



A graphic element consisting of two overlapping wavy lines, the top one in light green and the bottom one in blue.

GreenMeter™

GreenMeter™ User Manual

GreenMeter™ User Manual



© 2006 WES Power Technology Inc.
P.O. Box 21098
St. John's, NL
A1A 5B2
Canada
Phone (709) 772-8750

V. 1.0

PLEASE SAVE THIS MANUAL FOR FUTURE REFERENCE

Warranty Policy

The WES Power Technology Inc. Warranty Policy is stated below. If you are ready to return product, please contact Customer Service for a RMA.

WES Power Technology Inc. Warranty Coverage:

WES Power Technology Inc. Limited Warranties are provided by WES Power Technology Inc. ("WES Power Technology Inc.") and cover defects in workmanship and materials.

Duration of a WES Power Technology Inc. Warranty Period:

These warranties last for a Warranty Period that varies by product from the date of purchase at point of sale to you, the original end user customer. Please contact WES Power Technology Inc. Customer Service for further details on specific products.

What will WES Power Technology Inc. do?:

WES Power Technology Inc. will, at its option, repair or replace the defective product free of charge, provided that you notify WES Power Technology Inc. of the product defect within the Warranty Period for your product, and provided that WES Power Technology Inc. through inspection establishes the existence of such a defect and that it is covered by the Limited Warranty.

WES Power Technology Inc. will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. WES Power Technology Inc. reserves the right to use parts or products of original or improved design in the repair or replacement. If WES Power Technology Inc. repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater. All replaced products and all parts removed from repaired products become the property of WES Power Technology Inc.

WES Power Technology Inc. covers both parts and labor necessary to repair the product, and return shipment to the customer via a WES Power Technology Inc.-selected non-expedited surface freight within the contiguous United States and Canada. Alaska and Hawaii are excluded. Contact WES Power Technology Inc. for details on freight policy for return shipments outside of the contiguous United States and Canada.

Obtaining Service:

If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact WES Power Technology Inc. directly at the number listed on the website in the support section for your product.

In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by WES Power Technology Inc. Any evidence of tampering or unauthorized access to the internal workings of the product will void the warranty.

Proof of purchase may be in any one of the following forms:

- The dated purchase receipt from the original purchase of the product at point of sale to the end user, or
- The dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or
- The dated invoice or purchase receipt showing the product exchanged under warranty

What do WES Power Technology Inc. warranties not cover?

WES Power Technology Inc. Limited Warranties do not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. These warranties do not apply to and WES Power Technology Inc. will not be responsible for any defect in or damage to:

- a) the product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;
- b) the product if it has been subjected to fire, water,

- generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the WES Power Technology Inc. product specifications including high input voltage from generators and lightning strikes;
- c) the product if repairs have been done to it other than by WES Power Technology Inc. or its authorized service centers (hereafter "ASCs");
 - d) the product if it is used as a component part of a product expressly warranted by another manufacturer;
 - e) the product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

DISCLAIMER

WES POWER TECHNOLOGY INC. LIMITED WARRANTIES ARE THE SOLE AND EXCLUSIVE WARRANTY PROVIDED BY WES POWER TECHNOLOGY INC. IN CONNECTION WITH YOUR WES POWER TECHNOLOGY INC. PRODUCT AND ARE, WHERE PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, GUARANTEES, REPRESENTATIONS, OBLIGATIONS AND LIABILITIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING (WHETHER BY CONTRACT, TORT, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW, CONDUCT, STATEMENT OR OTHERWISE), INCLUDING WITHOUT RESTRICTION ANY IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT REQUIRED UNDER APPLICABLE LAW TO APPLY TO THE PRODUCT SHALL BE LIMITED IN DURATION TO THE PERIOD STIPULATED UNDER THIS LIMITED WARRANTY.

IN NO EVENT WILL WES POWER TECHNOLOGY INC. BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL

DAMAGES, LOSSES, COSTS OR EXPENSES HOWEVER ARISING WHETHER IN CONTRACT OR TORT INCLUDING WITHOUT RESTRICTION ANY ECONOMIC LOSSES OF ANY KIND, ANY LOSS OR DAMAGE TO PROPERTY, ANY PERSONAL INJURY, ANY DAMAGE OR INJURY ARISING FROM OR AS A RESULT OF MISUSE OR ABUSE, OR THE INCORRECT INSTALLATION, INTEGRATION OR OPERATION OF THE PRODUCT.

ELECTRICAL CODES VARY DEPENDING ON LOCATION AND TYPE OF INSTALLATION. ELECTRICAL INSTALLATIONS MUST MEET LOCAL AND NATIONAL WIRING CODES AND SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN.

Exclusions of the Policy:

If your product is a consumer product, federal law does not allow an exclusion of implied warranties. To the extent you are entitled to implied warranties under federal law, to the extent permitted by applicable law they are limited to the duration of this Limited Warranty. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights. You may have other rights, which may vary from state to state or province to province.

WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, UNLESS SPECIFICALLY AGREED TO BY IT IN WRITING, WES POWER TECHNOLOGY INC.

(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN MANUALS OR OTHER DOCUMENTATION PROVIDED BY IT IN CONNECTION WITH THE PRODUCT; AND (b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS OR EXPENSES,

**WHETHER SPECIAL, DIRECT, INDIRECT,
CONSEQUENTIAL OR INCIDENTAL, WHICH
MIGHT ARISE OUT OF THE USE OF SUCH
INFORMATION.**

**THE USE OF ANY SUCH INFORMATION WILL BE
ENTIRELY AT THE USER'S RISK.
WARNING: LIMITATIONS ON USE.**

Please refer to your product user manual for limitations on uses of the product. Specifically, please note that WES Power Technology Inc. products are not intended for use in connection with life support systems and WES Power Technology Inc. makes no warranty or representation in connection with any use of the product for such purposes.

Table of Contents

WARRANTY POLICY	III
INTRODUCTION	IX
DISCLAIMER	XI
CHAPTER 1	1
1.0 SAFETY CONCERNS	1
1.1 ELECTRICAL HAZARDS	1
CHAPTER 2	3
2.0 PACKAGE CONTENTS	3
CHAPTER 3	6
3.0 INSTALLATION	6
3.1 WIRING PROCEDURES FOR DC BASED SYSTEM	6
3.2 WIRING PROCEDURES FOR AC BASED SYSTEM	24
CHAPTER 4	25
4.0 GREENMETER™ SOFTWARE CONFIGURATION	25
4.1 INITIAL SETUP / LCD DISPLAY	25
4.2 PC SOFTWARE CONFIGURATION	35
CHAPTER 5	43
5.0 GREENMETER™ SPECIFICATIONS, SUPPORT AND FAQ	43
5.1 SPECIFICATIONS	43
5.2 TECHNICAL SUPPORT	44

Introduction

Congratulations on the purchase of your new GreenMeter™!

The GreenMeter™ is an energy monitor device. It is capable of measuring the amount of power generated from alternative energy sources such as solar panels and wind turbines. The GreenMeter™ also acts as a DC bus for battery/inverter based alternative energy systems. The unit is also capable of measuring AC currents from directly from your homes AC Power Panel showing electricity used from the grid using the optional AC Current sensors purchase separately. The GreenMeter™ can also be interface with a personal computer (PC), affording an appealing graphical user interface (GUI) for extensive data logging and monitoring your system. The GreenMeter™ can interface with an optional anemometer purchased separately to measure, track, and log wind speed.

The GreenMeter™ is designed for use in either

- DC based systems (stand alone or Grid-Tied), which make use of a battery bank and an inverter to provide stable AC power
- AC based systems (AC Power Panel) to measure power usage from the grid. (Requires AC Sensor Kit).

Please read through this instruction manual **THOROUGHLY** before attempting to install the GreenMeter™ into your alternative energy system.

PLEASE KEEP THIS MANUAL FOR FUTURE REFERENCE

Features & Specifications

- Monitor battery voltage
- Wind turbine monitor
- Solar monitor
- Inverter monitor
- Battery monitor
- Grid power usage meter*
- Cost savings kWh tracking
- Greenhouse gas emission tracking
- Computer interface Ethernet TCP/IP (RJ-45)
- Large LCD display
- 12VDC - 48VDC systems
- DC positive BUS tie
- Wire size from 6 AWG to 3/0 AWG (250kcmil)
- Data history and graphing
- Over Network Monitoring (ONM)
- Safety alarms (Audio/Visual)
- Remote monitoring
- Easy to install on existing systems
- Can monitor multiple wind turbines**
- Can monitor multiple solar arrays**
- On board memory for data logging without a computer up to a year
- Windows software included
- 24/7 monitoring
- Network TCP/IP compatible
- Wireless compatibility
- DC Bus Max Current 500 Amps
- AC Grid Tie Monitor (Optional Sensor Kit). AC Sensors capable of measuring 500 Amps each

Disclaimer

The contents of this document can change without notice and is intended for information purposes only. WES Power Technology Inc. makes no warranties, either express or implied, for the material covered in this document.

For information on turbine/solar installation and mounting, and installation of other power sources, the installer should refer to the user manual included with the equipment. It is the responsibility of the user to ensure that this product is suitable for the intended use and is installed in accordance with country/federal/provincial/state laws and codes. The user assumes full responsibility for the risk and results from the use of this document.

All material included with this product is copyright and cannot be reproduced without the explicit permission from WES Power Technology Inc. © 2006

Chapter 1

1.0 Safety Concerns

Prior to the start of work, all necessary tools should be collected and a work plan developed in a careful manner. Creating a work plan will greatly improve the chances of a successful installation and decrease the associated risk. Failure to follow the procedures outlined in this manual will **void** the product warranty.

A qualified electrician or tradesman should install the GreenMeter™. Prior to installation the installer should be familiar with all information contained in this manual and any additional information included with the product. The installer should also be familiar with country/provincial/federal/state regulations and codes related to the installation.

1.1 Electrical Hazards

The GreenMeter™ has been designed with safety as a primary concern. There are however still inherent dangers when opening the covers of the GreenMeter™. The following is a list of things to avoid doing when opening the GreenMeter™ covers:

1. Do not allow the ground clip to come into contact with any of the exposed metal in the terminal compartment. Doing so may cause a direct short across the battery bank causing serious personal injury and serious damage to your system.
2. Ensure that your wind turbine (if present) is not spinning and the brake is securely **ON** prior to connecting its output to the GreenMeter™. A spinning turbine has a voltage that could cause severe injury and damage to the unit.
3. Ensure that your solar panels (if present) are not producing voltage and are disconnected using an appropriate rated disconnect breaker and is in the **OFF** position prior to connecting its output to the GreenMeter™. An active solar panel has a voltage that could cause severe injury and damage to the unit.
4. The battery positive terminal **MUST** go through a safety breaker with the correct ratings or a disconnect box and a fuse.
5. All necessary fuses, breakers, disconnect switches, and turbine brake switches of the correct rating must be installed prior to installation of the GreenMeter™ on all

equipment. Fuse and breaker sizing should be done according to your user manuals of your system and standard electrical codes. Check with your local electrician for correct fuse and breaker sizing.

Chapter 2

2.0 Package Contents

The list below includes all the parts that should be included with the product. If anything is missing contact the distributor where the product was purchased, or contact WES Power Technology directly.

Main box:

- 1 GreenMeter™
- 1 Negative DC Battery Cable with Alligator Clamp
- 1 GreenMeter™ Windows CD
- 1 User Manual (This material)
- 1 Product Registration Card

Optional AC Sensor Kit

- 2 Satellite AC Sensors (Optional)
- 1 AC Power Adaptor (For use with AC systems ONLY) No DC connections

Please consult the following diagrams to identify the components of the GreenMeter™

- A. LCD Display
- B. Main console
- C. DC Terminal compartment
- D. DC Input holes
- E. Negative Battery Input
- F. 12VDC 1000mA Power Adaptor plug input
- G. TCP/IP Network Port
- H. AC Sensor plugs
- I. Negative Battery Connector
- J. DC Terminal bus
- K. Serial Number



Figure 1



Figure 2



Figure 3



Figure 4

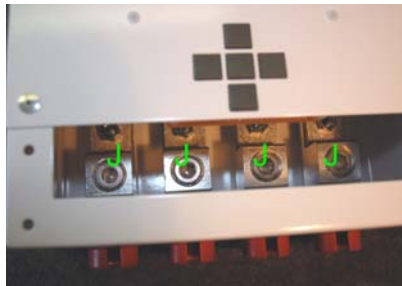


Figure 5



Figure 6

Chapter 3

3.0 Installation

Prior to starting the installation the following tools are required:

- Large Flat head screw driver
- Philips head screw driver
- 5/16 HEX Wrench
- Wire strippers

The GreenMeter™ is designed for use in either DC based systems, which use a battery bank and inverter, or AC systems, which connect directly to the power grid. Depending on what system you have, please follow the appropriate setup instructions

3.1 Wiring Procedures for DC based system

3.1.1 Installation Steps

A typical DC based system uses a bank of batteries that is charged by the alternative sources via charge controllers and/or load diversion regulators. The battery bank is typically connected to an inverter to provide AC power that can be used with standard loads. The inverter is usually wired to the dwelling's electrical panel.



NOTE: The GreenMeter™ assumes that all diversion load regulators, solar panels, chargers, and equipment are equipped with the correct circuit breakers, fuses, and disconnect boxes, and are equipped with diodes to prevent backflow from the battery to the sources as per installation manuals that come with other equipment. It is also recommended that adequate lightning protection be installed. WES Power Technology is not responsible for any damage to any equipment that does not have these vital components installed.

For a DC Based system, the GreenMeter™ also acts as the **POSITIVE** voltage bus. This simplifies the connectivity of your system. The bus can be used for a

maximum bus voltage of 48V, with a maximum battery charging potential of 57.6V. In this type of system, the GreenMeter™ is powered directly from the battery bank.



WARNING: It is EXTREMELY IMPORTANT to never exceed 57.6V on the bus. Doing so may result in permanent damage to the GreenMeter™ and void the warranty.

STEP 1:

Install GreenMeter™ in the upright position indoors only. The GreenMeter™ is NOT designed for outdoor use.

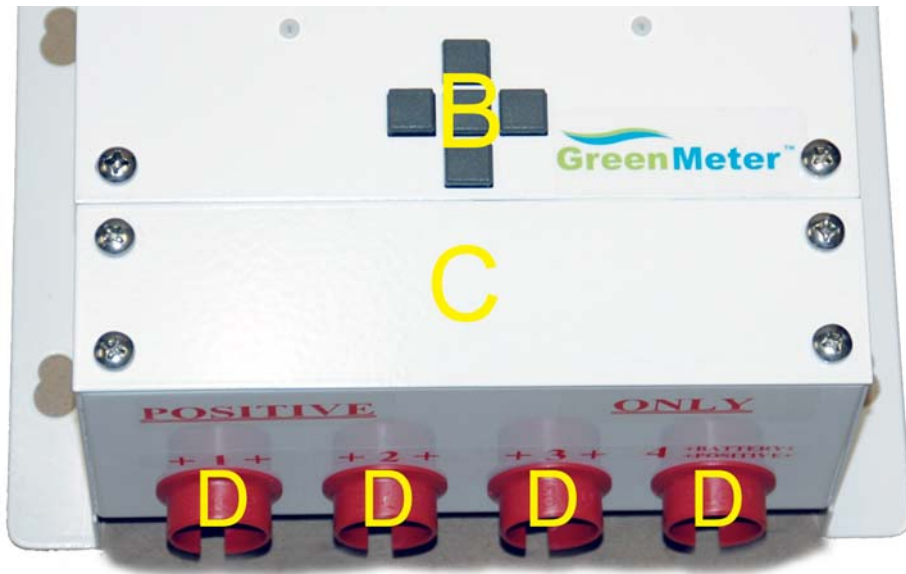
STEP 2:

Attach the case to EARTH GROUND (see below); note this is **NOT** the NEGATIVE terminal of the system. Failure to do so may result in injury or equipment damage and void the warranty of the GreenMeter™.



STEP 3:

Using a Philips head screwdriver, remove the four screws from lid “C” of the terminal compartment and set them aside for later.



STEP 4:

Ensure all DC Breakers are in the **OFF** position before connecting **POSITIVE** leads to GreenMeter™ terminal “C”.



NOTE: Before connecting the battery bank, the battery positive lead must be connected to a circuit breaker or a fuse and a disconnect box for safety purposes.

STEP 5:

Ensure that the breaker is in the off position, or the disconnect box disconnected. Connect the **POSITIVE** lead from the battery to “4 BATTERY POSITIVE” on the bus. Insert the **POSITIVE** wire from the battery into “D” and use a 5/16 HEX Wrench or large flat head screwdriver to tighten down “J” the lug on the battery wire.



STEP 6:

Insert the **POSITIVE** wire from each DC power device (usually the wire that goes to Battery Positive from controller will go to GreenMeter™ BUS, where this is the same point as Battery Positive) of the same DC voltage in port +1+, +2+, +3+, **NOT** to exceed **57V DC (48V DC BUS)**. Use a 5/16 HEX Wrench or large flat head screwdriver to tighten down the lug on the device wire. Follow each devices installation manual for installation of each device.

STEP 7:

If your alternative energy system has a wind turbine, ensure that it is not spinning before it is connected. Ensure that the electrical brake is **ON** or **ENGAGED**. Connect the positive output wire from the load diversion regulator to a terminal on the GreenMeter™.



WARNING: It is **EXTREMELY IMPORTANT** that the wind turbine not be spinning when connecting it to the terminal BUS. A spinning turbine has a voltage on its output which can caused arcing and damage to the GreenMeter™, wind turbine, or to one self.

STEP 8:

If your alternative energy system has solar panels, ensure that they are disconnected with the appropriate breaker and not generating power before connecting them. Once this is done, connect the positive output wire from the charge controller to the terminal bus.



WARNING: It is **EXTREMELY IMPORTANT** that the solar panels are **NOT** generating power or the breaker is in the **OFF** position. An active solar panel has a high voltage on its output which can caused arcing and damage to the GreenMeter™, solar panels, or to one self.

STEP 9:

Torque all wires using the following table:

Conductor Size	Torque (In-Lbs)	Torque (Ft-Lbs)
6 AWG	35	3
2 AWG	50	4
1/0 AWG	50	4
2/0 AWG	75	6.25
3/0 AWG (250kcmil)	275	23

STEP 10:

Replace the lid of the terminal compartment and secure using the four screws set aside earlier.

STEP 11:

Plug in the Black banana connector into the GreenMeter™ and attach the Alligator clip to the NEGATIVE Battery terminal ONLY. Caution, connecting the Alligator clip may cause some sparking on contact. The GreenMeter™ will now power up.



STEP 12:

Plug in the Ethernet cable into the TCP/IP port (not included) then to your router or direct to your computer.

STEP 13:

To setup the GreenMeter™ software and install the included Windows software, see Chapter 4.

STEP 14 (OPTIONAL):

If your inverter is grid-tied, and you want to monitor the amount of energy used from the grid, attach the **optional** satellite AC sensor to the dwellings AC output line usually located in the electrical panel. A qualified electrician should **ONLY** do this; failure to do so may cause **severe injury or even death**. For more information, please see "GreenMeter™ AC Sensor" manual included in your kit.



WARNING: ELECTRICITY CAN KILL. AC Electrical Panel contains **High Voltage, Current and Power** and can cause **severe injury or death**. A qualified electrician should **only** install AC sensors.

3.1.2 Installation Diagrams Examples and Possible Configurations

Current that can pass through the GreenMeter™ **CANNOT** exceed **500A** at any one time. To ensure that your system does not exceed 500A you must calculate you **MAXIMUM** Current. Use the following Chart to calculate **MAXIMUM** Current. See below examples of various systems.

Note: Battery Bank rating depends on the Amp/Hour rating. Battery bank should **NOT EXCEED** a current draw of more than the Amp/Hour Rating. For Example:

A system that will draw 114 Amps Max should have a rating of **GREATER THAN** 114Amp/Hour such as 150Amp/Hour Battery Bank.

Note: The below tables are used as a guide to be *filled* in and represents the worst-case scenario. The battery is only counted once because a battery cannot be charged and discharged at the same time giving a net current of zero in a worse case scenario.

User Worksheet

INPUT/OUTPUT	DEVICE NAME
1	
2	
3	
INPUT/OUTPUT 4	Battery Bank

BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/OUTPUT 4**	Battery Bank			___<___ Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1				
INPUT 2				+
INPUT 3				+
INPUT 4	Battery Bank	NA	NA	NA
			TOTAL LESS THAN 500 Amps	=

OUTPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1				
OUTPUT 2				+
OUTPUT 3				+
OUTPUT 4	Battery Bank	NA	NA	NA
			TOTAL LESS THAN 500 Amps	=

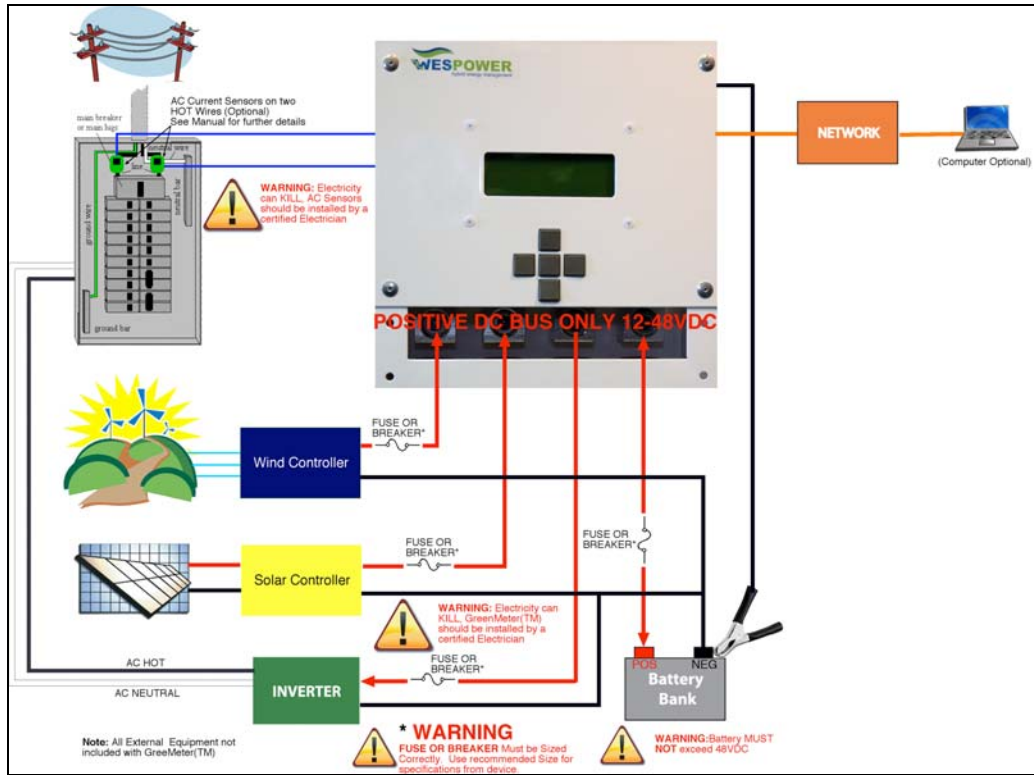
Notes: _____

3.1.3 GreenMeter™ Install Examples

The following are examples *ONLY* and systems may vary from the below examples. The GreenMeter™ can be used in various configurations, where all may not be shown in the following examples.

NOTE: Some Inverters can also charge your DC Battery bank. Be sure to account for the Inverter as an INPUT if it is used in this configuration. See owners guide for Inverter for more details.

System Example 1: Wind Turbine, Solar Array, Inverter, Battery, and AC option @ 48VDC



INPUT/OUTPUT	DEVICE NAME
1 Input	Wind Turbine
2 Input	Solar Array
3 Output	Inverter
4 INPUT/OUTPUT	Battery Bank

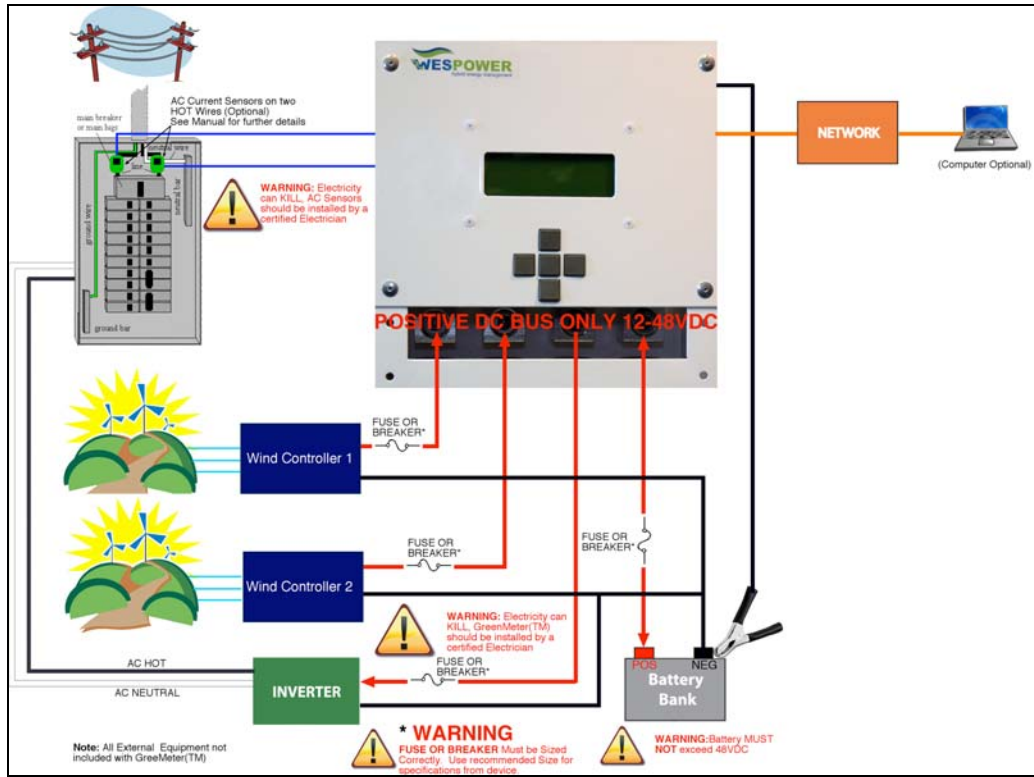
BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/ OUTPUT 4**	Battery Bank	48	2500	52 < 100 Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1	Wind Turbine	48	1000	21
INPUT 2	Solar Array	48	2000	+ 42
INPUT 3	NA	-	-	+ -
INPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 63

OUTPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1	NA	-	-	-
OUTPUT 2	NA	-	-	+ -
OUTPUT 3	Inverter	48	10,000	+ 208
OUTPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 208

System Example 2: Wind Turbine 1, Wind Turbine 2, Inverter, Battery, and AC option @ 48VDC



INPUT/OUTPUT	DEVICE NAME
1 Input	Wind Turbine 1
2 Input	Wind Turbine 2
3 Output	Inverter
4 INPUT/OUTPUT	Battery Bank

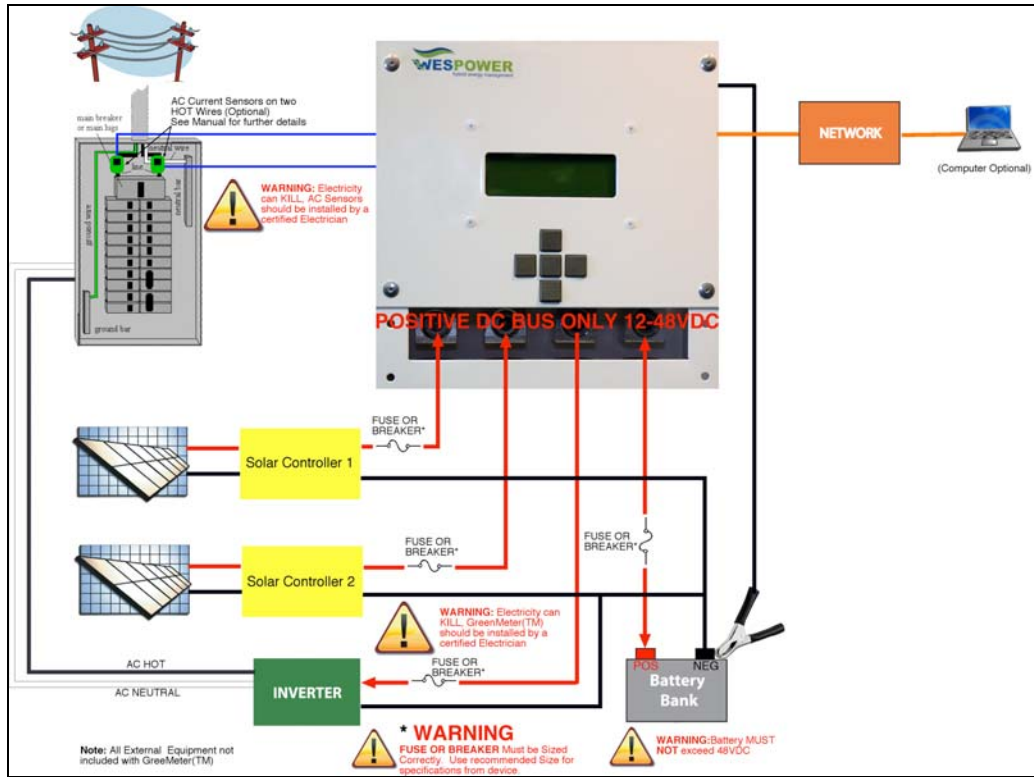
BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX All Must Match	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/OUTPUT 4**	Battery Bank	48	10,000	208 < 600 Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1	Wind Turbine 1	48	3000	62.5
INPUT 2	Wind Turbine 2	48	3000	+ 62.5
INPUT 3	NA	-	-	+ -
INPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 125

OUTPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1	NA	-	-	-
OUTPUT 2	NA	-	-	+ -
OUTPUT 3	Inverter	48	10,000	+ 208
OUTPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 208

System Example 3: Solar Array 1, Solar Array 2, Inverter, Battery, and AC option @ 24VDC



INPUT/OUTPUT	DEVICE NAME
1 Input	Solar Array 1
2 Input	Solar Array 2
3 Output	Inverter
4 INPUT/OUTPUT	Battery Bank

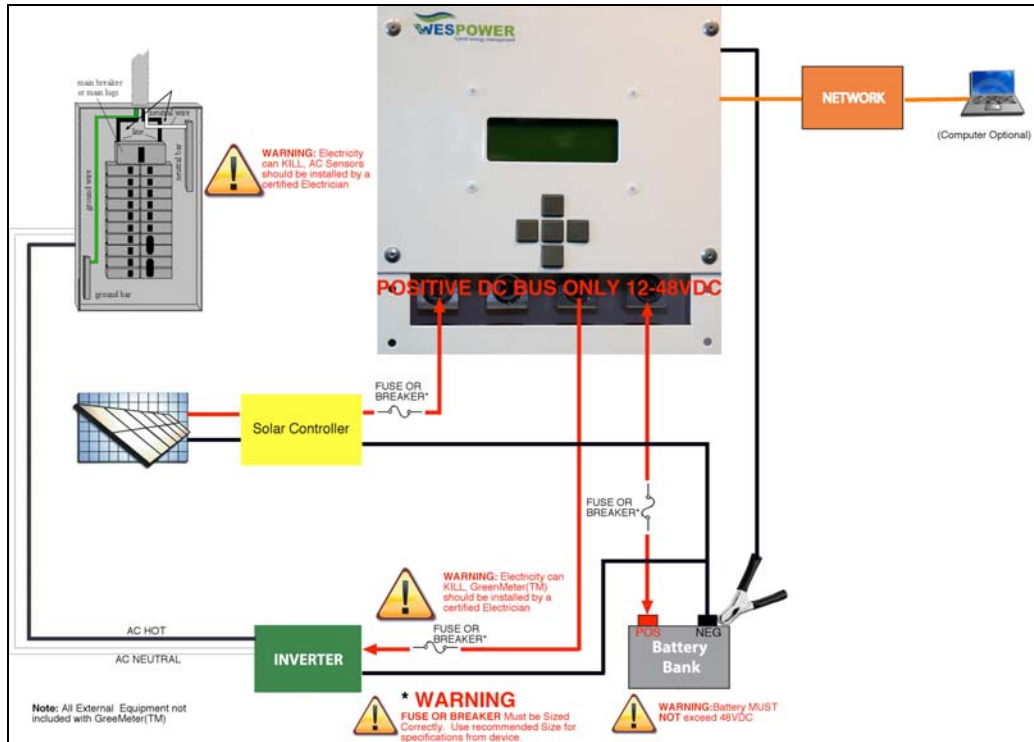
BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/OUTPUT 4**	Battery Bank	24	10,000	416 < 600 Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1	Solar Array 1	24	5000	208
INPUT 2	Solar Array 2	24	5000	+ 208
INPUT 3	NA	-	-	+ -
INPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 416

OUTPUT	DEVICE NAME	VOLTAGE 48VDC MAX <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1	NA	-	-	-
OUTPUT 2	NA	-	-	+ -
OUTPUT 3	Inverter	24	10,000	+ 416
OUTPUT 4	Battery Bank	NA	NA	NA
TOTAL LESS THAN 500 Amps				= 416

System Example 4: Solar Array, Inverter, and Battery, @ 12VDC. No Grid Connection.



INPUT/OUTPUT	DEVICE NAME
1 Input	Solar Array
2 Input	None
3 Output	Inverter
4 INPUT/OUTPUT	Battery Bank

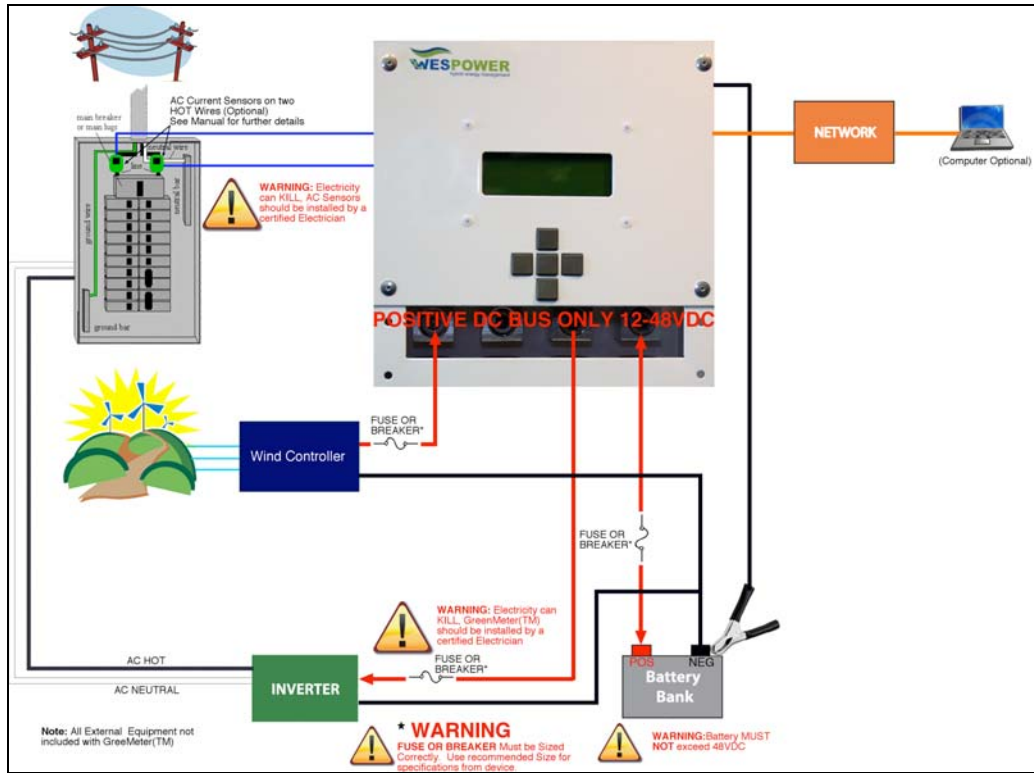
BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX All Must Match	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/OUTPUT 4**	Battery Bank	12	2,000	167 < 600Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE <u>48VDC MAX</u> <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1	Solar Array	12	2000	167
INPUT 2	NA	-	-	+ -
INPUT 3	NA	-	-	+ -
INPUT 4	Battery Bank	NA	NA	NA
		TOTAL LESS THAN 500 Amps	=	167

OUTPUT	DEVICE NAME	VOLTAGE <u>48VDC MAX</u> <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1	NA	-	-	-
OUTPUT 2	NA	-	-	+ -
OUTPUT 3	Inverter	12	2,000	+ 167
OUTPUT 4	Battery Bank	NA	NA	NA
		TOTAL LESS THAN 500 Amps	=	167

System Example 5: Wind Turbine, Inverter, and Battery, and AC Option @ 24VDC.



INPUT/OUTPUT	DEVICE NAME
1 Input	Wind Turbine
2 Input	None
3 Output	Inverter
4 INPUT/OUTPUT	Battery Bank

BATTERY CHECK	DEVICE NAME	VOLTAGE 48VDC MAX All Must Match	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT/OUTPUT 4**	Battery Bank	24	3,000	125 < 600 Amp/h

****Battery Bank Check:** Enter Amp/hour of battery in table. Do not exceed rated Amp/hour of battery. Enter in same power as inverter, where this is the maximum that can be discharged from Inverter Output.

INPUT	DEVICE NAME	VOLTAGE <u>48VDC MAX</u> <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
INPUT 1	Wind Turbine	24	3000	125
INPUT 2	NA	-	-	+ -
INPUT 3	NA	-	-	+ -
INPUT 4	Battery Bank	NA	NA	NA
		TOTAL LESS THAN 500 Amps		= 125

OUTPUT	DEVICE NAME	VOLTAGE <u>48VDC MAX</u> <u>All Must Match</u>	POWER WATTS (Obtain from Device Specifications)	CURRENT = POWER ÷ VOLTAGE
OUTPUT 1	NA	-	-	-
OUTPUT 2	NA	-	-	+ -
OUTPUT 3	Inverter	24	3,000	+ 125
OUTPUT 4	Battery Bank	NA	NA	NA
		TOTAL LESS THAN 500 Amps		= 125

3.2 Wiring Procedures for AC based system

For more information, please see "GreenMeter™ AC Sensor" manual included in your kit. This is just an overview to see if you would like to add the AC Sensor option.




WARNING: ELECTRICITY CAN KILL. AC Electrical Panel contains **High Voltage, Current and Power** and can cause **severe injury or death**. A qualified electrician should **only** install AC sensors.

Higher end wind turbines are capable of providing regulated AC power directly to the grid, without requiring you to provide battery banks, inverters, and controllers. In this case, the DC portion of the terminal box of the GreenMeter™ is not needed. Instead, the satellite AC sensors can be attached to monitor power usage from the grid.

1. Affix the AC sensor to the current carrying wire such that it is centered.
2. Push the tab of the tie-down through the slot and pull it taught.
3. Connect the cable end of the sensor to circular DIN connector of the GreenMeter™ main unit.
4. In AC mode, the GreenMeter™ is plugged directly into the wall outlet. Use the provided adapter (12VDC Center Positive 1000mA).




DC 12V 1000mA

Chapter 4

4.0 GreenMeter™ Software configuration

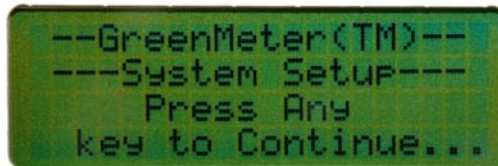
4.1 Initial Setup / LCD Display

The LCD Display on the GreenMeter™ is the main display for initial setup of the unit and for tracking the power running through your renewable system.

4.1.1 Initial Setup

This section describes the setup process for the GreenMeter™. The displays that are mentioned are described in more detail in section 4.1.2 below. The setup should be done after all hardware is setup and working. Power from either the battery or optional AC adapter (included with AC Grid option package, sold separately) will automatically bring up the setup menu on the first initialization.

Once power has been applied to the GreenMeter™, the initial display will show.



This will only be displayed on the first start-up or until the initial setup is completed if the setup is interrupted.

STEP 1:

Press any key

STEP 2:

Select a maximum DC voltage level for your system. This should correspond to the maximum charging capacity of the battery bank for the system, which is typically a less than 20% above the rated capacity. For example: lead-acid batteries – 12V rating \approx 14.4V actual maximum. See menu item 13 – DC Voltage – in the following section for more details.

STEP 3:

Setup DC inputs. Each input is by default inactive, and can be activated by changing **NO** to **YES** by pressing either of the top or bottom buttons, and then selecting the type of input corresponding to the number on the GreenMeter™ case, +1+, +2+, +3+. See menu item 11 – DC Input – in the following section for more details.

STEP 4:

If an input is selected as active, the maximum power level for the component needs to be entered. This should be set to the maximum acceptable input or output power from the connected component. For example, if an inverter is connected to the selected input, then the power output leaving the GreenMeter™ should not exceed the rated output of the inverter, so the power setting should be equal to the inverter output. For example, 5000W inverter is set to 5000W using the keypad.

STEP 5:

Repeat step 3 and 4 for the three inputs.

STEP 6:

Set the battery maximum power that will allow for the maximum expected charging from all sources and for maximum expected power draw. See User worksheet above in Chapter 3. See menu item 14 – DC Input Power – in the following section for more details.

STEP 7:

If the AC Grid optional sensor package has been installed, select **YES** to activate it, similar to the DC inputs above. When activated, the grid voltage level needs to be selected. For North America the voltage is typically 120V for each leg going to the electrical panel, while in Europe, it is typically 230V. See menu item 16 – AC Grid Option – in the following section for more details.

STEP 8:

Setup the current, date and time. Move the up and down key to change the number and side keys to move the cursor, then press the center key when complete. The format is Month/Day/Year Hour:Minute:Second (MM/DD/YY HH:MM:SS). See menu item 23 – Set Date/Time – in the following section for more details.

STEP 9:

Setup the cost of power in your location, in kilowatt-hours (KWH). This should be available on your power bill or contact your power utility. The cost of power is in dollars and cents. This will allow for the estimation of cost savings from any renewable power devices that are connected to the GreenMeter™. See menu item 24 – Set KWH Cost – in the following section for more details.

Once the setup is complete, the GreenMeter™ will bring up the main menu. To change the setup later, follow the details in the menu structure section below.

4.1.2 Menu Structure

ARCS 250 Menu Structure

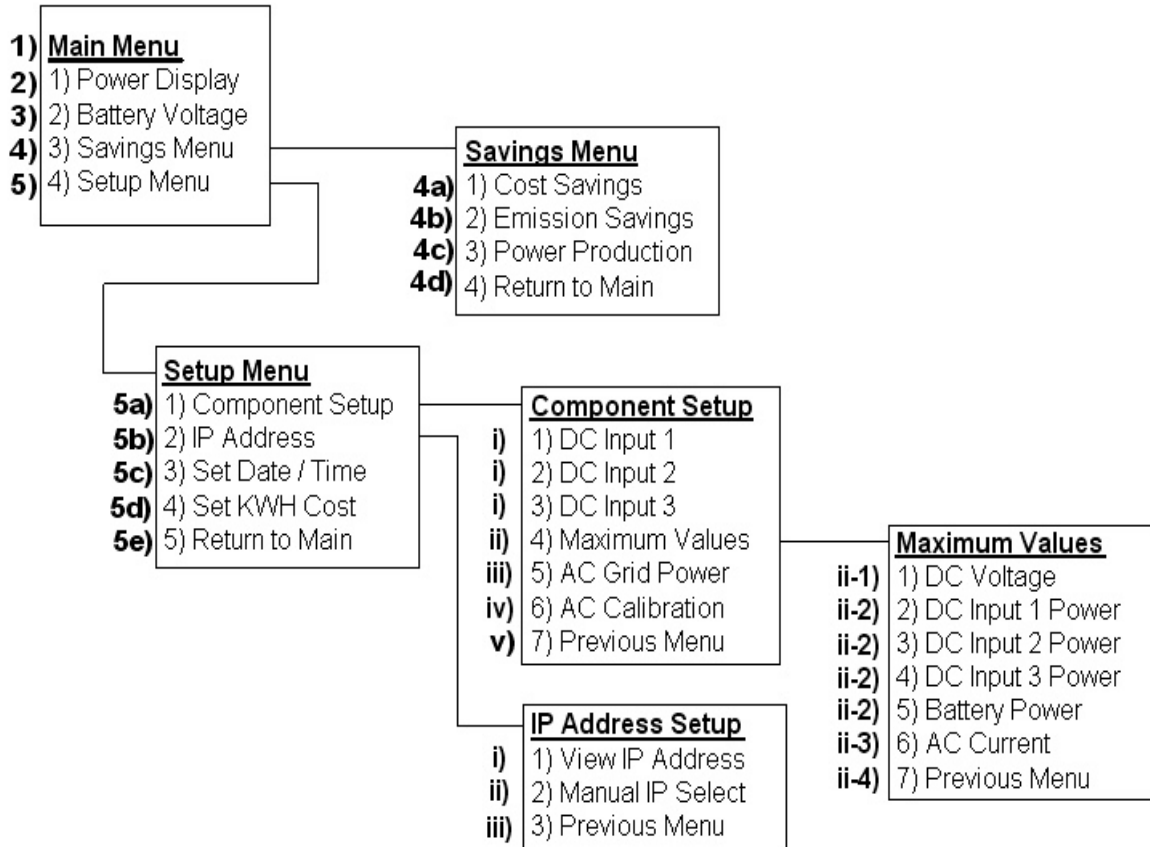


Figure 7

The menus and options available on the display of the GreenMeter™ are described in following paragraphs in this section. See Figure 7 above for the menu system layout and corresponding numbering to the details below.

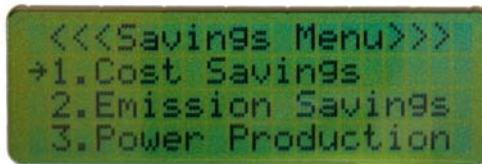
NOTE: Any changes to the settings on the GreenMeter™ will not be immediately reflected on the PC User Interface. If the User Interface is running, click the System Settings button, then click on the (Re)Connect button to download the new settings. See Section 4.2.3 for details.

- 1) **Main Menu** – The Main Menu contains the main power and voltage displays as well as the main sub menus for power, cost and emission savings and for changing the system setup. The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.



NOTE: All readings are an estimate and are for information purpose only.

- 2) → **1. Power Display** – (Main Menu) The Power Display shows the real-time DC current and power being input to or output from each component in the system. These displays can be scrolled through using the left and right buttons, and exited at anytime by using the center button to return to the Main Menu.
- 3) → **2. Battery Voltage** – (Main Menu) The Battery Voltage displays the real-time system DC voltage across the system. This display can be exited at anytime by using the center button to return to the Main Menu.
- 4) → **3. Savings Menu** – (Main Menu) The Savings Menu contains the displays for estimated cost savings, emission savings and power produced by renewable energy components attached to the system, as well as the option to return to the Main Menu. The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.



- a. → **1. Cost Savings** – (Savings Menu) The Cost Savings display shows the total estimated cost savings from any renewable energy components attached to the system, as well as the individual cost savings from each renewable energy component. These displays can be scrolled through using the left and right buttons, and exited at anytime by using the center button to return to the Savings Menu.
- b. → **2. Emission Savings** – (Savings Menu) The Emission Savings display shows the estimated savings of three emission types: Carbon Dioxide (CO₂), Sulphur Dioxide (SO₂), and Nitrogen Oxide (NO_x). These types are shown as overall savings totals for all renewable energy components and for each individual renewable energy component. These displays can be scrolled through using the left and right buttons. The emission types can be scrolled through using the top and bottom buttons. The displays can be exited at anytime by using the center button to return to the Savings Menu.
- c. → **3. Power Production** – (Savings Menu) The Power Production display shows the total power produced from any renewable energy components attached to the system, as well as the individual cost power produced from each renewable energy component. These

displays can be scrolled through using the left and right buttons, and exited at anytime by using the center button to return to the Savings Menu.

- d. →**4. Return to Main** - (Savings Menu) Return to Main returns you to the Main Menu.
- 5) →**4. Setup Menu** - (Main Menu)



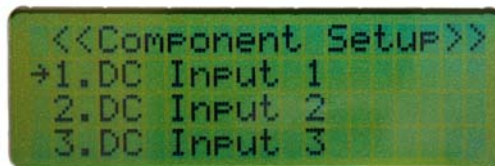
The Setup Menu contains the menu for setup of the individual components attached to the system, the display for the IP address of the GreenMeter™, the displays for changing the date and time, and the utility kilowatt hour cost of power your area, as well as the option to return to the Main Menu. The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.

- a. →**1. Component Setup** – (Setup Menu)

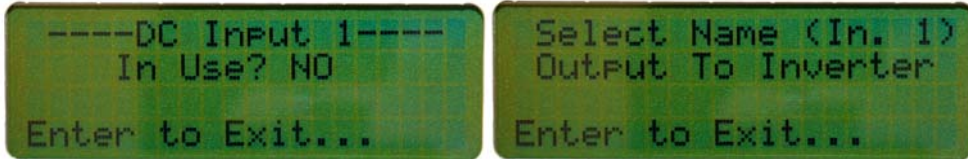


The Component Setup is a menu that contains displays for the setup of the first three input/outputs on the GreenMeter™, a display for setting the maximum power levels for these components, a display for selecting optional AC current sensing for your utility power, a display for calibrating the optional AC current sensors, as well as the option to return to the Setup Menu. The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.

- i. →**1. – 3. DC Input (1, 2 or 3)** – (Component Setup Menu)
The first to third options on the Component Setup menu.



The DC Input display allows you to select if there is an input/output connected to the selected DC Input on the GreenMeter™. If **NO** is displayed, use the top or bottom button to select **YES**, and a list of possible connections can be scrolled through to match the input/output using the top and bottom buttons.



If **YES** is already selected, using the left or right button will bring up the same list, or **NO** can be selected to using the top or bottom button. The selected option can be saved and exited at anytime by using the center button to return to the Component Setup menu.

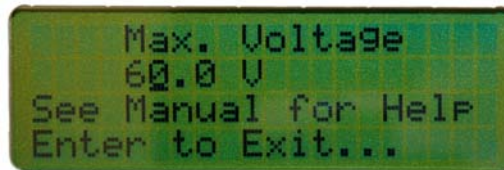
NOTE: If the Inputs are changed anytime, don't forget to update the Maximum values to the correct value or the alarm may go off early or not at all.

- ii. →**4. Maximum Values** – (Component Setup Menu)
Maximum Values is a menu that contains the displays for the maximum voltage of the system, the maximum power level for the components connected to the four DC Inputs, as well as the option to return to the Component Setup Menu. The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.

- 1. →**1. DC Voltage** – (Maximum Values Menu)



The DC Voltage display allows you to select the maximum voltage allowed on your system. Using the left and right buttons, each part of the voltage can be accessed. The selected part of the voltage can be changed using the top and bottom buttons.



The display can be saved and exited at anytime by using the center button to return to the Maximum Values menu.

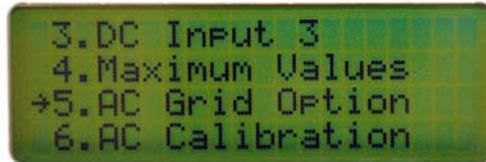
- 2. →**2. – 5. DC Input (1, 2 or 3) Power OR Battery Power** – (Maximum Values Menu) The second to fifth options on the Maximum Values menu. The DC Input or Battery Power displays allows you to set the maximum power levels that are acceptable

for each of the DC Inputs, according to the components attached to those inputs.

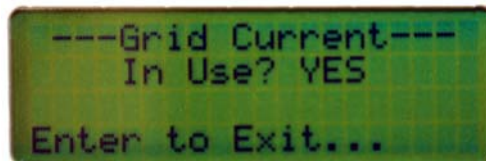


Using the left and right buttons, each part of the power can be accessed. The selected part of the power can be changed using the top and bottom buttons. The displays can be saved and exited at anytime by using the center button to return to the Maximum Values menu.

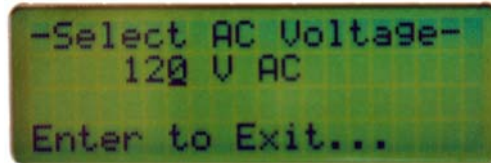
3. →**6. AC Current** - (Maximum Values Menu) The sixth option on the Maximum Values Menu. The AC Maximum Current display allows you to choose from a selection of maximum currents to closely match the actual maximum current that is available from the AC Grid. Using the top and bottom buttons, you can scroll through the current options. The option can be saved and the display exited at anytime by using the center button to return to the Maximum Values menu.
4. →**7. Previous Menu** – (Maximum Values Menu) Previous Menu returns you to the Component Setup Menu.
- iii. →**5. AC Grid Option** – (Component Setup Menu)



The AC Grid Option display allows you to select if the optional AC current sensors are included and in use (see instructions with optional AC component). **YES** or **NO** can be selected using the top and bottom buttons.

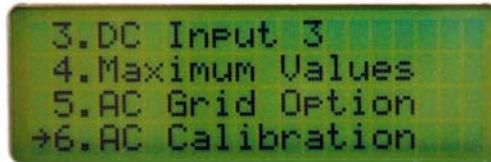


If **NO** is displayed, use the top or bottom button to select **YES**, and an AC Grid voltage will be displayed that can be scrolled through to match voltage of the AC grid in your area (North American grid – 120V).

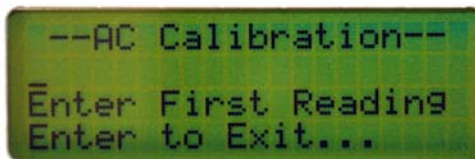


If **YES** is already selected, using the left or right button will bring up the same voltage option, or **NO** can be selected to using the top or bottom button. The selected option can be saved and exited at anytime by using the center button to return to the Component Setup menu.

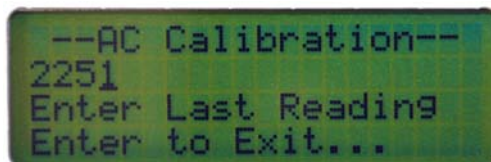
iv. →**6. AC Calibration** – (Component Setup Menu)



The AC Calibration display allows you to calibrate the optional AC sensors in order to monitor the AC Grid power being used. After the sensors have been installed, enter the kilowatt-hours on your meter just after it changes.



A short time later, as long as the meter reading has just changed again, re-enter the display and enter the new number.



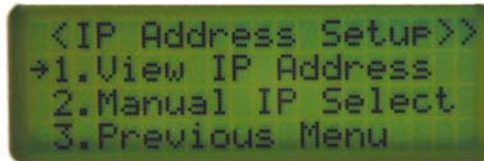
This will give an approximate power usage that the GreenMeter™ can use to calibrate the sensors. Numbers can be added by using the top and bottom buttons, and using the right button to move to a new number, and the left button to return to previously entered numbers. To exit the menu after each number has been entered, press the center button.

Please Note: Be sure to push enter (Center Button) at the same time after the first number has changed and the last number has changed. For example, meter number changes to 2250 go from meter to GreenMeter™ hit enter, then after meter changes again 2251 go from meter to GreenMeter™ hit enter in approximately the same to

ensure accurate AC reading on the GreenMeter™. This process may need to be repeated if value isn't accurate enough.


☛ **TIP:** To speed up the process, turn on several loads in the house to speed up power consumption for meter change. To check turn on a known device with a known power rating and see if the GreenMeter™ responds accordingly.

- v. → **7. Previous Menu** – (Component Setup Menu)
Previous Menu returns you to the Setup Menu.
- b. → **2. IP Address** – (Setup Menu) The IP Address is a menu that contains the displays for viewing the current IP address of the GreenMeter™, and for changing the IP address manually if necessary for your connection or network settings on your computer. The IP address is for use with the computer user interface software (see instructions, section 4.2.2). The menu can be scrolled through using the top and bottom buttons, and an option can be selected using the center button.
 - i. → **1. View IP Address** – (IP Address Menu)



```
<IP Address Setup>>
→1.View IP Address
 2.Manual IP Select
 3.Previous Menu
```

The View IP Address display shows you the current IP address on the GreenMeter™ for use with the computer user interface software.



```
----IP Address----
192.168.1.99
Any Key to Exit...
```

This display can be exited at anytime by using the center button to return to the IP Address menu.

- ii. → **2. Manual IP Select** – (IP Address Menu)
The Manual IP Select display allows you to manually edit the IP address of the GreenMeter™.



```
-Change IP Address-
 192.168.001.001
See Manual for Help
Enter to Exit...
```

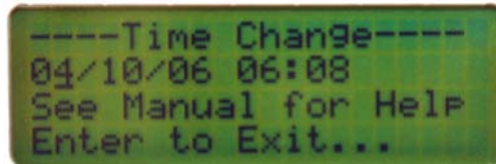
The top and bottom buttons allow each number to be scrolled up and down. The left and right buttons allow for scrolling to each of the numbers in the IP Address. The display can be exited and saved by using the center button.

Note: If you wish to go back to Automatic IP assignment after going to the Manual IP menu, you MUST reset the GreenMeter™ by disconnecting the Negative (Black Clip) from the negative battery terminal and then reconnecting it.

- iii. →3. **Previous Menu** – (IP Address Menu) Previous Menu returns you to the Setup Menu.
- c. →3. **Set Date/Time** – (Setup Menu)



The Set Date/Time display allows you to set the date and time on the GreenMeter™. Using the left and right buttons, each part of the date and time can be selected individually (MM/DD/YY HH:MM:SS).



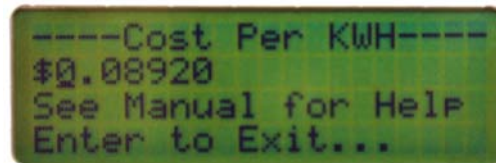
The top and bottom buttons are used to increase or decrease the selected number through the appropriate range. The display can be exited and save the date/time entered at anytime by using the center button to return to the Setup Menu.

Note: Time is set in 24 Hour time.

- d. →4. **Set KWH Cost** – (Setup Menu)



The Set KWH Cost allows you to enter in the current utility cost per kilowatt-hour that they are paying for electricity to accurately see how much they are saving under the Cost Savings displays.



The left and right buttons allow navigation to each part of the number so they can be changed individually, and the top and bottom buttons increase or decrease the selected number, zero to nine (0 – 9). The display can be exited and save the kWh cost entered at anytime by using the center button to return to the Setup Menu.

- e. →**5. Return to Main** – (Setup Menu) Return to Main returns you to the Main Menu.

4.2 PC Software configuration

The User Interface for the PC comes on a CD with the GreenMeter™. This software allows an easier and better way to monitor your renewable energy system, showing real-time renewable system status, data logging and graphing, renewable power production, and cost and emission savings from the use of their renewable sources.

4.2.1 Installation & Requirements

The software is currently only available for Windows machines.

Requirements

Windows 2000/XP

Pentium 2 or equivalent processor

Java Runtime Environment 5.0 or greater (Included on CD)

Ethernet Port – From you PC or connected Router

Ethernet Cable (not included) – Crossover cable for direct-to-PC connections, Straight-through cable for Router connections.

Installation

- Insert CD into CD ROM drive of PC
- Open My Computer and double-click the CD ROM drive
- Follow the instructions on the install program

Note:

To Install Java Runtime Environment 5 from CD

- Insert CD into CD ROM drive of PC
- Open My Computer and right-click on CD ROM drive, select “Open”
- Open the JRE directory
- Run “jre-1_5_0_09-windows-i586-p.exe”

4.2.2 Connecting the GreenMeter™ to your PC

In order to connect the GreenMeter™ to your computer, you first need to determine if you will connect to the computer directly or through an existing router. For Cable or DSL connected computers already using the Ethernet port of your computer, a Router connection is required. If you do not have a router, you will either have to purchase a router (available at low cost at most electronics

stores) or disconnect your Internet connection and connect directly to your computer when connecting to the GreenMeter™.

Direct Connection

If you are connecting directly to your computers' Ethernet port, you will require a Crossover Ethernet cable. In this case, the IP Address will be fixed. The default is **192.168.1.1**, but it can be set manually on the GreenMeter™, just use the "Manual IP Select" under the "IP Address" menu, under the "Setup" menu on the GreenMeter™ display. The IP address on your computer will have to be set manually as well, with the first three numbers in the address the same as on the GreenMeter™ - for example, **192.168.1.2** would work with the default address shown above.

Router Connection (Automatic IP Assignment - DHCP)

If you are connecting to your Routers' Ethernet port, you will require a Straight-through Ethernet cable. No computer setting changes should be necessary. Your computer must be connected to the same Router. To obtain the IP address of the GreenMeter™, connect the GreenMeter™ to your Router and wait ten seconds, then check "View IP Address" under the "IP Address" menu, under the "Setup" menu on the GreenMeter™ display.

***Note:** If you wish to go back to Automatic IP assignment after going to the Manual IP menu, you MUST reset the GreenMeter™ by disconnecting the Negative (Black Clip) from the negative battery terminal and then reconnecting it.*

4.2.3 Running the Windows Software

Once the application is installed, select GreenMeter™ GUI from the Start menu, starting the application. On initial start-up, the user interface will not be able to connect, so click on the System Options button towards the top right-hand side of the screen. The System Settings screen will appear (see Figure 8), allowing you to enter the IP address of the GreenMeter™ (See section 4.2.2 for details on obtaining the IP address). Once it has been entered, click the "OK" button. The GUI will connect to the GreenMeter™.

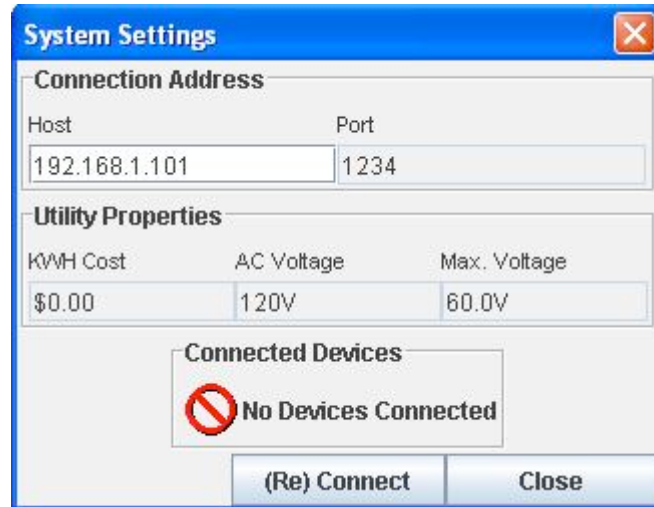


Figure 8

Once connected to the GreenMeter™, the main screen showing power input/output of the connected devices will appear (Figure 9). On the left-hand side there are several selections, depending on your system configuration. The first is “Full System” – which is also the main screen shown. The next five (5) are the possible inputs/outputs plugged into the GreenMeter™. The first three (3) are the DC inputs that are available, the fourth is the battery bank input, and the fifth is the optional AC Grid option for monitoring incoming grid power usage. The names on the inputs reflect the components connected to them.



Figure 9

When one of these inputs are clicked, another screen showing individual power, current and system voltage is displayed for that input (see Figure 10 for an example).



Figure 10

The Alarm indicators underneath the input names are to show if one of the maximum voltage or power levels has been surpassed. The “Over Voltage Indicator” blinks if the system voltage goes above the entered maximum value on the GreenMeter™. The “Over Current Indicator” reacts the same if the power input or output from any of the above inputs exceeds the maximum value entered for each on the GreenMeter™.

The “Power Savings” and “Data Graphs” buttons are used to show a graphical or textual view of the logged data. The Power Savings screen below (Figure 11) shows graphs of the cost savings, emission savings and power produced from any renewable sources connected to the GreenMeter™. The savings types can be selected, as well as data individual to each renewable source or all together. Data can be viewed cumulatively over different time intervals or through distributed totals over the same intervals.

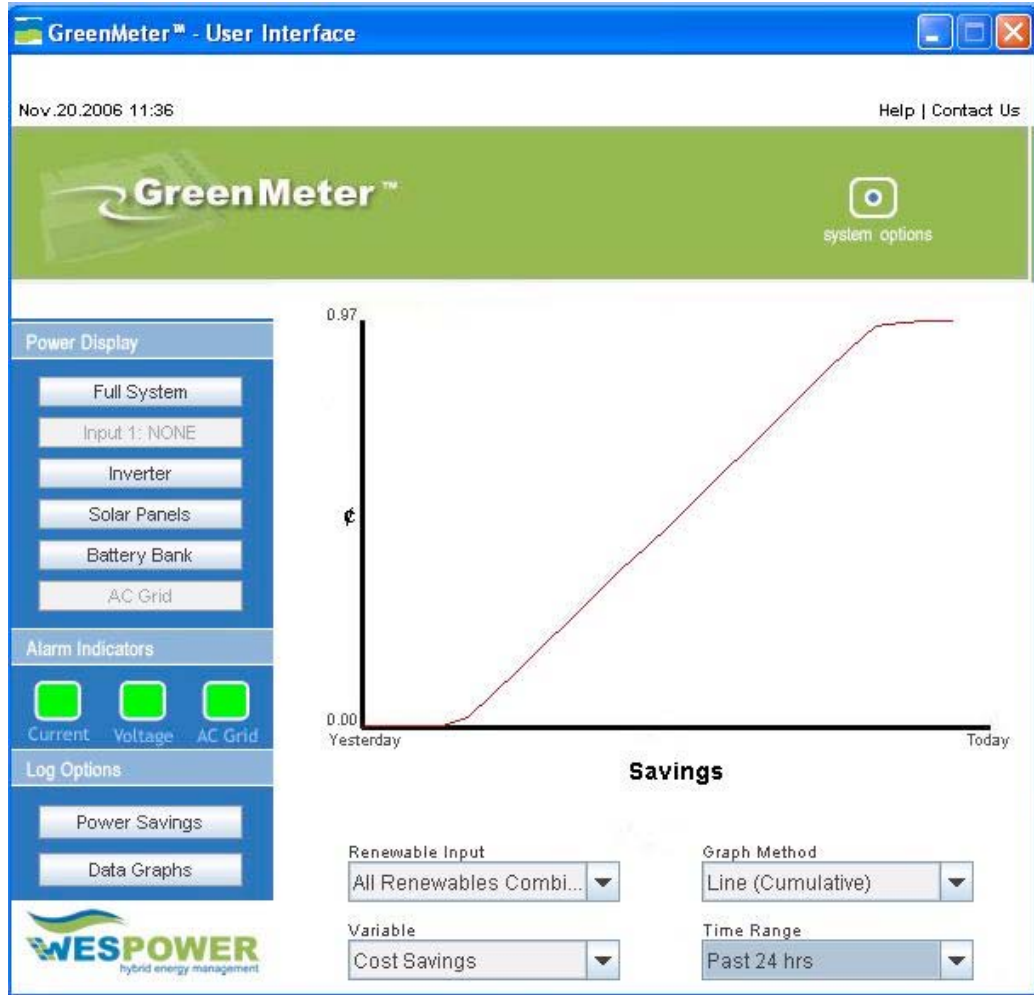


Figure 11

The Data Graphs screen below (Figure 12) shows graphs of the voltage, current and power levels over different time intervals, as well as a text view of each statistic over the life of the system.

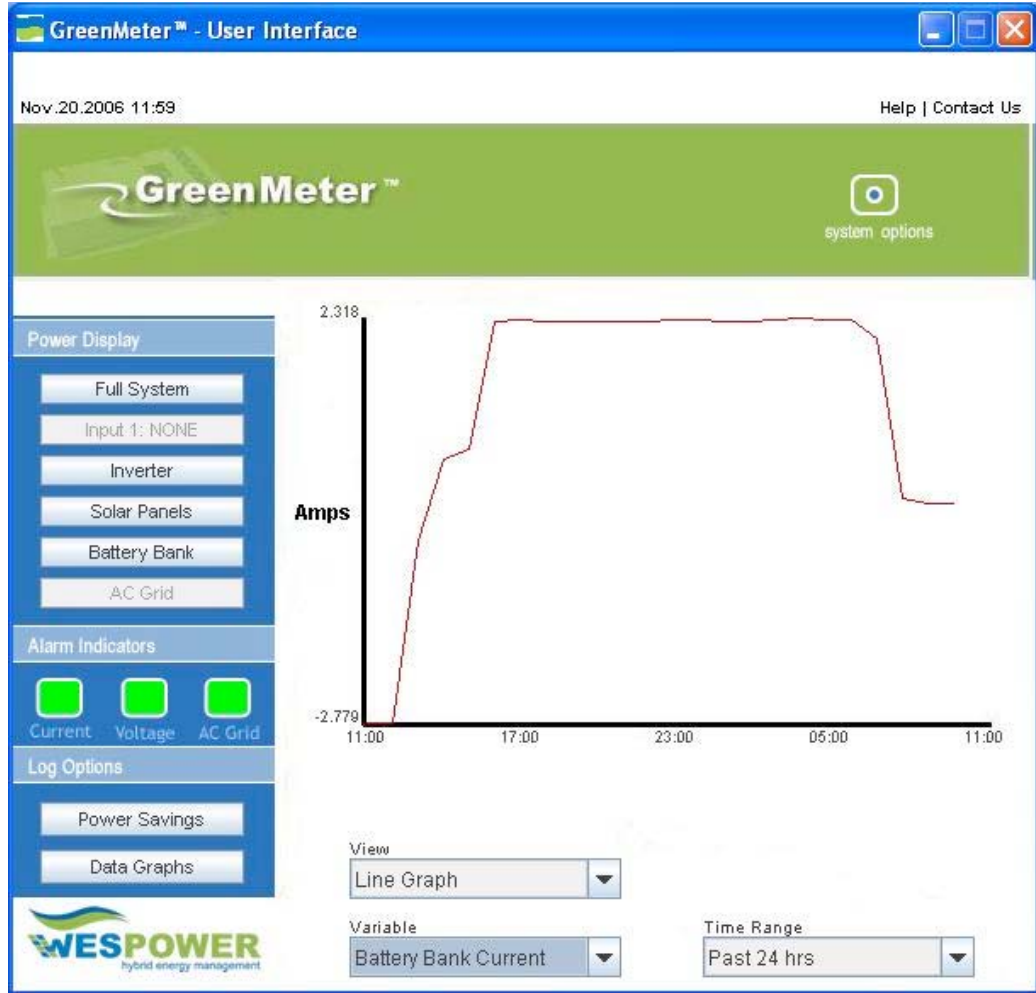


Figure 12

The System Options for the User Interface (Figure 13 below) allows you to view all the settings on the GreenMeter™, as well as enter/change the IP Address, if necessary. If you make **ANY** changes to the settings on the GreenMeter™, they will not be immediately reflected on the User Interface, so use the (Re)Connect to download the latest settings.

The image shows a 'System Settings' dialog box with a blue title bar and a close button in the top right corner. It is divided into three main sections: 'Connection Address', 'Utility Properties', and 'Connected Devices'. Each section contains a table of settings.

Connection Address	
Host	Port
192.168.1.101	1234

Utility Properties		
KWH Cost	AC Voltage	Max. Voltage
\$0.10	120V	28.6V

Connected Devices	
Device	Maximum Power
Inverter	2500W
Solar Panels	1000W
Battery Bank	2500W

At the bottom of the dialog box, there are two buttons: '(Re) Connect' and 'Close'.

Figure 13

Chapter 5

5.0 GreenMeter™ Specifications, Support and FAQ

5.1 Specifications

Parameters	Units	Data
Electrical:		
Nominal Input	Volts	12 – 48
Max Input	Volts	58
Max total BUS Current	Amps	500
Max total AC Current per sensor (AC Option)	Amps	500
Mechanical:		
Dimension	Inches	8 (L) x 8 (W) x 5 (D)
Environmental:		
Operation temperature	Celsius	-5 to 50
Operation humidity	-	0 to 80% RH

5.2 Technical Support

Web: www.greenmeter.ca

www.wespt.com/support

FAQ: www.wespt.com/support/faq

e-mail: support@wespt.com

Notes: