PVI-RADIOMODULE®

Remote Controller

Quick Installation Guide and Short Introduction Manual

Model number: PVI-RADIOMODULE   *Rev. 1.1*

REVISION TABLE

Document Revision	Date	Change Description
1.0	01/10/2009	First emission
1.1	02/02/2010	Complete review

⚠ **SAVE THESE INSTRUCTIONS!**

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety instructions that must be followed during the installation and start-up of the equipment. To reduce the risk of electrical shock hazards and to ensure the equipment is safely installed prior to operation, special safety symbols are used in this manual to highlight potential safety hazards and provide important safety information. The symbols are:

WARNING: The paragraphs highlighted by this symbol contain processes and instructions that must be followed to avoid potential injury to personnel and equipment damage.

NOTE: The paragraphs highlighted by this symbol contain processes and instructions that must be followed to avoid potential equipment damage or negative results.

FCC NOTICE

The device complies with part 15 of the FCC rules. Operation is subjected to the following 2 conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation

FCC ID: X6W-MOD

INDICE

power-one®
Changing the Shape of Power

1   INTRODUCTION

☞ **NOTE**: All the images, screenshots, figures and graphics reported in this guide are based on prototypes. The final equipment could have some little esthetical and functional differences.

This document is a short description and a quick guide for installation and operation modes of PVI-DESKTOP, which is a remote controller for photovoltaic systems. Following instructions will guide the end user to a correct set-up and a proper use of the monitoring and controlling system.

The system is made of two different parts:

- PVI-DESKTOP – which is the effective controller
- PVI-RADIOMODULE – which is the optional radio board to install in the inverter. This part is an option because you can communicate with inverter via RS485. In that case you don't need any radio link.
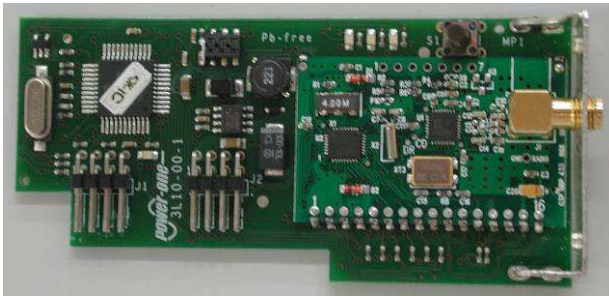

Figure 1 - PVI-DESKTOP

Changing the Shape of Power

Figure 2 - PVI-RADIOMODULE

1.1   WHAT YOU'LL FIND IN THE PVI-DESKTOP PACKAGE

In the PVI-DESKTOP package you'll find the following parts:

1. PVI-DESKTOP (n°1), complete with SD card
2. Base (n°1)
3. Wall mounting kit (n°1)
4. Stylus pen (n°1)
5. AC/DC adapter (n°1)
6. USB Cable (n°1)
7. Manuals and instructions

Check you have all parts before starting the set-up procedure.

1.2   WHAT YOU'LL FIND IN THE PVI-RADIOMODULE PACKAGE

In the PVI-DESKTOP package you'll find the following parts:

1. PVI-RADIOMODULE board (n°1)
2. Mounting screw (n°1)
3. Antenna (n°1)
4. Cable and plug to be mounted on the inverter (n°1)
5. Manuals and instructions

Check you have all parts before starting the set-up procedure.

power-one®
Changing the Shape of Power

2   PRELIMINARY OPERATIONS

If you want to correctly set-up the communication system you need to perform some preliminary operations.

2.1   BATTERY CHARGING

First of all the PVI-DESKTOP has an internal rechargeable lithium battery and it is necessary to recharge it completely. Connect the PVI-DESKTOP to the AC/DC adapter or to a computer USB port and wait for the led indicator (see Figure 3) to become green. Charging using AC/DC adapter will be faster.

LED indicator

Figure 3 - Led indicator position

2.2   INSTALLING PVI-RADIOMODULE

If you want to use radio communication you need to install the PVI-RADIOMODULE into the inverter. *This operation MUST be performed only by trained and authorized personnel*, because of safety reasons.

⚠ **WARNING**: Installation of PVI-RADIOMODULE must be performed only by trained and authorized personnel. Don't try to access, install or remove the board into the inverter for safety reasons. Every unauthorized action will cause losing of warranty and may cause serious damage or injury.

⚠ **WARNING**: Follow exactly the procedure in order to avoid risks of electrical shocks.

Following procedure will help you to set the PVI-RADIOMODULE. Follow the Aurora inverter manual to perform some of this operation (indicated by a *** symbol):

1. Disconnect the AC from Aurora Inverter, by proper switch, and wait 1 minute. (***)
2. Disconnect the DC from Aurora Inverter, by using the integrated switch or by disconnecting the input cables. Wait at least 5 minutes in order to discharge internal capacitance. (***)
3. Open the front side of Aurora Inverter. (***)
4. Remove one of the small plug in the bottom of the inverter (red circled in Figure 4). (***)

Figure 4 - Bottom of the inverter

5. Pass the connection cable from the hole in the bottom of the inverter. Pass the cable inside the locknut and screw the plug to the Inverter chassis.. (Figure 5 and Figure 6)

Figure 5 - Antenna plug mounted, external view

Figure 6 - Antenna plug mounted, internal view

6.   Screw the cable to the connector placed on a side of the board. (Figure 7)
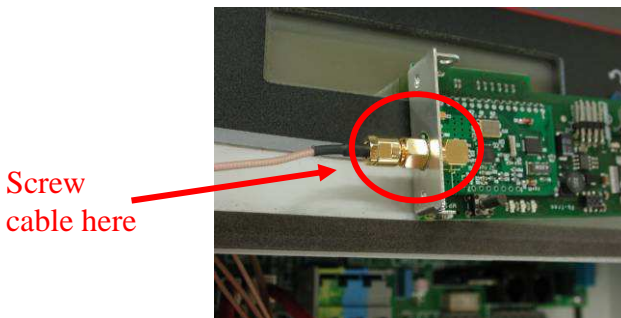

Screw
cable here

Figure 7 - SMA connector

7. Insert the PVI-RADIOMODULE into the connectors indicated in Figure 8. Check connection to be sure you did the right operation.
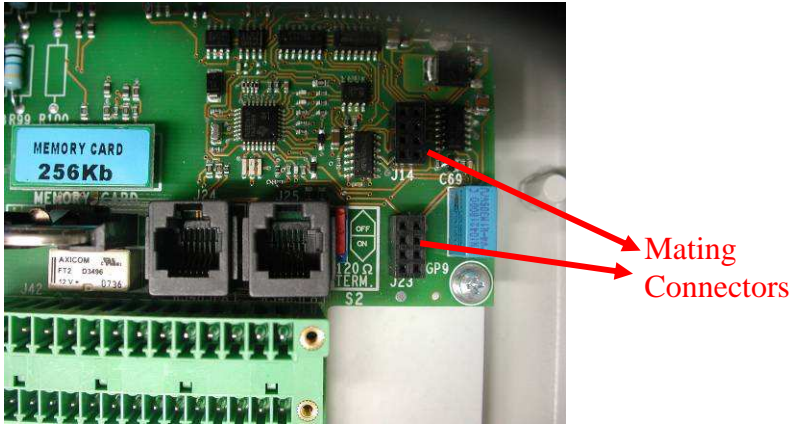

Figure 8 - PVI-RADIOMODULE mating connectors

8. Fix the board by means of mounting screw. Mounting board incorrectly will not allow you to screw it.
9. Mount the external antenna screwing it to the external connector in the plug (Figure 5).

⚠ **WARNING**: Antenna must be installed by authorized and trained personnel only. Don't try to remove or change antenna. Every improper use will cause the lose of warranty.

⚠ **WARNING**: Really take care in the next operations in order to avoid electrical shocks. Use all personal protection against direct or indirect contact.

10. Reconnect the DC to Aurora Inverter, by using the integrated switch or by reconnecting the input cables. Wait until the display unit will be on. (***)
11. Look at the orange led on the PVI-RADIOMODULE,press the button on the PVI-RADIOMODULE for more than 3 seconds if you don't see it blinking. Now you'll see the orange led correctly blinking. Use protective gloves in order to avoid electrical shock.

power-one®
Changing the Shape of Power

12. Close the front side of Aurora Inverter. (***)
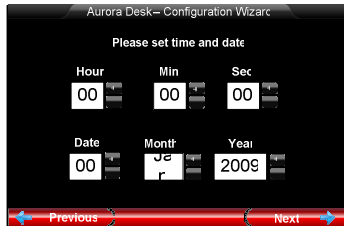13. Reconnect the AC to Aurora Inverter, by proper switch. (***)

Now the radio module is ready to be configured and affiliate to your PVI-DESKTOP. To complete the affiliation see the procedure in the next pages.
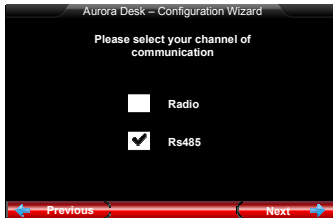
2.3   RADIO AFFILIATION

Switch on the PVI-DESKTOP, read the screen and select the proper option. Once you switched on your PVI-DESKTOP you'll see the following screen
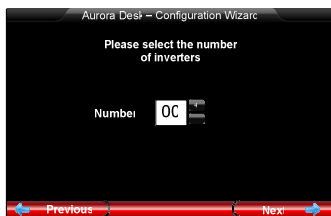

Click on "Next".

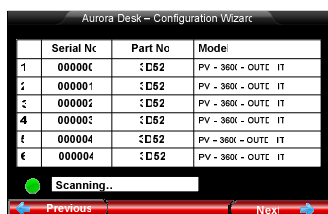Using the buttons set date and hour, then click on "Next"

Select the communication channel you'll use, then click on "Next".

Set the number of the inverter you want to connect to PVI-DESKTOP, then click on "Next".

Select "Scan now", click on "Next".

PVI-DESKTOP will scan the radio channels to find the inverters. Remember that PVI-DESKTOP will find them only if they are switched on. If, for some reasons, the inverters are switched off, repeat the configuration wizard switching on the inverters. The table will report all the inverters found on the radio link. Select your inverter clicking on "+" or deselect it clicking on "-". Once you're sure you selected all your inverters click on "Next".

At this point you configured your communication channel and the PVI-DESKTOP will automatically synchronize all inverters data and will start to collect and record information.

2.4   HOW TO RECONFIGURE SYSTEM

Sometimes it is necessary to configure again your system, like when you decide to add to or remove from your plant an inverter. There's a very user friendly menu that helps you doing that. You simply have to go on menu "SETTINGS" and choose "Configuration". The configuration wizard will start again and you could decide which inverter remove or add to your communication system.

2.5   SHUTTING ON OR OFF

PVI-DESKTOP has a marked button on the top. Pressing this button you'll turn on the equipment. Pressing the button for more than 5 seconds you'll see a message on the screen requesting you the confirm for shutting off.
PVI-RADIOMODULE receives power supply from the inverter. It is simply on when the inverter display is on and off when the inverter display is off.

3 FUNCTIONS AND MENU

Here's reported a short description of PVI-DESKTOP's menu. The menu will depend on the firmware version because of continuous adding of new features and functions, anyway it's very easy and user friendly.

3.1 STATISTICS MENU

Selecting this menu you have the possibility to evaluate and visualize historical data about your photovoltaic inverter. The menu is divided into different submenus.
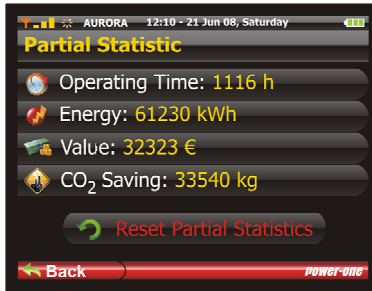

3.1.1 Total

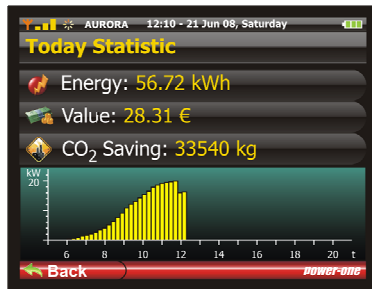This section gives the total energy production of the plant.

3.1.2   Partial

This section gives the energy production of the plant since the last resetting. It is possible to reset statistics clicking on the proper button
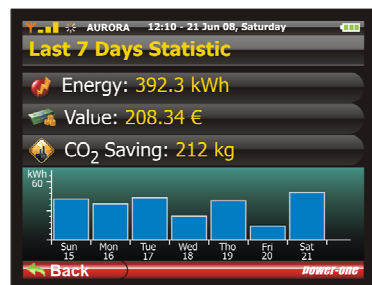

3.1.3   Today

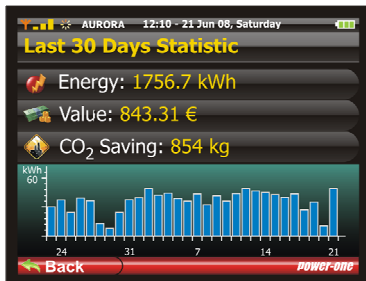This section gives the energy production of the last day.

3.1.4   7 days

This section gives the energy production of the last 7 days.
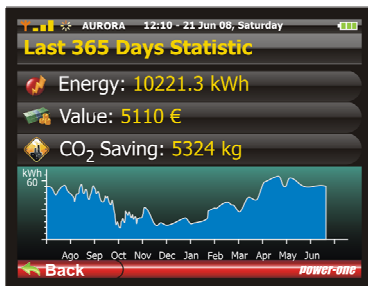
3.1.5 30 days

This section gives the energy production of the last month.

3.1.6 365 days

This section gives the energy production of the last year.

3.1.7 User

This section gives the energy production of a selectable period.

3.2   SETTINGS MENU

Selecting this menu you have the possibility to change the behaviour of your system and to calibrate it. The menu is divided into different submenus.

3.2.1   Date and Time

In this section you can change date and time visualized on the screen.

3.2.2   Money

Entering this section you can set the right currency in order to perform calculation on money saving. You have the possibility to create new currencies.

3.2.3   Display

Entering this section you can set and calibrate screen backlight or touch screen. We suggest to periodically recalibrate touch screen in order to avoid mismatch.

3.2.4   Language

In this section you can choose and set the language

3.2.5   Configuration wizard

Choose this section if you want to reconfigure the radio communication system. Following the information on the screen you can add, remove or change the affiliation of the inverters to your PVI-DESKTOP.

3.2.6   Firmware update

Choose this option if you want to update the firmware version. We suggest to periodically check power-one web site (www.power-one.com) for new firmware releases.

power-one®
Changing the Shape of Power

3.3   INFO MENU

Selecting this menu you have the possibility to get info about your equipment. The menu is divided into different submenus.

3.3.1   ID PVI-DESKTOP

This section gives you the identification code of your equipment. The ID is useful to avoid conflict with other communication system.

3.3.2   Firmware

This section gives you the actual firmware version.

4   UPGRADE

PVI-DESKTOP has the capability to evolve continuously. New functions, small bug fixtures and other upgrades will be released by power-one very often. The equipment can be updated using USB port, the optional Bluetooth, or directly coping files into the SD card which contains some part of the firmware. The PVI-DESKTOP maintain a back-up of the last working firmware to avoid system failures and it is possible to roll-back to the old firmware using the menu.

4.1   UPGRADE USING SD CARD

This procedure explain how to upgrade the firmware using the SD card. Follow the steps to correctly upgrade the equipment:

1. Shut down PVI-Desktop pushing more than 5 seconds on the ON/OFF button and confirming on the display.
2. Extract the SD card by pushing softly on it.
3. Insert the SD card on a PC card reader.
4. Check the formatting of the SD card by clicking on the right button and selecting Properties. Verify that the format is FAT and not FAT32.
5. Open the SD card and you will find several folders (language, theme, etc.), including the folder 'boot'. If a 'boot' file does not exist, create it.
6. Copy the file downloaded from the Power-One website into the 'boot' folder, and if necessary rename it "boot.ben".
7. Remove SD card from the PC being careful to perform the procedure for safely removing hardware and put it back in the PVI-DESKTOP. Reinsert it on PVI-Desktop
8. Push the ON/OFF button.
9. Navigate the menu to select the firmware update.
10. Clicking next PVI-DESKTOP will begin the update process.
11. Once you have read and loaded the new software a request for selection will appear on the screen. From this screen you can decide whether to install the new firmware, return to the previous version, or cancel the process and keep the current firmware.

Wait until PVI-DESKTOP concludes the installation process to see the menu automatically reappear.

The procedure requires few minutes. You'll see a 'Boot...' screen appearing, just wait that PVI-Desktop has concluded the procedure. Your PVI-DESKTOP is now upgraded to the last firmware version.