



Installation/User Manual

APsystems ECU-3
Energy Communication Unit (ECU)

Version 8.0 1/16

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INTRODUCTION

The APsystems Communicator, our state-of-the-art Energy Communication Unit (ECU), is the information gateway for our microinverters. The unit collects module performance data from each individual microinverter and transfers this information to an Internet database in real time, requiring only a single data and power cable. Through the APsystems Monitor software, the APsystems Communicator gives you precise analysis of each microinverter and module in your solar installation from any web-connected device. The APsystems Communicator's integrated http webserver offers the simplest and most flexible network integration of any data logger on the market. The user-friendly browser-based interface lets you access your solar array in seconds.

ECU functions as a gateway and monitors the microinverters that are connected to the PV modules. Therefore, the communication between inverters and ECU does not affect inverter performance, even if ECU fails to communicate with the inverters. The ECU is NOT a revenue grade metering device. Power production data collected by ECU is for reference only, please check the power meter for the real power production of the whole system.



Figure 1

INTRODUCTION

Features

- Collects individual module and microinverter statistics
- Communicates in real time
- Requires no additional wiring

The APsystems Microinverter is used in utility-interactive grid-tied applications, and is made up of three key elements:

- APsystems Microinverter
- APsystems Energy Communication Unit (ECU)
- APsystems Energy Monitor and Analysis (EMA) web-based monitoring and analysis system

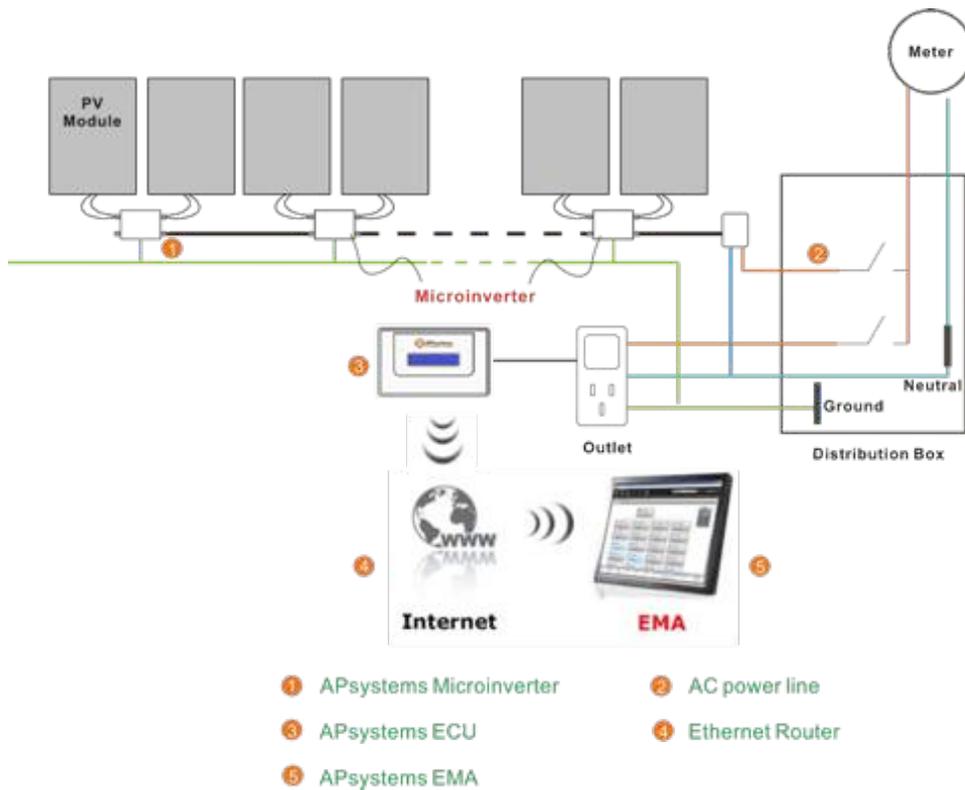


Figure 2

Diagram of a typical residential system

HARDWARE INSTALLATION

PREPARATION

Make sure you have the following things taken care of before attempting to install the ECU:

- A dedicated standard AC electrical outlet (located as close electrically to the array as is possible).
- A broadband Internet connection is available for your use.
- A broadband router with either a CAT5 Ethernet, or wireless router is available for your use.
- A laptop with a web browser (to view the APsystems EMA online monitoring application).
- An ECU.

SELECTING AN INSTALLATION LOCATION FOR THE ECU

- A location that is as close electrically to the array as is possible – preferably a dedicated outlet installed directly to the solar system sub-panel or combiner box.
- The ECU is NOT rated for outdoor use, so if installing outdoors near a junction box or breaker panel, making sure that you enclose it in an appropriate weather proof NEMA electrical box.

Using Electrical Mounting Din Rail

1. Loosen the two (2) M3 mounting screws on the back of the ECU and rotate the two (2) rail holders so that the holders are above the ECU.

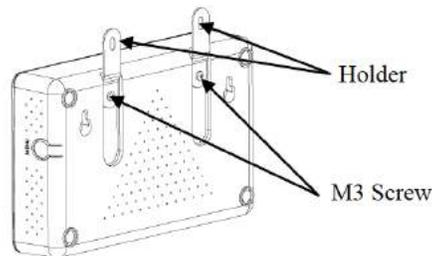


Figure 3

2. Attach the ECU to the mounting rail with machine screws.

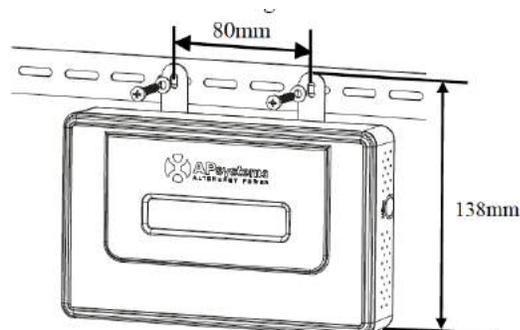


Figure 4

HARDWARE INSTALLATION

Using Wall Mount

When mounting the ECU to a wall, make sure to select a cool, dry, indoor location.

1. Depending on the wall surface you are mounting the ECU to, use either two (2) #8 drywall screws or wall anchors, installed 130 mm apart. The drywall screws and wall anchors are NOT included in the ECU kit.
2. Align and slide the ECU onto the mounting screws.

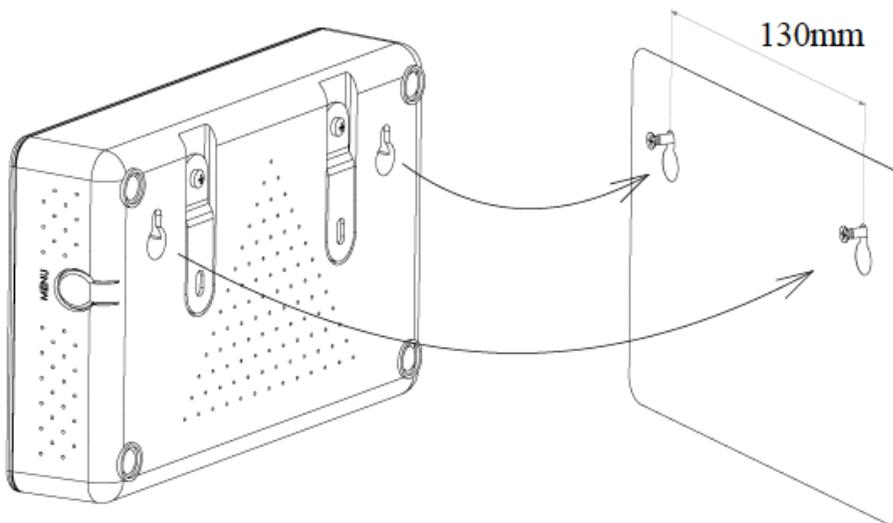


Figure 5

***Best Practice:** Install and connect the ECU to the Internet (see below instructions) while the rest of the array is being installed. Doing so allows the ECU to automatically update its internal software while the rest of the physical installation is underway. The ECU will then communicate with the inverters when the installation is complete and the array is energized.*

HARDWARE INSTALLATION

Cable Ports

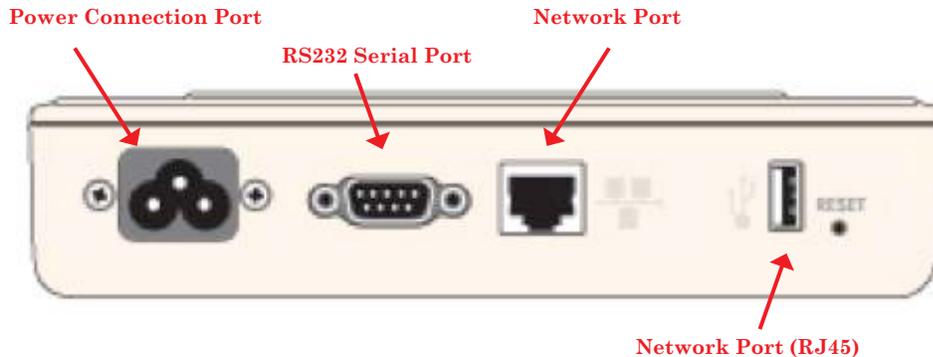


Figure 6

Power Connection Port:

The power connection port is used to both supply the ECU with power, and communicate with the inverters using the Power Line Communications (PLC) protocol.

RS232 Serial Port:

The RS232 serial port can be used to connect the ECU to the Internet using General Packet Radio Service (GPRS). GPRS is a cell technology that is not available in all areas. Check with your cell phone service provider for details regarding availability and service pricing.

Network Port (RJ45):

The network port (RJ45) is used to connect the ECU to your local network via a CAT5 cable. This port can be used to connect directly to the network router, or through a wifi extender or PLC bridge.

USB Port:

The USB port can be used as a power source (5VDC) for a wifi bridge if necessary. It is NOT a two-way communication port, and is therefore incompatible with external wifi devices such as wifi dongles or thumb drives.

CABLE CONNECTIONS

1. Connect the supplied power cable to the power connection port on the bottom of the ECU.

NOTE: As noted in the previous section, the ECU communicates with the inverters using the Power Line Communications (PLC) protocol through the power connection port.



HARDWARE INSTALLATION

2. Connect the supplied CAT5 cable to the network port (RJ45) on the bottom of the ECU.

INTERNET CONNECTION

There are two different approaches to connecting the ECU to the Internet:

- Direct CAT5 network connection to a broadband router.
- Wireless connection to a wireless broadband router.

NOTE: The ECU is NOT a wireless device and requires a wifi extender or bridge to make the connection to a wireless router.

NOTE: Make sure the ECU is connected to a router device – NOT a modem or network switching device.



Direct CAT5 Connection

1. Make sure the CAT5 cable is connected to the network port on the bottom of the ECU.
2. Connect the CAT5 cable into a spare port on the broadband router.



Figure 7

Wireless Connection

Using a wifi extender:

1. Make sure the CAT5 cable is connected to the network port on the bottom of the ECU.
2. Connect the CAT5 cable into the wifi extender.
3. Join the wifi extender to the site's LAN.

HARDWARE INSTALLATION

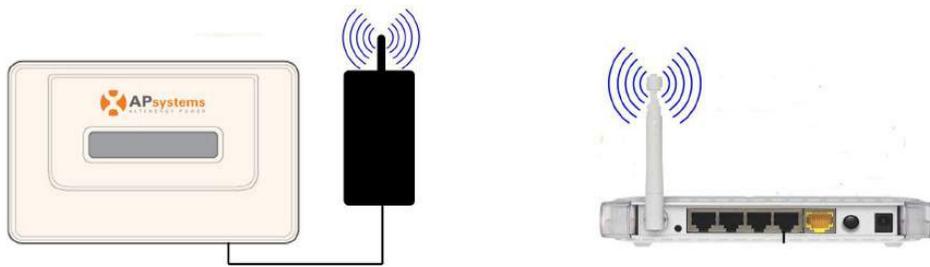


Figure 8

Using a PLC bridge:

NOTE: A PLC bridge uses the power line to communicate and requires both a “send” and “receive” unit.



1. Make sure the CAT5 cable is connected to the network port on the bottom of the ECU.
2. Connect the CAT5 cable into the “send” unit of the PLC bridge.
3. Connect a CAT5 cable from the “receive” unit of the PLC bridge into a spare port on the broadband router (refer to bridge users manual for specific operating instructions).

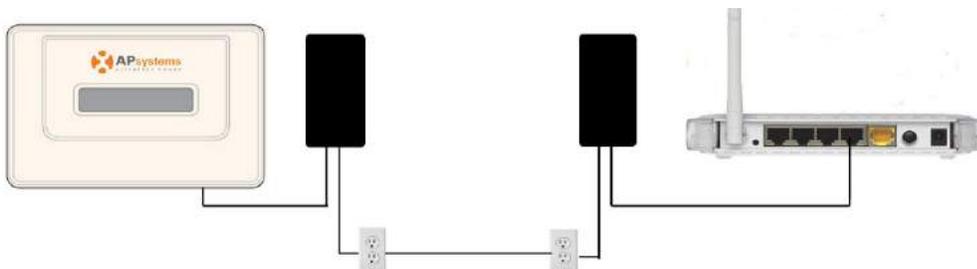


Figure 9

POWER UP ECU

1. Make sure the power cable is correctly connected to the power connection port on the bottom of the ECU.
2. Plug the power cable into a dedicated standard AC electrical outlet.

WARNING: Make sure to use a dedicated outlet for the ECU. Do NOT plug any other devices into the same outlet as the ECU.



WARNING: Do NOT plug the ECU into a power strip, surge protector, or uninterruptable power supply (UPS). The surge suppression and/or filtering on these sorts of devices will substantially diminish PLC performance.



ECU INITIALIZATION SEQUENCE

Once power is supplied to the ECU it automatically steps through a series of initialization screens on its LED display.

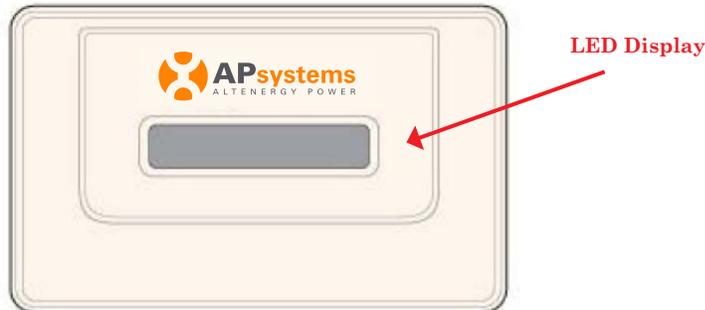


Figure 10

ECU INITIALIZATION

1. Loading the software firmware.

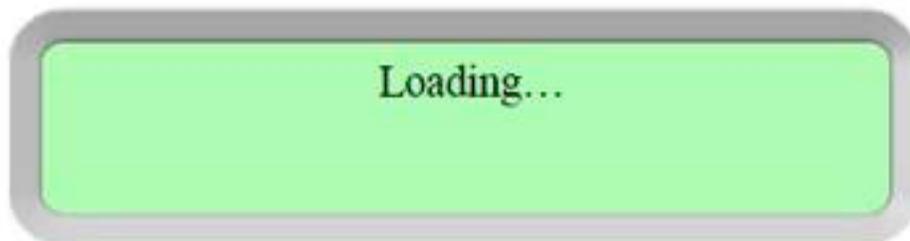


Figure 11

2. Searching for the inverters.

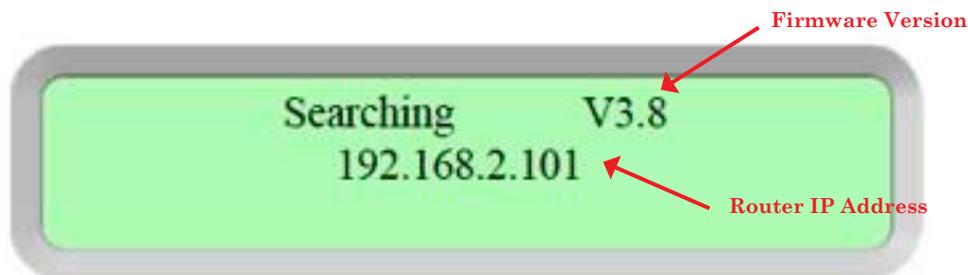


Figure 12

A word about network communication protocols. The ECU needs to have access to the router via an IP address. The ECU will only search for and obtain a DHCP IP address during its powering up sequence.

For example, the LED screen on the front of the ECU displays an IP address such as “192.168.2.101” if the connection to the router is successful (the IP address will vary based on router supplier, so check with the user manual for specifics). If, however, the LED displays “60.190.131.228”, the ECU-router connection has not been successful, in which case you’ll need to check all of the cabling connections and reboot the ECU by removing the power cable for a few seconds and reconnecting.

ECU INITIALIZATION SEQUENCE

NOTE: The complete initialization sequence can take several minutes (up to 15 minutes depending on the complexity of the installation and the overall number of inverters).



3. Operating Interface.

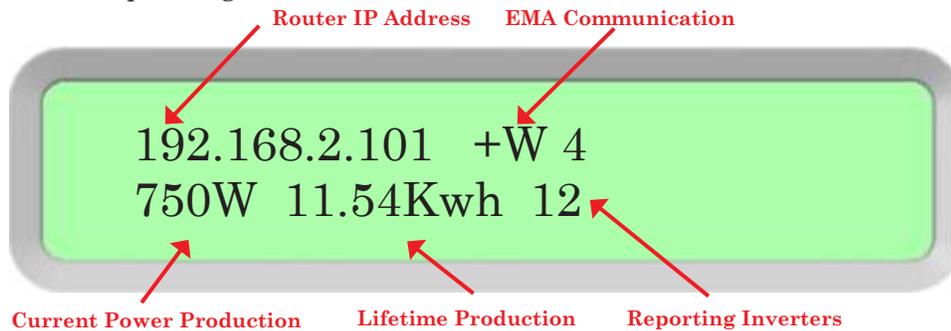


Figure 13

Router IP Address:

The LED screen on the front of the ECU displays an IP address such as “192.168.2.101” if the connection to the router is successful (the IP address will vary based on router supplier, so check with the user manual for specifics). If, however, the LED displays “60.190.131.228”, the ECU-router connection has not been successful, in which case you’ll need to check all of the cabling connections and reboot the ECU by removing the power cable for a few seconds and reconnecting.

EMA Communication:

A “+Web” indicates that the ECU is communicating with the APsystems EMA via the Internet. “-Web” is an indication that there is a problem and the ECU is not communicating with the APsystems EMA.

PLC Signal Level:

The PLC signal strength measured from 1-5, with higher number being stronger signal strength.

NOTE: Signal Level will not be displayed if there is no PLC, or if the ECU has a UID less than 203000018226.



Current Power Production:

What the solar array is producing currently (in Watts).

Lifetime Production:

The lifetime power output of the system (in kWh).

ECU INITIALIZATION SEQUENCE

Reporting Inverters:

The number of inverters reporting into the ECU. If the number is followed by an “!”, then the number of reporting inverters does not match the number of UIDs that have been programmed into the ECU (see Managing Inverter UIDs pg. 22).

NOTE: The inverter UIDs **MUST BE PROGRAMMED** into the ECU for the ECU to recognize the inverters. The ECU will **NOT** auto-sense the inverters (see Managing Inverter UIDs pg.22).



USING THE ECU MENU BUTTON

You can access the ECU's menu by pressing and holding the Menu Button on the side of the ECU for 2 seconds.

NOTE: The Menu Button will only cycle through its menu selections once the ECU has been successfully initialized.

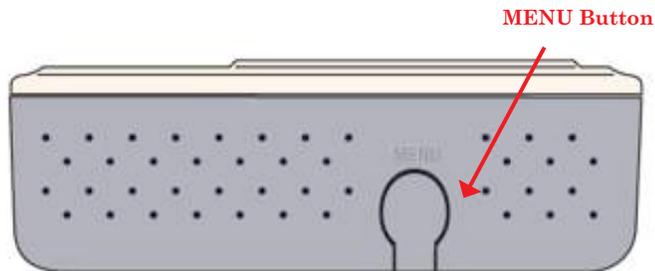


Figure 14

The ECU has the following menu structure (displayed on LED screen):

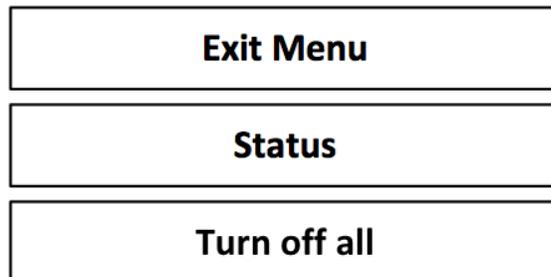


Figure 15

Press and hold the MENU Button, releasing the button to gain access to the functionality of each menu item.

Exit Menu:

Returns the ECU to the normal operating screen (see Operating Interface Pg. 11).

USING THE ECU MENU BUTTON

Status:

Reports both the number of inverters that should be reporting into the ECU (Total), and the number that are actually reporting (Connected). These numbers should match.

The Signal Level screen.

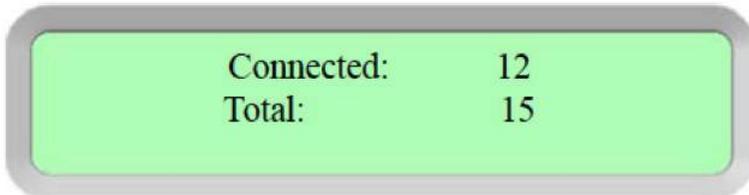


Figure 16

Turn off all:

Shuts down the entire system.

The Shutdown screen.

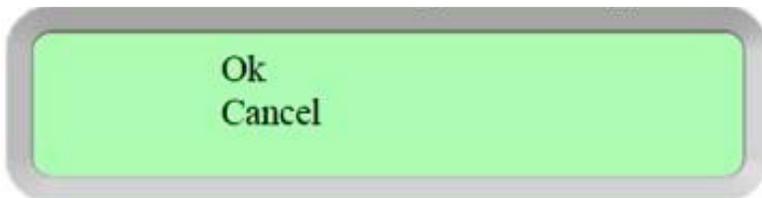


Figure 17

NOTE: Leaving the MENU Button untouched for one (1) minute returns the ECU to the normal operating screen (see Operating Interface Pg. 11).



RESETTING THE ECU TO FACTORY DEFAULTS

Insert a paperclip, or something similar, into the reset access along the bottom of the ECU for three (3) seconds or longer. The ECU will reset to its factory settings.



Figure 18

TROUBLESHOOTING ECU OPERATION

Problem: IP shows “60.190.131.228”

If the IP address displayed on the ECU’s LED shows “60.190.131.228”, the ECU did not successfully obtain a DHCP IP address from the router.

Solution: Check network connectivity to the router or other DHCP server. Typically this means that the ECU is not communicating with the router. You may need to contact the Internet provider, or refer to the router’s documentation for troubleshooting assistance.

Problem: -Web

If the ECU’s LED is displaying “-web”, the ECU is not communicating with the APsystems monitoring system.

Solution: Reboot the ECU by unplugging the power cord for at least seven (7) seconds, and plugging it back in. If the LED still indicates “-web”, check network connectivity to the router. You may need to contact the Internet provider, or refer to the router’s documentation for troubleshooting assistance.

Problem: “!” following Reporting Inverters number

If the reporting inverters number is followed by an “!”, then the number of reporting inverters does not match the number of UIDs that have been programmed into the ECU (see Managing Inverter UIDs pg. 20). This may indicate the ECU is having difficulty communicating with the inverters, or that light levels are too low to energize the system.

Solution: Plug the ECU into a different dedicated electrical socket.

LOCAL NETWORK INTERFACE

The ECU can be configured, by connecting a computer to the ECU via the Local Area Network (LAN), or by connecting directly to the ECU via its Ethernet port.

CONNECTING TO THE ECU VIA THE LAN

1. Make sure both your computer and the ECU are correctly connected by the LAN.
2. Using a standard web browser on your computer, enter the IP Address that is displayed on your ECU in to the URL search field.

The ECU's Home Page is displayed.

The screenshot shows the APsystems Energy Communication Unit Home Page. The page has a navigation bar with 'Home', 'Real Time Data', and 'Administration'. The main content area is divided into two sections. The left section is a table with system information, and the right section is a box titled 'ENVIRONMENTAL BENEFITS' showing CO₂ offset equivalents.

Home	
ECU ID	203100026410
Lifetime generation	70.26 kWh
Last System Power	193 W
Generation of Current Day	0.88 kWh
Last Connection to website	2015-09-07 12:45:00
Number of Inverters	1
Last Number of Inverters Online	1
Current Software Version	V4.0
Current Time Zone	Asia/Shanghai
ECU Eth0 Mac Address	80 07 1B 00 07 03
ECU Wlan0 Mac Address	80 C5 A0 E0 99 4B
Inverter Comm. Signal Level	4

2015-09-09 14:11:24
Wednesday

ENVIRONMENTAL BENEFITS

CO₂ Offset Equivalent to

- 5 GALLONS (represented by a car icon)
- 2 TREES (represented by a tree icon)
- 51 KG (represented by a factory icon)

Figure 19

LOCAL NETWORK INTERFACE

CONNECTING DIRECTLY TO THE ECU

Using a Windows-based PC

1. Connect the computer to the ECU using a CAT5 network cable.
2. Power up the ECU by connecting the power cable.
3. Open the “*Network and Sharing Center*” in the Control Panel on the PC.
4. Select “*Local Area Connection*” for “*Unidentified Network*”.
5. Select “*Properties*” when “*Local Area Connection Status*” (LAC) window is displayed.
6. Highlight “*Internet Protocol Version 4 (TCP/IPv4)*” when the “*Local Area Connection Properties*” window is displayed.
7. Select “*Use the Following IP Address*” radial button and the enter IP Address and Subnet Mask as listed below. Do not enter anything in the DNS Server address section.
IP Address: 60.190.131.190
Subnet Mask: 255.0.0.0
8. Select “OK” on the IPv4 Properties window.
9. Close the LAC Properties window.
10. Close the LAC Status window.
11. Close the Network and Sharing Center.
12. Using a standard web browser on your computer, enter the IP Address that is displayed on your ECU in to the URL search field.



Figure 20

LOCAL NETWORK INTERFACE

Using an Apple Mac

1. Connect the computer to the ECU using a CAT5 network cable.
2. Power up the ECU by connecting the power cable.
3. Select the Apple icon in the menu bar to access “*System Preferences*”.
4. Select “*Network*” in the “*Internet & Wireless*” section of the System Preferences.
5. Select “*Ethernet*” on the left side of the Network window.
6. Select “*Manually*” from the “*Configure IPv4*” drop down menu.
7. Enter the following in the appropriate fields:
IP Address: 60.190.131.190
Subnet Mask: 255.0.0.0
8. Leave the “*Router*” field blank.
9. Select “*Apply*”.
10. Using a standard web browser on your computer, enter the IP Address that is displayed on your ECU in to the URL search field.



Figure 21

LOCAL NETWORK INTERFACE

VIEWING THE ECU'S HOME PAGE



Figure 22

ECU ID:

This is a unique number that identifies this specific ECU.

Lifetime Generation:

Amount of power this system has generated during its lifetime.

Last System Power:

Amount of power the system was generating during its last polling cycle.

Generation of Current Day:

Amount of power that has been generated during the most current day.

Last connection to Website:

The last time the ECU checked into the central APsystems EMA database.

Number of Inverters:

Number of inverters that have programmed into the ECU.

Last Number of Inverters Online:

Number of inverters that are checking in with the ECU.

Current Software Version:

Version of software firmware.

LOCAL NETWORK INTERFACE

Current Timezone:

Time zone that has been programmed into the ECU.

ECU Eth0 Mac Address:

The computer “machine address” of the ECU.

ECU Wlan0 Mac Address:

The ECU’s internal WLAN address

Signal Level:

The PLC signal strength measured from 1-5, with higher number being stronger signal strength.

NOTE: Signal Level will not be displayed if there is no PLC, or if the ECU has a UID less than 203000018226.



LOCAL NETWORK INTERFACE

MANAGING INVERTER UIDS

The inverter UIDs **must be programmed** into the ECU for the ECU to recognize the inverters. The ECU will **NOT** auto-sense the inverters.

Initial Programming of the Inverter UIDs into the ECU

1. Select “Administration” at the top of the page.



The screenshot shows the APsystems Energy Communication Unit web interface. The top navigation bar includes "Home", "Real Time Data", and "Administration", with "Administration" selected. A red arrow points to the "Administration Tab" label. The main content area displays system information in a table and environmental benefits.

Home	
ECU ID	203100026410
Lifetime generation	70.26 kWh
Last System Power	193 W
Generation of Current Day	0.88 kWh
Last Connection to website	2015-09-07 12:45:00
Number of Inverters	1
Last Number of Inverters Online	1
Current Software Version	V4.0
Current Time Zone	Asia/Shanghai
ECU Eth0 Mac Address	80:07:1B:00:67:53
ECU Wlan0 Mac Address	80:C5:A6:EG:99:4B
Inverter Comm. Signal Level	4

2015-09-09 14:11:24
Wednesday

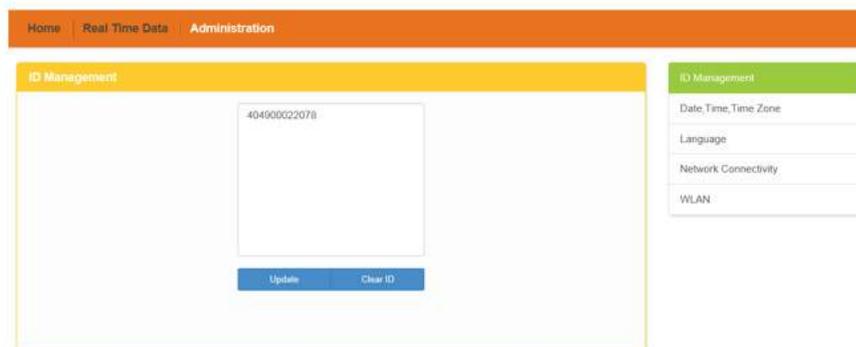
ENVIRONMENTAL BENEFITS

CO₂ Offset Equivalent to:

- 5 GALLONS
- 2 TREES
- 51 KG

Figure 23

The UID Management page is displayed.



The screenshot shows the ID Management page. The top navigation bar includes "Home", "Real Time Data", and "Administration". The main content area displays a form for entering an inverter ID.

404900022078

Update Clear ID

ID Management

Date, Time, Time Zone

Language

Network Connectivity

WLAN

Figure 24

NOTE: The “Enter Inverter ID” window field will be blank if you have not yet entered any of the inverter UIDs.



LOCAL NETWORK INTERFACE

If Manually Entering the UIDs into the ECU

1. Enter each 12-digit inverter UID, followed by pressing the “*Enter/Return*” key (providing a line break between each entry).
2. Once all the UID have been entered, press “*Update*”.

“ID updated successfully” message is displayed.

If Using a Scanning Gun to Enter the UIDs into the ECU

1. Copy the scanned UIDs into the ID Management box.
2. Once all the UID have been copied, press “*Update*”.

“ID updated successfully” message is displayed.

Adding Additional Inverter UIDs

1. Select “*Administration*” tab at the top of the page.

The UID Management page with the existing inverter UIDs is displayed.



Figure 25

2. Scroll down to the end of the existing list.
3. Enter the new UID.
4. Press “*Update*”.

Deleting an Existing Inverter UID

1. Select “*Administration*” at the top of the page.

The UID Management page with the existing inverter UIDs is displayed.

3. Delete the “*obsolete*” UIDs from the list.
4. Press “*Update*”.

LOCAL NETWORK INTERFACE

NOTE: Pressing “*Clear ID*” **deletes ALL** of the inverter UIDs from the list.



NOTE: Combine the above two (2) steps when swapping out an inverter. Add the new inverter, and Delete the old one. Remember to follow up with the same process on the APsystems EMA because the ECU and EMA need to be in synch with each other.



LOCAL NETWORK INTERFACE

CHANGING THE DATE, TIME ZONE

It is critical for accurate power production reporting that the ECU is programmed with the correct date, time, and time zone.

1. Select “*Administration*” tab at the top of the page.
2. Select “*Date, Time, Timezone*” tab.

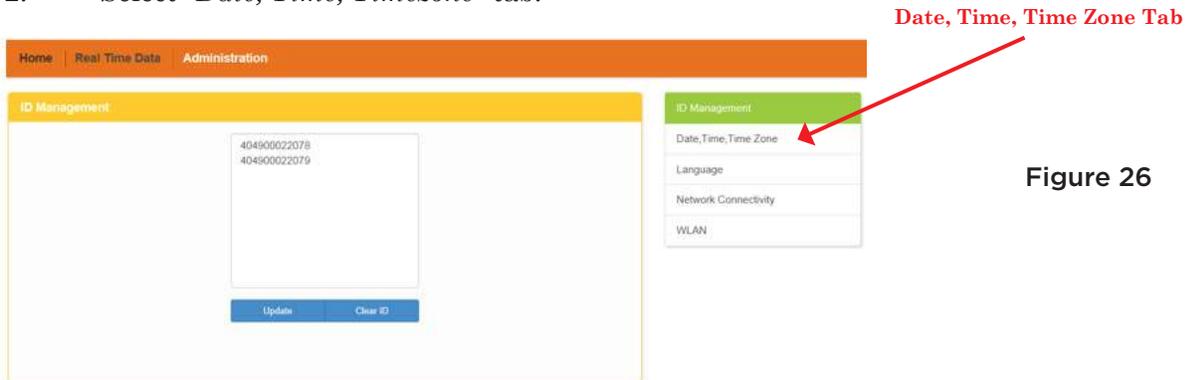


Figure 26

The Date, Time, Time Zone page is displayed.

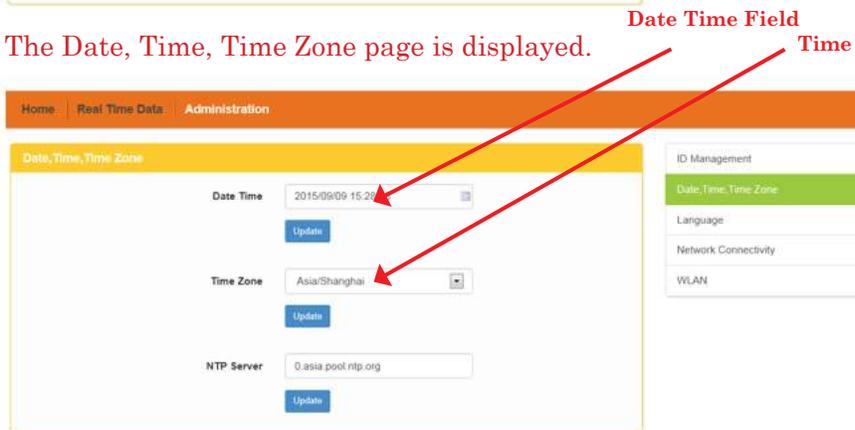


Figure 27

3. Select the “*Date Time*” field.

The Date, Time page is displayed.

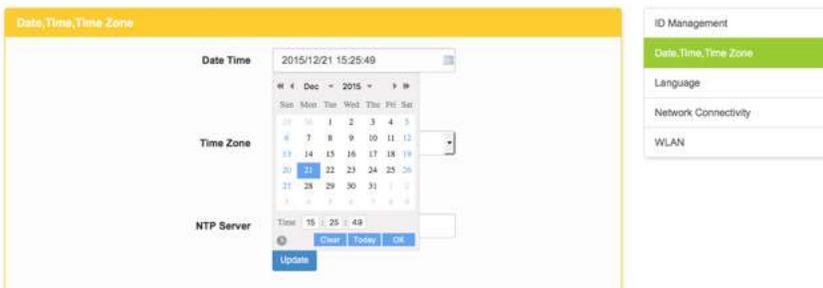


Figure 28

NOTE: Date is displayed in “international date format” – YYYY/MM/DD.



LOCAL NETWORK INTERFACE

4. Select the correct date on the calendar
5. Enter the correct time.
6. Press "*Update*".
7. Select the correct time zone using the Time Zone pull down field.
8. Press "*Update*".

LOCAL NETWORK INTERFACE

CHANGING THE ECU LANGUAGE

1. Select “Administration” tab at the top of the page.
2. Select the “Language” tab.

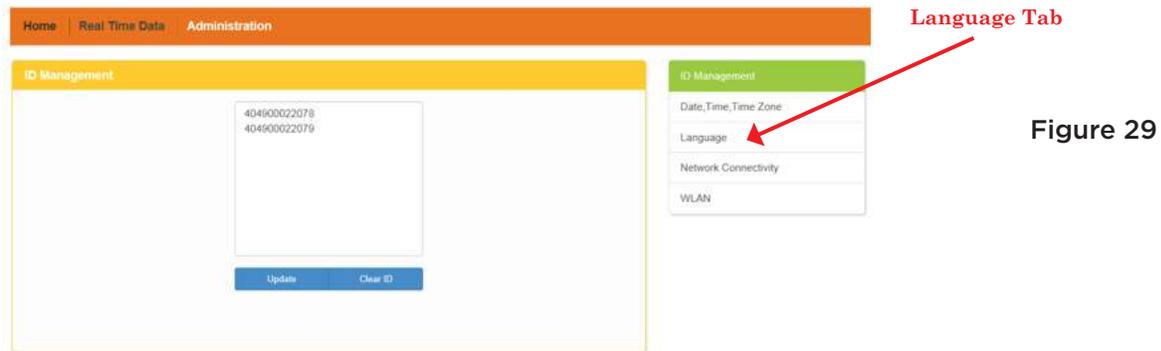


Figure 29

The Language Management page is displayed.



Figure 30

3. Select the ECU’s display language using the Language pull down field.
4. Press “Update”.

LOCAL NETWORK INTERFACE

MANAGING THE NETWORK CONNECTION

The default network connection setting for the ECU is “DHCP” which allows the ECU to automatically establish a connection assignment from the router. The ECU can be assigned a static IP Address if the network design requires it.

Assigning a Static IP Address to the ECU

1. Select “Administration” tab at the top of the page.
2. Select “Network Connectivity” tab.

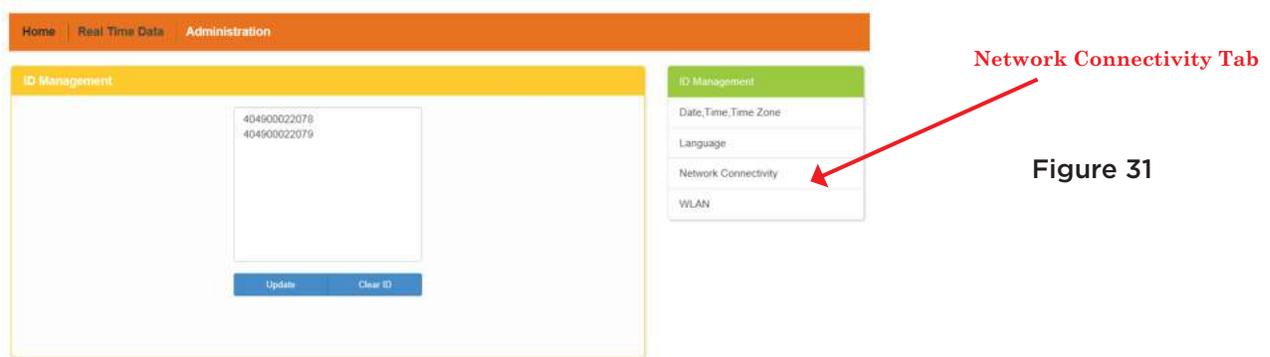


Figure 31

The Network Connectivity page is displayed.

Use the following IP address button

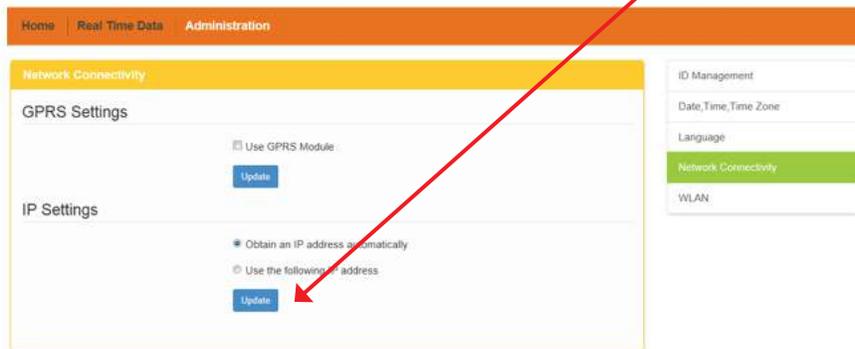


Figure 32

3. Select the “Use the following IP address” button.

LOCAL NETWORK INTERFACE

The Static IP Address page is displayed.

The screenshot shows a web interface for network settings. At the top, there is a yellow header bar labeled "Network Connectivity". Below this, there are two main sections: "GPRS Settings" and "IP Settings".

GPRS Settings: Contains a checkbox labeled "Use GPRS Module" which is currently unchecked. Below the checkbox is a blue "Update" button.

IP Settings: Contains two radio button options: "Obtain an IP address automatically" (which is unselected) and "Use the following IP address" (which is selected). Below these options are five input fields, each with a label to its left: "IP address", "Subnet mask", "Default gateway", "Preferred DNS server", and "Alternate DNS server". At the bottom of this section is another blue "Update" button.

On the right side of the interface, there is a vertical menu with the following items: "ID Management", "Date, Time, Time Zone", "Language", "Network Connectivity" (which is highlighted in green), and "WLAN".

Figure 33

4. Enter the "IP Address", "Netmask", "Gateway IP", "Primary DNS Server", and "Secondary DNS Server" (Refer to your local network administrator for these settings).
5. Press "Update".

LOCAL NETWORK INTERFACE

MANAGING THE WLAN/WIFI CONNECTION

The ECU operates in two communication modes: WLAN and as a wifi hub.

When operating in WLAN mode, the ECU connects to the local network router via its wifi capabilities (eliminating the need for a PLC bridge or wifi extender between the ECU and network router), allowing you to monitor and manage the ECU through the local network.

When functioning as a wifi hub, the ECU can directly communicate wirelessly with mobile devices, and/or a PC.

NOTE: The ECU's wireless functionality is for ongoing monitoring and ECU management, not initial installation. Initial ECU installation requires that you use a wifi extender, PLC bridge, or direct CAT5 connection to the network router.

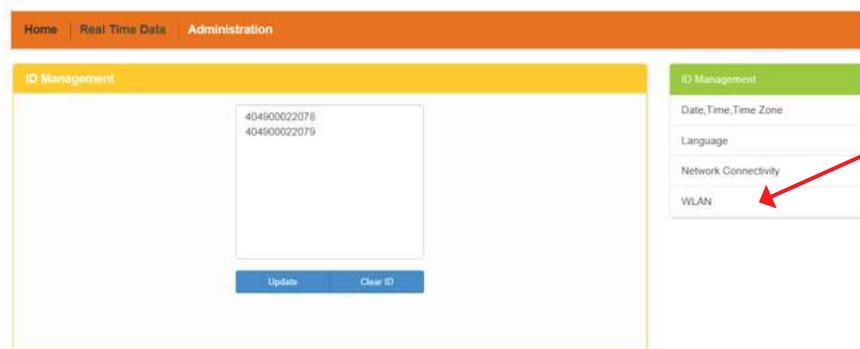


NOTE: The ECU operates as a wifi hub by default.



To Change the ECU to WLAN Mode

1. Select “*Administration*” tab at the top of the page.
2. Select “*WLAN*” tab.



WLAN Tab

Figure 34

LOCAL NETWORK INTERFACE

The “Hotspot” page is displayed.

WLAN Tab

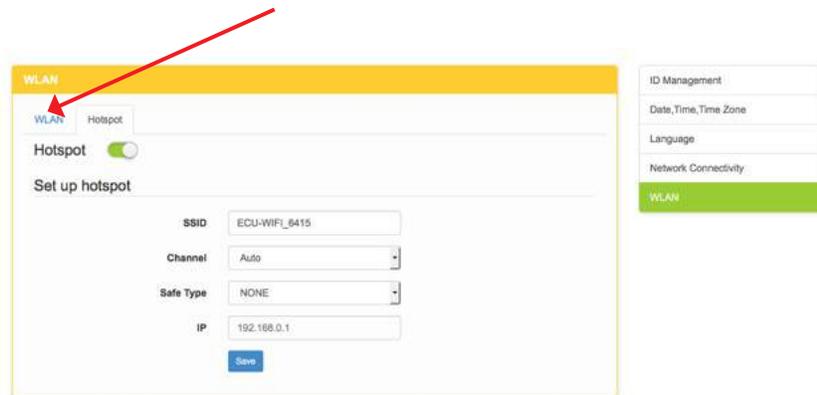


Figure 35

3. Select “WLAN” tab.

The “WLAN” page is displayed.

WLAN Toggle

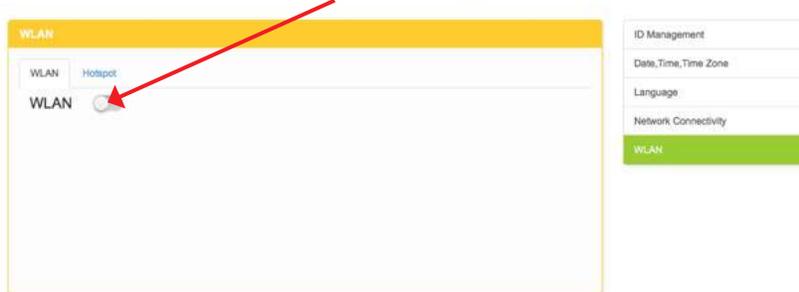


Figure 36

4. Click on the “WLAN toggle” to select WLAN.

The system displays a confirmation message.

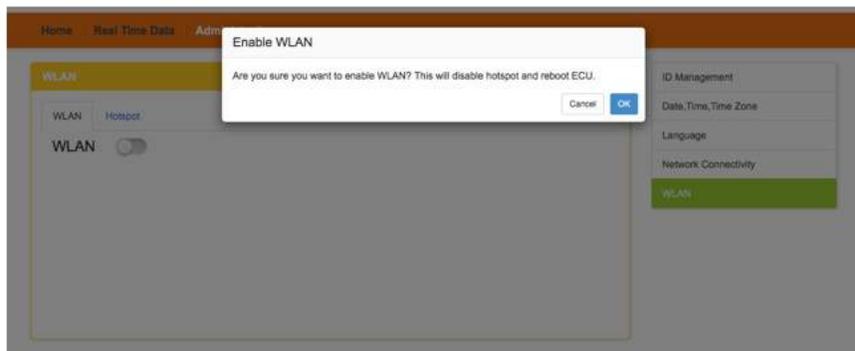


Figure 37

5. Press the “OK” button.

LOCAL NETWORK INTERFACE

The system displays a status page for the ECU reboot process ...



Figure 38

... and then displays the “Available networks” page.

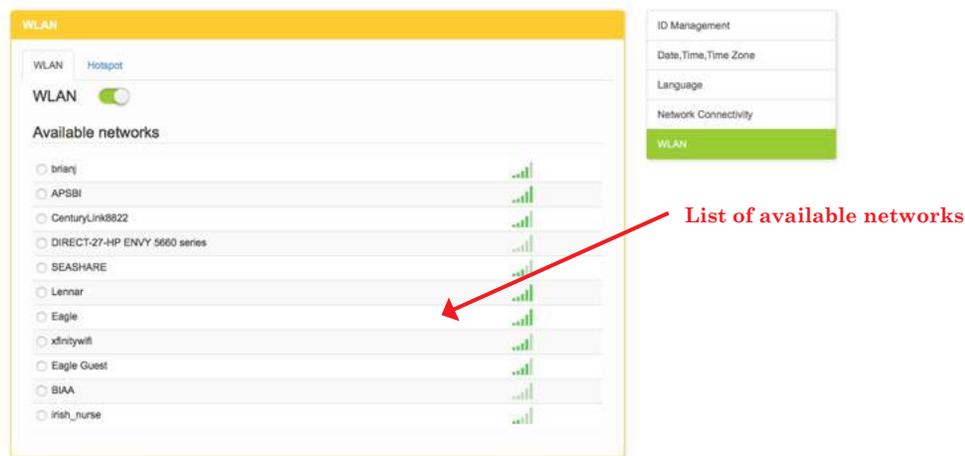


Figure 39

NOTE: If the Available networks page fails to load, enter the router’s IP address that is displayed on the ECU’s display screen into the browser’s URL search field.

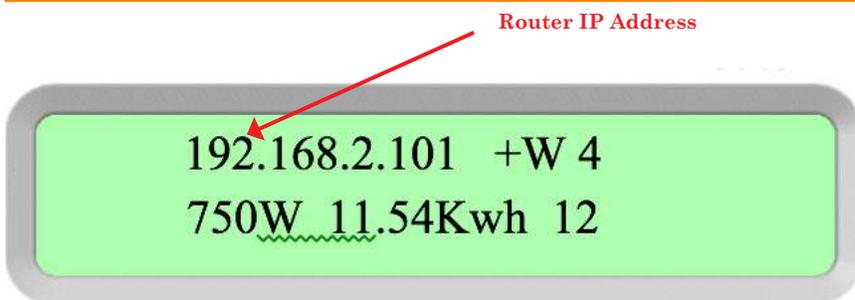


Figure 40

6. Select the network you want to join.

LOCAL NETWORK INTERFACE

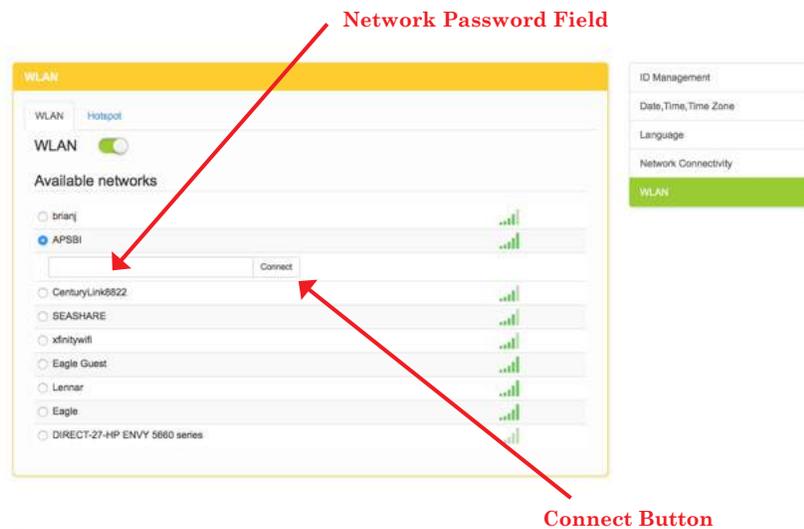


Figure 41

7. Enter the network password.
8. Press the “Connect” button.

The WLAN Connection page is displayed.

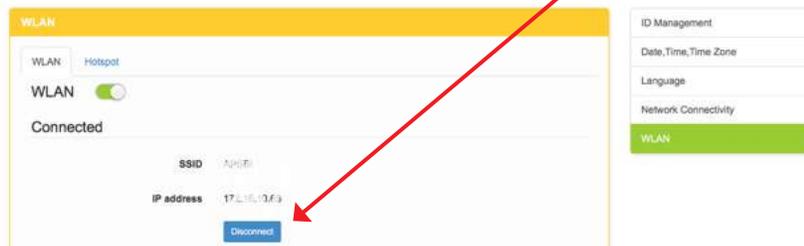


Figure 42

NOTE: To access the ECU with a mobile device or PC, enter the IP address that is displayed on the WLAN Connection page into a browser URL search field.

REMOTE ECU MANAGEMENT

The ECU has been design with remote connect functionality. You can access this remote functionality through the APsystems Energy Monitoring & Analysis [EMA] website, using your installer login credentials. Changes made remotely through the EMA do not take affect until the ECU's next reporting cycle.

The ECU must first be installed with verified Power Line Communication [PLC] and Internet connectivity.

The ECU remote functionality allows you to do the following:

1. Set Time Zones
2. Manage Inverter UIDs

There are additional ECU functions available but the instructions are not outlined in this document. If you need to access one of the following features, please contact APsystems Technical Support at 844-666-7034 or support@APsystems.com.

3. Change system parameters
4. Turn the inverters ON and OFF
5. Reset GFDI
6. Reset Power Settings

REMOTE ECU MANAGEMENT

NOTE: This section of the documentation assumes you have a working knowledge of the APsystems EMA.



1. Log onto your APsystems EMA account.

Your Customer List within the Installer Portal is displayed.

2. Select the customer's ECU you want to manage and click on the pencil icon in the "Change ECU Status" column.

English | Settings | Sign Out

APsystems **INSTALLER PORTAL**
ALTERNATE POWER ENERGY MONITORING ANALYSIS

CUSTOMER REGISTRATION FAQ

CUSTOMER LIST User Account: Blustrog, Olympia, Washington, United States

ID	Customer Account	ECU ID	First Name	Country	State	City	System Size(KW)	Register Date	Change ECU Status	Delete
1	NickDrouin	203000006557	Nicolas Drouin	United States	WA	Bellevue	10.0	2015-09-05		
2	pwunser	203000015787	Paul Unser	United States	NY	Smithtown	5	2014-12-01		
3	dkleszcz	203000016109	Don Kleszcz	United States	CA	Camarillo		2014-12-01		
4	etromason	203000012880	Earl Thomason	United States	WA	Vancouver	7.5	2014-11-14		
5	Jopez	203000014540	Jaime Lopez	United States	CA	South Gate		2014-10-07		
6	Scheff	203000014624	Phil Scheff	United States	CA	Newbury Park	8.25	2014-10-03		
7	Randles	203000014538	Garry Randles	United States	WA	Prosser	4	2014-07-14		
8	Ribic	203000012755	Rachael Ribic	United States	WA	Spokane	3.3	2014-06-20		
9	RiserRM	203000011168	Rolf and Marion Ritter	South Africa	Namibia	Africa		2014-05-29		
10	PVUSA	203000008668	Steve Coonan	United States	California	Davis		2014-02-07		
11	MLanson	203000006550	Mike Larson	United States	Washington	Mercer Island	4.3	2013-10-24		
12	Fried	203000004525	Roger Fried	United States	Washington	Sammamish		2013-05-07		

Displaying 1 to 12 of 12 items. First 1 Last

Figure 43

REMOTE ECU MANAGEMENT

ECU CONFIGURATION

The ECU SETTINGS page is your entry point into managing ECUs remotely.

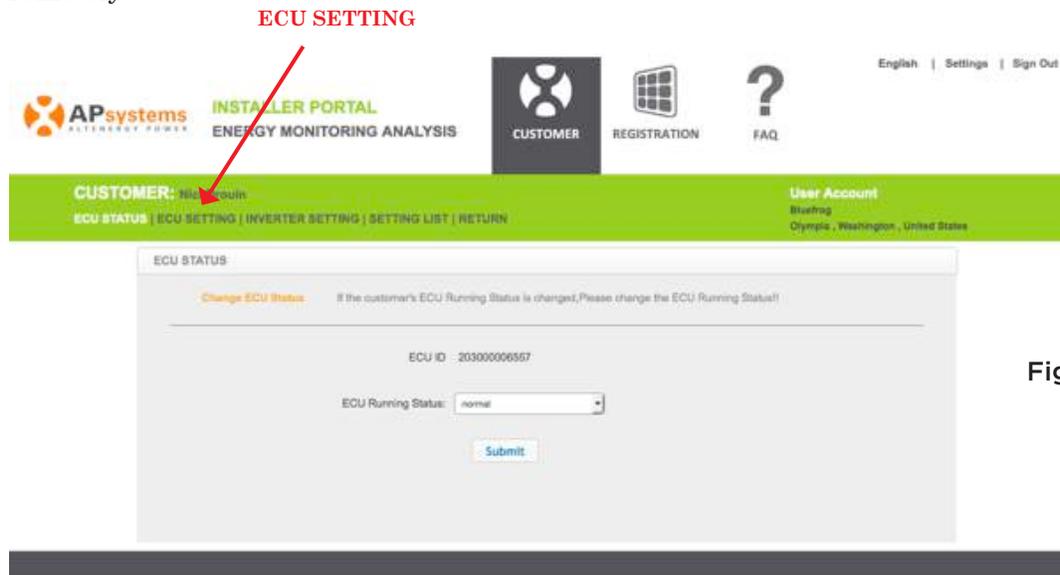


Figure 44

The ECU SETTING tab allows you to:

Set Time Zones

- The ECU time zone can be set or adjusted remotely through the ECU Setting tab. If the time zone is not properly set, the solar production data will not post properly on the EMA site.

Load Inverter UIDs

- Once the ECU has been installed, you can access the ECU remotely to add the inverter UIDs. The ECU will not be able to collect data from the inverters until the inverter UIDs are loaded.

Update Inverter UID list

- The ECU's programmed list of inverters will need to be updated if an inverter(s) is added or swapped for a new unit.

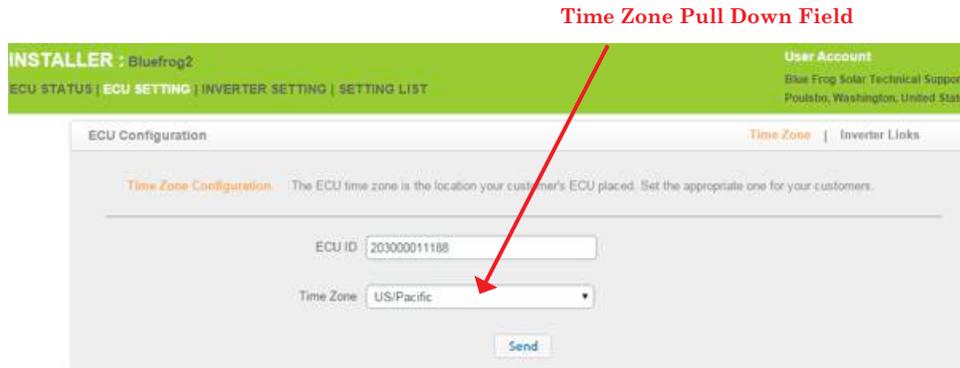
REMOTE ECU MANAGEMENT

SETTING THE ECU TIME ZONE

1. Select the “*ECU SETTING*” tab.

The ECU Configuration page is displayed.

Time Zone Pull Down Field



The screenshot shows the ECU Configuration page. At the top, there is a green header with "INSTALLER : Bluefrog2" on the left and "User Account" on the right. Below the header, there are navigation tabs: "ECU STATUS", "ECU SETTING", "INVERTER SETTING", and "SETTING LIST". The "ECU SETTING" tab is selected. The main content area is titled "ECU Configuration" and has two sub-tabs: "Time Zone" (selected) and "Inverter Links". Under the "Time Zone" tab, there is a section titled "Time Zone Configuration" with a description: "The ECU time zone is the location your customer's ECU placed. Set the appropriate one for your customers." Below this, there is a form with two fields: "ECU ID" with the value "203000011188" and "Time Zone" with a pull-down menu showing "US/Pacific". A red arrow points to the "Time Zone" pull-down menu. At the bottom of the form is a "Send" button.

Figure 45

2. Using the “*Time Zone*” pull down field, select the appropriate time zone.
3. Press “*Send*”.

REMOTE ECU MANAGEMENT

MANAGING INVERTER UIDS AND UPDATING THE INVERTER UID LIST

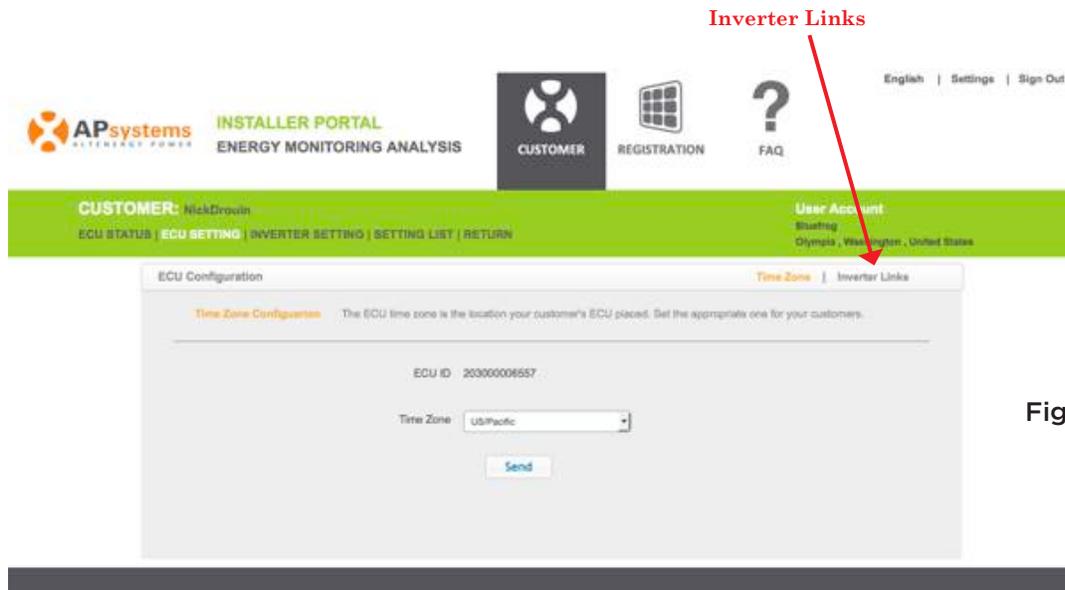
NOTE: To remotely manage the inverter UID list within the ECU, you must fully register the user and their inverters in the EMA. Registering the user's inverters enters the UIDs within the EMA system, but does not upload the UIDs to the ECU until you complete the following.



1. Select the “*ECU SETTING*” tab.

The ECU Configuration page is displayed.

2. Select the “*Inverter Links*” tab.



The screenshot displays the APsystems Installer Portal interface. At the top, there are navigation tabs for CUSTOMER, REGISTRATION, and FAQ. The CUSTOMER tab is active, showing the user's name (Nick Drouin) and location (Bellingham, Olympia, Washington, United States). Below this, the ECU Configuration page is shown, with the Inverter Links tab selected. The page displays the ECU ID (203000009657) and a dropdown menu for the Time Zone (US/Pacific). A red arrow points from the text "Inverter Links" to the Inverter Links tab in the screenshot.

Figure 46

REMOTE ECU MANAGEMENT

The Inverter Links Configuration page is displayed.

Operation Selection **Inverter Selection**

CUSTOMER: Brad Lewis User Account
APS America Technical Support
Peulabo, Washington, United States

ECU Configuration Time Zone | Inverter Links

Inverter Links Configuration Typically, each inverter should be connected to one ECU. Reset the links between the ECU and inverters when your customer changes his inverters.

ECU ID: 203000016146

Operation: Clear Add Delete

Choose the Inverters: Select the Special Ones Input the Special Ones

Inverter ID	Link Status	Operation select
403000046672	Link	<input type="checkbox"/>
403000053954	Link	<input type="checkbox"/>
403000053972	Link	<input type="checkbox"/>
403000053976	Link	<input type="checkbox"/>
403000053996	Link	<input type="checkbox"/>
403000054014	Link	<input type="checkbox"/>
403000054017	Link	<input type="checkbox"/>
403000054022	Link	<input type="checkbox"/>
403000054479	Link	<input type="checkbox"/>
403000054752	Link	<input type="checkbox"/>
403000054850	Link	<input type="checkbox"/>
403000102126	--	<input type="checkbox"/>
403000102403	--	<input type="checkbox"/>

Figure 47

The inverter UIDs that have been registered in the EMA appear in the “Inverter ID” column.

NOTE: “Link” in the “Link Status” column means that the inverter UID has been registered in the EMA and has been uploaded to the ECU. “- -” in the “Link Status” column means that the inverter UID has been registered in the EMA, but has NOT been uploaded to the ECU.



Uploading a Complete List of Inverter UIDs for a Newly Installed System

1. Select “Add” in Operation Selection.
2. Select “Select the Special Ones” in Inverter Selection.
3. Open the pulldown menu in the “Operation select” column.
4. Select “Check all”.
5. Press “Send”.

REMOTE ECU MANAGEMENT

Uploading New Inverter UIDs into an Existing System

1. Select “Add” in Operation Selection.
2. Select “Input the Special Ones” in Inverter Selection.
3. Enter the 12-digit inverter UID into the blank field area. The UID is automatically placed in the Inverter ID column.
4. Press “Send”.

Delete UIDs from Inverter List

1. Select “Delete” in Operation Selection.
2. Select “Input the Special Ones” in Inverter Selection.
3. Select (check box) the inverter UIDs you want to delete from the system in the “Operation select” column.
4. Press “Send”.

TECHNICAL DATA

Model: ECU-3	
Version: 4	
Communication Interface	
Power Line	APsystems Proprietary
Integrated Wi-Fi	802.11g/n
Ethernet	10/100M Auto-sensing, Auto-negotiation
USB interface	Standard
RS232	Standard
Power Requirements	
AC Outlet	110~240 VAC, 50~60 Hz
Power Consumption	2.5 W
Mechanical Data	
Dimensions(W×H×D)	182mm×113mm×42mm (7.1"×4.4"×1.6")
Weight	380g (0.83lbs)
Ambient Temperature Range	-40°C to +65°C (-40°F to 149°F)
Cooling	Nature Convection; No Fans
Enclosure Environmental Rating	Indoor - NEMA 1(IP30)
Features	
Compliance	IEC 60950-1, EN60950-1, IEC 60529, EN 60529, ANSI/UL 60950-1, CAN/CSA C22.2 No.60950-1, UL50E, FCC part 15, EN61000-6-1, EN61000-6-3, ICES-003, AS NZS 60950-1, GB/T17799

This device complies with part 15 of the FCC Rules. Operation is subject to the following two 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.

This Class B digital apparatus complies with Canadian ICES-003.