6. Replace the AC terminal cover and secure.

Connecting to the Internet

The Power Manager uses an Internet connection to transmit the data it collects from the AC modules to the ET Solar™ Power Portal.

Keep in mind that communication between the Power Manager and the AC modules and communications between the Power Manager and the Power Portal are two different protocols. The Power Manager can continue to collect module data when there is no Internet access. Likewise, the Power Manager will contact thePower Portal even when it has failed to collect data from the AC modules.

1. Power Portal even when it has failed to collect data from the AC modules.Thread the Ethernet cable through the lower right opening in the Power Manager's housing and through the rubber grommet.

 Caution	To protect the interior of the Power Manager from insects and condensation, cut the smallest opening possible to fit over the Ethernet connector.

2. Remove the Consent to Share label from the Ethernet port.

NOTE: When connected to the Internet, the Power Manager periodically uploads site and module-level data to the Power Portal.

3. Plug the cable into the Ethernet port.
4. Verify that the other end of the Ethernet cable is plugged into a 10/100Base-T network router with broadband Internet access.

On startup, you will see flashing green lights next to the Power Manager's Ethernet port. These lights indicate that the Power Manager has a connection with the network router.

The Power Manager uses DHCP to acquire an IP address. If a network or DHCP is not available, the Power Manager uses its default IP address, 192.168.100.1. Replace the Power Manager's access cover.

System Startup

This chapter includes the following procedures:

- "Starting Up the Power Manager"
- "Setting the Time Zone"
- "Discovering Modules"
- "Accessing the Power Manager's Local Web Interface"
- "Shutting Down the Power Manager"

To complete the installation, you must perform the first two procedures in the above list. Once these procedures have been completed, the Power Manager will begin collecting data from the installed modules. If an Internet connection exists, the Power Manager will begin uploading data to the Power Portal in approximately 10 minutes.

Starting Up the Power Manager

NOTE: If the Power Manager will be connected to the Internet, plug in the Ethernet cable before applying power to the Power Manager. This ensures the Power Manager will acquire the current date and time before it begins collecting data.

Once the Power Manager is connected and the power is turned on, the LCD interface is the first software component to initialize. It requires approximately 5 minutes to fully start up. However, the first time that the Power Manager is turned on the startup includes database and software initialization processes, which can take three times longer to complete.

Once all software components have started, the LCD displays the following Home screen:

Figure 7: Power Manager Home Screen

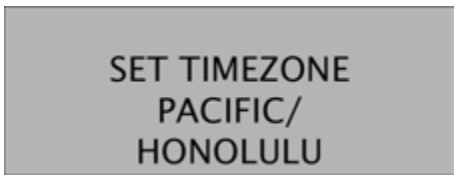
1	Displays the number of modules from which the Power Manager is requesting data. Use the **Module Information** menu to verify that all modules have forwarded their data.
2	Displays the amount of power being produced at the time that data was last collected from the modules.
3	Indicates whether the Power Manager has a connection to the Power Portal. NOCOMM indicates that data is not being forwarded to the Power Portal. The cause could be loss of Internet access, the Ethernet cable is disconnected from the router or from the Power Manager, or the Power Portal is unavailable to receive data.

At this point, the Power Manager is operational and the full LCD interface is available. See "Power Manager LCD Interface" for detailed information on the organization and content of the LCD interface.

Setting Time Zone

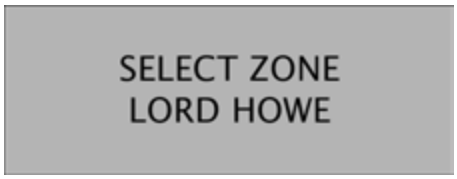
If possible, the Power Manager retrieves the current time from the ET Solar™ Power Portal. If that connection is not available when the Power Manager starts up, use Power Manager's LCD to set the current date and time.

1. Verify that the discovery process has completed. When Discover completes, the number of modules shown on the Power Manager Home screen is a number other than zero.
2. Press the arrow button ( ) until the LCD displays the **Operation** menu, and press the checkmark button ( ).



3. Press the arrow button ( ) to move to **Set Time Zone** and press the checkmark button ( ).

4. Press the checkmark button ( ) on the **Set Time Zone** to begin.



5. Press the arrow button ( ) until your time zone appears on the screen and then press the checkmark button ( ).
6. Press the checkmark button ( ) on the **Exit** screen to return to the **Set Time Zone** screen, which now displays your current region and time zone.

Setting Date and Time

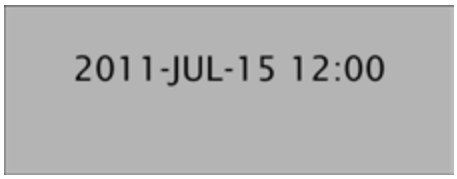
If the Power Manager is connected to the Internet when the Power Manager is powered on, the Power Manager will acquire the current date and time from the Internet.

If an Internet connection does not exist, you must set the date and time manually using the **Operations -> Set Date/Time** menu. This menu is only shown when no Internet connection is available.

NOTE: The ET Solar™ AC Module System uses the UTC time zone and a 24-hour clock.

1. Press the arrow button ( ) until the LCD displays the **Operations** menu and then press the checkmark button ( ).
2. Press the arrow button ( ) to move to **Set Date/Time**.

3. Press the checkmark button ( ) on the Set Date/Time to begin.



NOTE: Use care when setting the date. Setting the date in the futurecan have adverse effects on data collection.

4. Use the two buttons to increment and select the underlined values. After selecting the final value, press the arrow button ( ) to move to the **Save/Cancel** screen. **Save** stores your selection and returns to **Set Date/Time**. **Cancel** returns to the previous screen enabling you to make new selections.

Discovering Modules

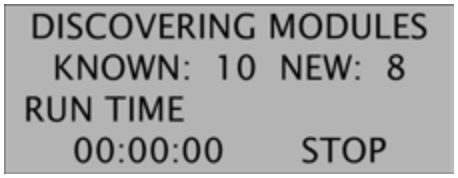
Discovering modules is a three part process:

- Discover
- Discover wrap-up
- Module configuration

1. Press the arrow button ( ) until the LCD displays the Operations menu and press the checkmark button ( ).
2. (Optional) If the Power Manager has been previously used, either for testing or at another site, press the arrow button ( ) to move to Clear All Discovered Modules, then press the checkmark button ( ).
3. Press the arrow button ( ) until the LCD displays Discover New, then press the

checkmark button ( ).

An interim screen displays the progress of the discover process.



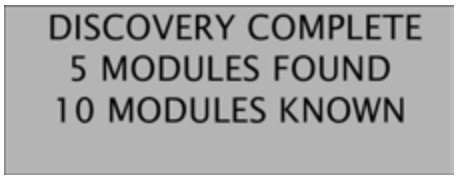
- The top line of the screen changes to show the progress of discover.

Discovering Modules	The discovery process has begun
Discvr. Pass : 280 | 0	The first number, 280, indicates the current size of the response window. The response window decreases as modules are found. Therefore, this number decreases as the discovery process progresses. The second number is a 5-second counter. This counter is controlled by the discover process and therefore indicates that the process is running.
Discover Wrap-up: 5 Mins	This is a wait period to ensure that all modules have an opportunity to respond.
Configuring Modules	This phase initializes each of the modules found in the discovery passes.

- Known – The number of previously discovered modules.
- New – The number of modules found during this discovery. This number increments as each module is found.
- Run Time – The elapsed time since starting the discover process.

TIP: When the number of new modules reaches the number that you are expecting to discover, you can press the checkmark button ( ) to stop the discovery process. The menu screen proceeds to DiscoverWrap-up: 5 Min to initialize the discovered modules.

When discovery completes, the following screen displays:



4. Press the arrow button ( ) to move to **Exit** then press the checkmark button ( ).

Accessing the Power Manager's Local Web Interface

The Power Manager's web interface provides local access to the same site information available through the Power Portal but with a slightly different layout.
This local web interface is available to service providers to assist in troubleshooting the array.

1. Use the Power Manager LCD to determine the current IP address of the Power Manager.
2. Remove the housing from the lower portion of the Power Manager.
3. If necessary, disconnect the existing Ethernet cable.
4. Using an Ethernet cable, connect your laptop to the RJ45 Ethernet port on the Power Manager.
5. On the Power Manager's LCD, navigate to the **Communications** menu and select **Refresh IP Address**.
6. In a web browser, type the IP address in the URL address field. For example: http://192.168.100.1

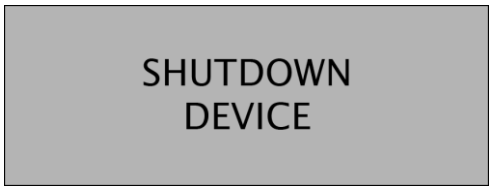
NOTE: If you fail to make a connection, manually configure your IP address to the same subnet as the Power Manager. For example, if the Power Manager's address is 192.168.100.1, you might temporarily set your IP address to 192.168.100.2, subnet mask 255.255.255.0.

7. On the Login page, type the following information and click Login.
   - Username – admin
   - Password – admin
8. Use the online help for instructions on using the Power Manager's web interface.

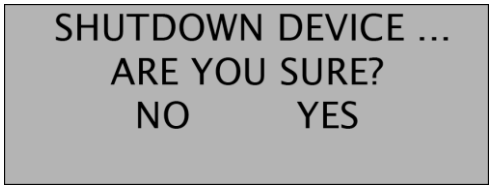
Shutting Down the Power Manager

The Power Manager is a computer. Like all computers, shutting down the device without using the proper shutdown menu can potentially leave the system in a corrupted state that prevents or negatively impacts future performance. Use the following steps to properly shutdown the Power Manager:

1. Press the checkmark button ( ) on the **Operation** screen, then press the arrow button ( ) until the **Shutdown Device** screen appears.



2. Press the checkmark button ( ).



3. Press the arrow button ( ) to choose the correct response to the confirmation question, then press the checkmark button ( ). Selecting YES continues the shutdown.

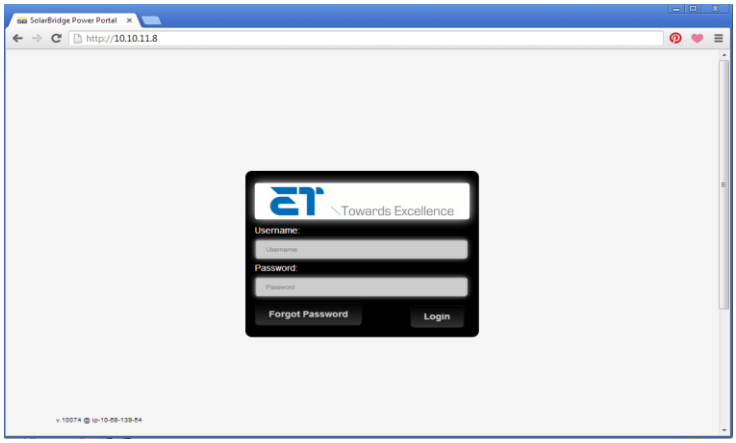
When the screen goes blank, it is safe to remove power from the Power Manager.
To restart the device, cycle the power supply by unplugging the Power Manager and then plugging it back in or by flipping the circuit breaker.

4. Configuring the Power Manager's Web Interface

Login in the Welcome page

Besides the way describe on "Accessing the Power Manager's Local Web Interface", you can login in the **Welcome** page by another way.

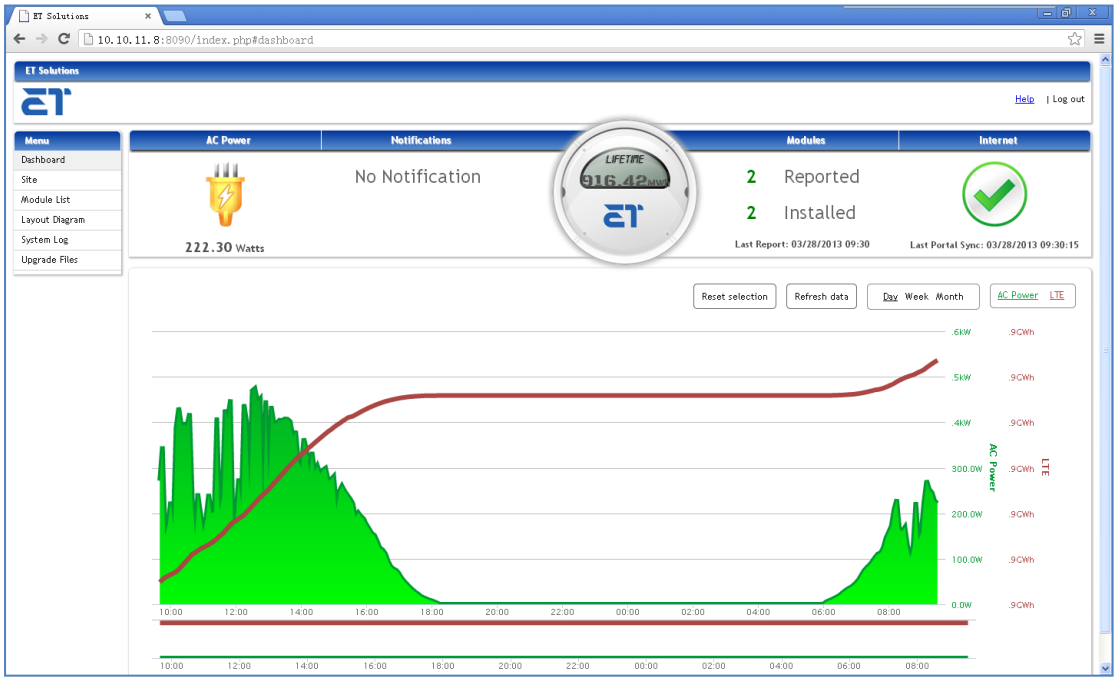
1. Connect your laptop or PC to a Lan-Port of the router, which Power Manager shares.
2. Change the IP address of your laptop or PC to the same address field, then in a web browser, type the IP address in the URL address field. For example: http://10.10.11.8. Then you login in the **Welcome** page.



3. Type the following information and click Login.

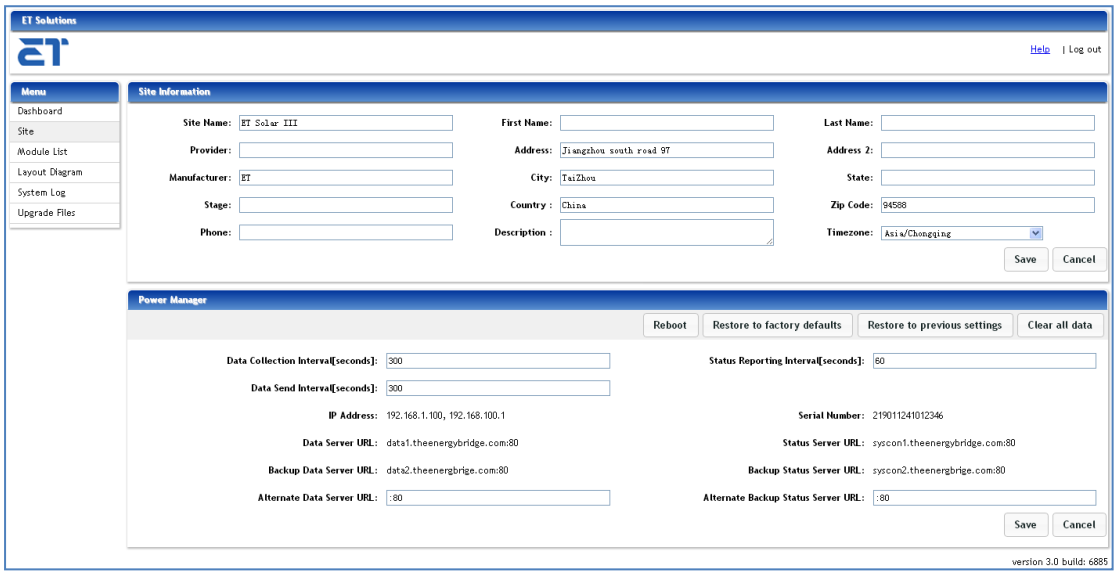
- Username – admin
- Password – admin

Now you can view the Home page of the Power Manager's web.



View the site information

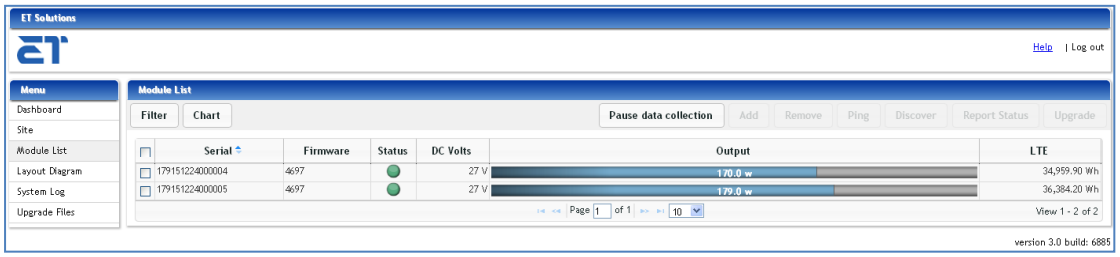
The **Site information** should be filled by the installer, you can view and check it. If there is any incorrect information, please contect with our service.



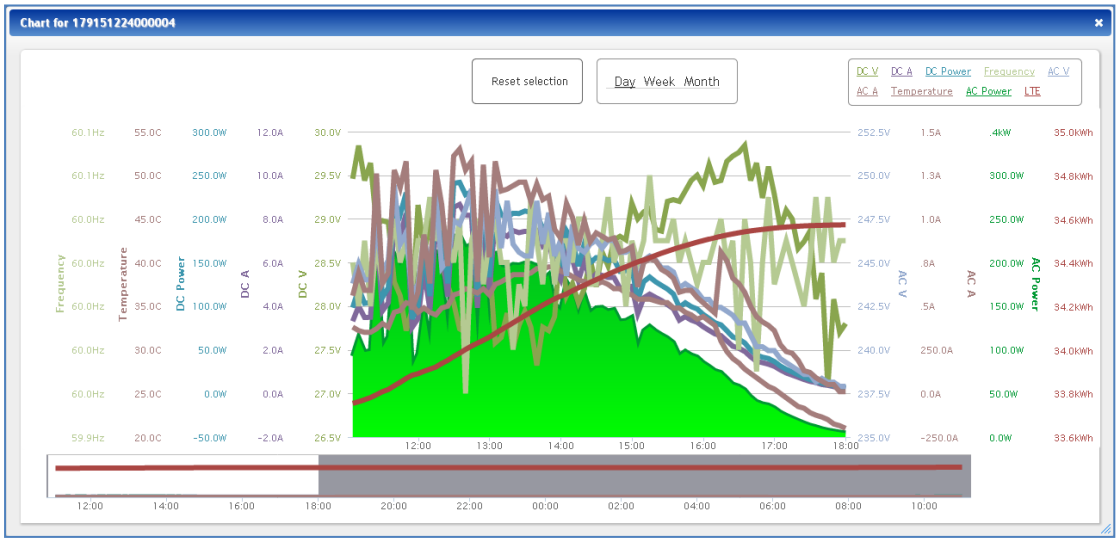
The **Power Manager** information is prefilled, Please DO NOT change it unless necessary.

View the module information

Click the **Module list** button in the menu, it will show the following page.

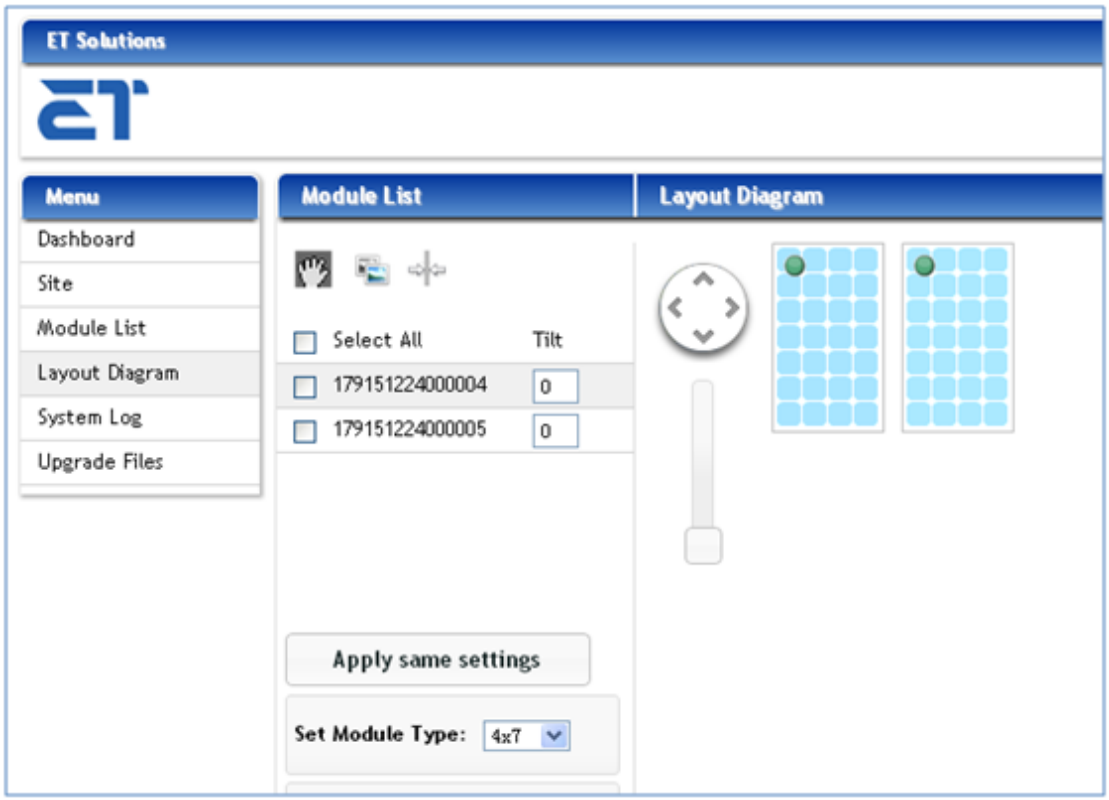


Select a module in the **module list**, and click the **Chart** button, you can view the detail information of the selected module.



View the module layout

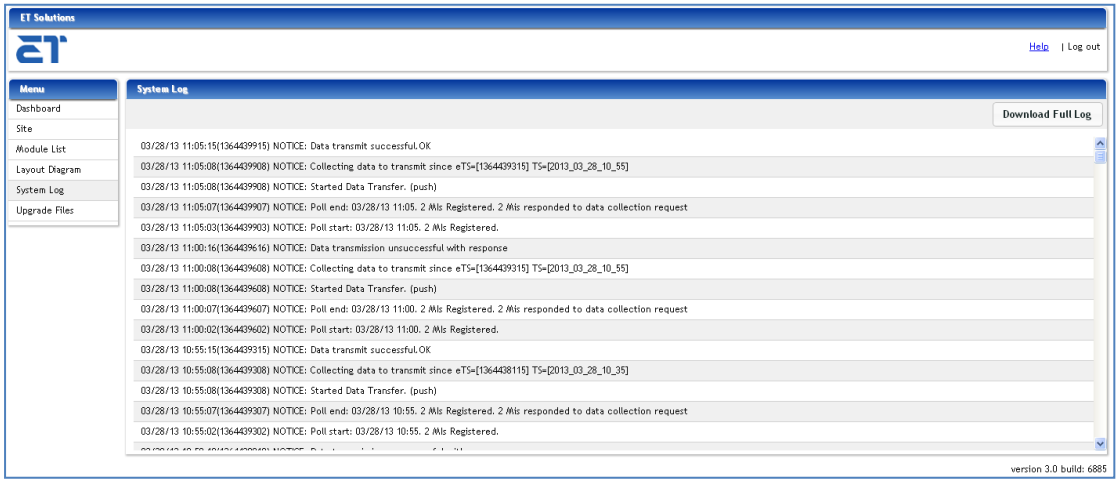
Click the **module layout** button in the menu, it will show the following page.



You can change the tilt, orientation and the array formation of the installed modules.

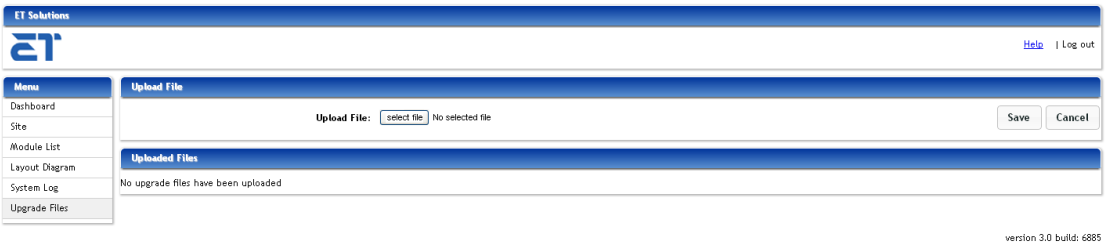
View the system log file

In this page, you can view and download the system log file for more use.



View the upgrade files

Click the Upgrade files button in the menu list, you can view the upgrade files of the Power Manager, and use them to upgrade the device. All files are downloaded automatically.



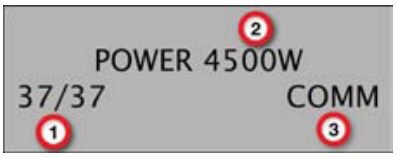
Appendix A: Power Manager LCD Interface

The Power Manager's LCD interface is most commonly used by an installer to configure the site after modules have been installed or by a service provider performing maintenance at the site. Use the two buttons below the LCD interface to navigate through a set of topic menus that provide access to information or setup controls.

	The Next button - Press to move to the next screen or editable field. Pressing the arrow button () on the EXIT screen returns you to the first menu item in the current topic menu.
	The Select button - Press to select a topic menu. Pressing the checkmark button () on the EXIT screen returns to the topic menu.

Main Menu

The table below describes the top-level menu items in the LCD interface. Use the arrow button () to scroll through the items in this table. The checkmark button () to selects the menu.

Menu	Description	Press  to go to...
	Home screen appears when the Power Manager software is fully initialized. 1 Number of modules that reported in the last data request/Number of known modules. 2 Total amount of power generated by all modules at the time of the last data reading. 3 COMM = Connected to Power Portal, NOCOMM = Not connected to Power Portal.	

DEVICE INFORMATION	Information about the Power Manager.	"Device Information Menu"
MODULE INFORMATION	Information about each module that is monitored by this Power Manager.	"Module Information Menu"
SITE INFORMATION	Current performance statistics for the array.	"Site Information Menu"
COMMUNICATIONS	Information related to communications with the Power Manager.	"Communications Menu"
OPERATIONS	Screens used to restart or stop the device and to discover new modules. If no Internet connection is available, the Set Date/Time screen is also shown.	
EXIT	Scrolls through the menus.	Exits the main menu and returns to the Home screen.

Device Information Menu

This menu provides basic information about the Power Manager. Press to scroll through the screens.

Menu	Description
DEVICE SERIAL NUMBER 123456789012345	Displays the serial number of the Power Manager.
SOFTWARE VERSION V3.0.2 BUILD 1234	Displays the version number of the installed firmware.

DISK AVAILABLE 2726MB	Displays the amount of memory still available on the SD card.
EXIT	Scrolls through the screens. Exits the information screens and returns to **Device Information**.

Module Information Menu

This menu provides information about each module monitored by this Power Manager.

Menu	Description
1/10 MODULE SERIAL # 123456789012345	Press to scroll through the list of serial numbers. Press to view information about this module. The remainder of this table shows the information available for each module.
MODULE FIRMWARE 2160	Displays the version number of the firmware installed on the inverter attached to the module.
MODULE POWER 4.5W	Displays the current power output of the module.
MODULE DC VOLTS 24.556V	Displays the DC volts currently produced by the solar module.
MODULE DC AMPS 2.556A	Displays the DC amps currently produced by the solar module.
LAST REPORT 01/01/2011 12:33	Displays the date and time the module last reported data to the Power Manager.

RETURN TO MODULE SN LIST	Continues to next screen. Exits the information screens for the selected module and returns to **Module Serial** # list.
RETURN TO MODULE INFORMATION	Scrolls through the screens. Exits the information screens for the selected module and returns to **Module Information.**.

Site Information Menu

This menu provides information about the overall performance of the site.

Menu	Description
DAILY SITE ENERGY 1234.5678kWh	Displays the amount of energy produced today.
LIFETIME SITE ENERGY 2549.2640kWh	Displays the total energy produced over the lifetime of the array.
CURRENT GRID VALUES VOLT 211.0Vrms FREQ 60.3Hz	Displays the voltage and frequency of the electric grid at the time of the last data reading.
GRID VOLTAGE TRIP LIMITS RMS 211.0V 256.5V TIME 2.0s 120.0s	Displays the low and high voltage at which the modules stop producing power, and the number of second after a limit is reached before power production stops.
GRID FREQUENCY TRIP LIMITS FREQ 57.0Hz 60.5Hz TIME 2.0s 150.0s	Displays the low and high frequency at which the module stops producing power, and the number of second after a limit is reached before power production stops.
EXIT	Scrolls through the screens. Exits the information screens for the selected module and returns to **Site Information.**

Communications Menu

This menu provides the IP address and MAC address of the Power Manager as well as the date and time that the Power Manager last communicated with the Power Portal.

Menu	Description
DEVICE IP ADDRESS 12.34.56.789	Displays the IP address of the Power Manager.
REFRESH IP ADDRESS	Pres ✓ to acquire a new IP address or to renew the current IP address. An interim screen displays the progress of the refresh and returns the **Device IP Address** screen.
DEVICE MAC ADDRESS 01:23:45:67:89:AB	Displays the MAC address of the Power Manager.
LAST PORTAL SYNC 01/01/2011 12:10	Displays the date and time that data from the modules was last transmitted to the Power Portal.
EXIT	→ Scrolls through the screens. ✓ Exits the information screens for the selected module and returns to **Communications**.

Operation Menu

The submenus in this menu enable you to stop or restart the device, and to discover newly installed modules.

This menu might also include the **SET DATE/TIME** submenu. When an Internet connection is available, the date and time are acquired from the Internet. If no Internet connection is available, use this submenu to set the device to UTC time. An underline marks information that you must supply (for example: year, month, day, etc.).

Use the arrow button (→) to scroll through a set of values and the checkmark button (✓) to select a value. After selecting the value, the underline moves to the next item to be provided. When you make the final selection on a screen, press the arrow button (→)again to move to the **EXIT** screen.

Menu	Description
DISCOVER NEW	Press ✓ to begin discovering modules. An interim screen displays the discovery progress and returns the next screen.
DISCOVERING MODULES KNOWN: 10 NEW: 8 RUN TIME 00:00:00 STOP	Shows the number of new modules found during the discover process as well as the number of previously discovered modules already included in the system database. The top line of this screen changes as the discovery progresses. Press ✓ to stop Discover after the expected number of new modules has been found.
DISCOVERY COMPLETE 5 MODULES FOUND 10 MODULES KNOWN	Press ⇨ to move to the **EXIT** screen.
EXIT	Pres ✓ to returns to **Discover** screen.
CLEAR ALL DISCOVERED MODULES	Removes all known modules from the system.
SET TIMEZONE PACIFIC/ HONOLULU	Press ✓ to begin setting the local time zone
SELECT REGION AUSTRALIA	Shows the currently set region. Press ⇨ to scroll through the available regions. Press ✓ to select the displayed region.
SELECT ZONE LORD HOWE	Shows the time zones of the selected region. Press ⇨ to scroll through the available regions. Press ✓ to select the displayed zone.
EXIT	Press ✓ to return to the **SET TIME ZONE** screen.
SET DATE/TIME	This screen is shown only when an Internet connection is NOT available. Press ✓ to set the current date and time.

2011-JUL-15 12:00	Use the arrow button ( ) to scroll through a set of values and the checkmark button ( ) to select a value. After selecting the value, the underline moves to the next item to be provided. When you make the final selection on a screen, press the arrow button ( ) again to move to the **EXIT** screen.
EXIT	Press to return to the **SET DATE/TIME** screen.
RESTART DEVICE	Press to restart the Power Manager.
SHUTDOWN DEVICE	Press to begin the shutdown process.
SHUTDOWN DEVICE ... ARE YOU SURE? NO YES	Press the arrow button ( ) to choose the correct response to the confirmation question, then press the checkmark button ( ). Select **YES** to continue the shutdown.
SHUTTING DOWN ...	When the screen goes blank, it is safe to remove power from the Power Manager.
EXIT	Scrolls through the screens. Exits the information screens and returns to **Operations**.

Appendix B: Technical Specifications

Power Manager

Communications	
With AC Modules	Power Line Communication
With Power Portal	Ethernet with 10/100Base-T router
Power Requirements	
Power Supply	Direct wire or AC outlet
Power Consumption	~0.1 amp
Mechanical Specifications	
Dimensions	12.8"L X 7.9"W X 3.5"D
Weight	3.5 lbs
Ambient Temperature Range	-20°C and 50°C (-4°F and 122°F)
Enclosure Environmental Rating	Type 3R/IP 44
Other	
Compliance	UL60950-1 ITE, UL60950-22 Outdoor Use, FCC Part 15 Class B
Australian Regulatory Compliance Mark (RCM)	EMC – ACMA compliance (IEC 61000-6-3 and EN 50065-1). PLC is rated Class 122. Electrical Safety Certificate of Suitability (AS/NZS 60950-1), includes IP44 (IEC60529)

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