



Quick Start/Troubleshooting Manual

APsystems Energy Communication Unit (ECU)

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QUICKSTART INSTRUCTIONS

NOTE: The APsystems Communicator, or Energy Communication Unit (ECU), can be installed at any time during the system installation process. It will remain in Search mode until the system is completed and terminated properly.



Step 1

Plug in the Cat5 cable to your local Router/modem using one of the four ports available.

Step 2

Plug the other end of the Cat5 cable to the Ethernet port on the back of the ECU.

NOTE: Always connect the Cat5 before the AC.



Step 3

Plug the AC cable into an adjacent 110vac outlet, then plug the other end into the matching AC plug on the ECU. Remember to locate the ECU as close to the service panel as possible. Ideally, this would be a dedicated circuit that comes straight from the service panel.

NOTE: Do not plug the ECU into a power strip, surge protector, or uninterruptible power supply (UPS). *For best performance, do not use an outlet shared with a power strip or surge protector.* Keep such devices far away from the ECU, as they can substantially diminish communication performance by increasing line noise.



Step 4

The ECU will now acquire an IP (Internet Protocol) address from your local Router/modem (example: 192.168.1.10). If the address comes up as **60.1.23.2** or any address starting with **60**, this indicates that it is not properly connected to the Router/modem.

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Step 5

Using a local computer connected either via Cat5 or WiFi connection to your local Router/modem and with a valid IP address shown on the screen of the ECU, open your web browser and type that IP address into the web browser on your computer. This will take you to a web page being generated by the local ECU.

EXAMPLE: 192.168.2.10 +WEB
234kwh 012

In the above example, the 192.xxx address is assigned by the router in the home and should be typed into the web browser as described above.

Step 6

Select “Administration” on the upper right of the page.

Step 7

This will give you a new page with four options. Select “**DATE/TIME, TIME ZONE**”, then “**SELECT TIME ZONE**” then scroll down until you find **US/PACIFIC**. Once selected, click “**UPDATE TIME ZONE**” and the ECU will set the correct time.

NOTE: Before leaving this page, be sure to update the date and time at the top of this section.



Step 8

Select **ID MANAGEMENT**.

Step 9

The system should now be discovering new serial number ID’s from the Microinverters that have recently been installed. These numbers are 12 digits long and will look something like this: “403000001234”. This process may take from 20 seconds to 5 minutes, depending on your system.

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Step 10

Return to the home page and wait for the ECU to find and report the Microinverters. This usually takes from 1 to 10 minutes.

You will see a summary screen that shows the ECU ID at the top, followed by assorted data that will include the number of system modules as well as the number of modules online.

The number of modules shown refers to the number of Microinverters detected and should equal the number of Microinverters that are installed in your solar array. See **STEP 11** for counting the number of PV modules on your roof.

NOTE: The amount of “noise” in your home wiring will determine how quickly and accurately this stage will be completed. It is important to minimize interference from other devices such as power strips and UPS systems.



Step 11

Click on **REAL TIME DATA** at the top of the screen. This screen will show one line of data for each PV module installed. The number of PV modules in your array should accurately be reflected by the number of units shown on this screen. (Note: This information may vary depending on which model of APsystems Microinverter you have installed. Since APsystems YC500 Microinverters monitor two PV modules each, the serial numbers for each of the pairs will be the same, ending in A or B.)

If you need any help, please call our Customer Service Department for assistance at (206) 855-5149.

TROUBLESHOOTING ECU COMMUNICATION ISSUES

There are three possible areas of trouble with the Energy Communication Unit (ECU):

1. The ECU is not communicating with the Internet
2. The ECU is not communicating with the Microinverters
3. The Microinverters are not functioning properly

ECU is not communicating with the Internet:

The ECU should be plugged in to the wall and there should be other verification that the site has access to the Internet. Verification can be through another computer. If no other computers in your home have access to the Internet, do not proceed until you have independently verified that Internet access has been established.

Check the window of the ECU for a signal showing either:

- ✓ **+Web** or...
- ✓ **-Web**

If the ECU is showing “**+Web**” then the unit has access to the Internet.

If the ECU is showing “**-Web**” then the unit has not yet been able to access the Internet. If other systems in the house have Internet access, then this problem may be caused by one of the following reasons:

- ✓ Your Router/modem could have a hardware issue such as a port failure, or...
- ✓ Your system has a firewall that is blocking access, or...
- ✓ Some older routers have a very limited number of IP addresses available or a fixed IP and your existing computer equipment has already taken all the IP addresses available.

A classic symptom of this would be that the ECU would display something as follows:

EXAMPLE: 192.168.2.10 **-WEB**
234kwh 012!

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The 192.xxx (or some number other than 60.xxx) is telling you that the Router is able to see the ECU, but the ECU is still not able to get through the Router to the Internet for some reason.

SOLUTION: This is a problem with your existing hardware that will need assistance from a qualified IT professional. If your hardware is several years old, it might be cheaper to buy a new Router to replace your existing equipment.

ECU is not communicating with the Microinverter

If you have installed the ECU and registered an Internet connection, but not all of your modules have shown up on the Home Screen when searching for Microinverters, the following issues may have occurred:

- ✓ There could be “noise” in your wiring system either as a result of the installation or due to grounding problems in the existing wiring.
- ✓ Possible connection issues with the AC cables connecting each Microinverter

NOISE IN THE WIRING SYSTEM:

The ECU is designed to communicate with the Microinverters through your home wiring. Called “power line communication”, this works through a well established process that sends communication signals through wire that normally carries power.

The advantage of this system is that no new wiring is required. As long as the house wiring is properly done, there should be no problems. However, if there are loose wires in outlets or there are too many other appliances plugged in near the ECU, then a significant amount of “line noise” can build up.

This is a phenomenon similar to static on a television screen or an extra buzz on an AM radio station. Faulty electrical connections may be able to operate without actually shorting, but still be loose enough that the connection is creating noise in the line. This is common in

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older house wiring which may have a loose ground wire in one of the outlets, which can result in some level of noise.

Also, newer power systems that are designed with surge protection devices may have a dampening effect on communication through home wiring.

SYMPTOM: When installing the ECU, fewer modules show up on the control screen than are installed at the site. Also, when looking at the ECU,

EXAMPLE: 192.168.2.10 **+WEB**
234kwh 012!

The bottom right number (012 as shown in the above example) does not match the number of Microinverters in the installation. In this case, there will be an exclamation mark because the system can tell there should be more units, but it can't find them. When the system thinks all units have been found, exclamation mark will go away.

SOLUTION: Check the physical location of the ECU, paying special attention to how it is plugged into the wall and what else is plugged in on this circuit.

- ✓ **MAKE SURE THE ECU IS NOT PLUGGED INTO A SURGE PROTECTOR OR UNINTERRUPTED POWER SUPPLY (UPS).** It should not even be plugged into the same outlet as these devices. It may be necessary to move the ECU closer to the service panel to avoid this noise.
- ✓ **IF THE PROBLEM PERSISTS, TRY PLUGGING THE ECU INTO A “CLEAN” OUTLET VERY CLOSE TO THE SERVICE PANEL.** For testing purposes, it is not necessary at this point to have an Internet connection. Watch the small LED screen for the number that comes on the screen: this is the number of Microinverters which are detected. If this is more units than were previously detected, then there is enough noise in the house wiring that it is necessary to keep the ECU plugged in close to the service panel.

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SOLUTION (cont.):

- ✓ **ANOTHER TEMPORARY OPTION IS TO RUN AN EXTENSION CORD FROM AN OUTLET THAT IS VERY CLOSE TO THE SERVICE PANEL AND HAS THE HIGHEST LIKELIHOOD OF BEING “CLEAN”.** This can then be connected to the Router as described in the installation instructions above. If all of the modules in the array appear, then the problem is the wiring in your home. This can easily be solved by keeping the ECU plugged in close to the service panel and then getting Internet access by using a Wi-Fi Bridge.
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FAULTY CONNECTION

In some cases, the AC connections between the Microinverters can develop moisture or have an otherwise poor connection.

SYMPTOM: The module has a history of strong performance, but starts to have problems in rainy weather. Also, the unit may register as working but may periodically show as “**NO DATA DISPLAYED**” on the APsystems Monitor, or Energy Monitor & Analysis (EMA).

In some cases, a series of modules will disappear from the EMA. This would appear to be all of the modules in a series after a certain point in the string.

SOLUTION: The connections between the affected Microinverters should be taken apart and carefully inspected. The connections should be dry with no apparent moisture. Moisture in the AC or DC connectors will cause problems in the system and can easily be solved by placing conductive jell in each contact and reconnecting. We recommend all connections should have conductive jell.

If you feel the Microinverters themselves are not working or defective, **DO NOT ATTEMPT TO OPEN OR REPAIR THEM.** Please contact our Customer Service Department for a replacement - (206) 855-5100.