



Installation / User Manual

APsystems Energy Communication Unit ECU-R



Please use mobile browser to
scan the QR codes
to download ECUAPP :



(Android)



(iOS)

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1. Introduction

The APsystems Energy Communication Unit (ECU-R) is the information gateway for our inverters. The unit collects module performance data from each individual inverter and transfers this information to an Internet database in real time, requiring only a single data and power cable. Through the APsystems Energy Monitoring and Analysis software, the ECU-R gives you precise analysis of each inverter and module in your solar installation from APP. The user-friendly interface lets you access your solar array in seconds.

Features

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

The APsystems ECU-R is used in utility-interactive grid-tied applications, and is made up of four key elements:

- APsystems inverter
- APsystems Energy Communication Unit (ECU-R)
ECU-R is part of the system and is the data link to the inverter.
- APsystems APP (ECUAPP)
Based on android and iOS.
- APsystems Energy Monitoring and Analysis (EMA)
Web-based monitoring and analysis system.

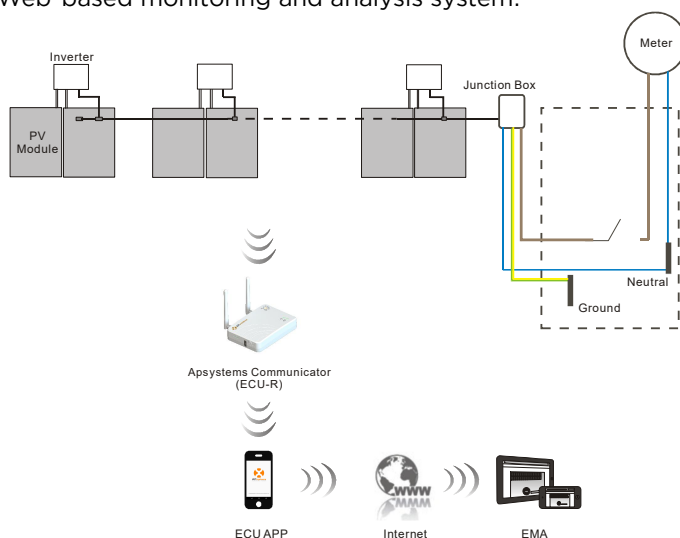


Figure 1

2. Interface Explanation

2.1 Interface Layout

The ECU-R interface includes, (figure 2)from left to right, are Reset、antenna(Wifi)、 power connection port、 RJ45 Signal port、 RJ45 ethernet network port、 antenna(Zigbee).

The sides from top to bottom ,are port,USB port,AP.

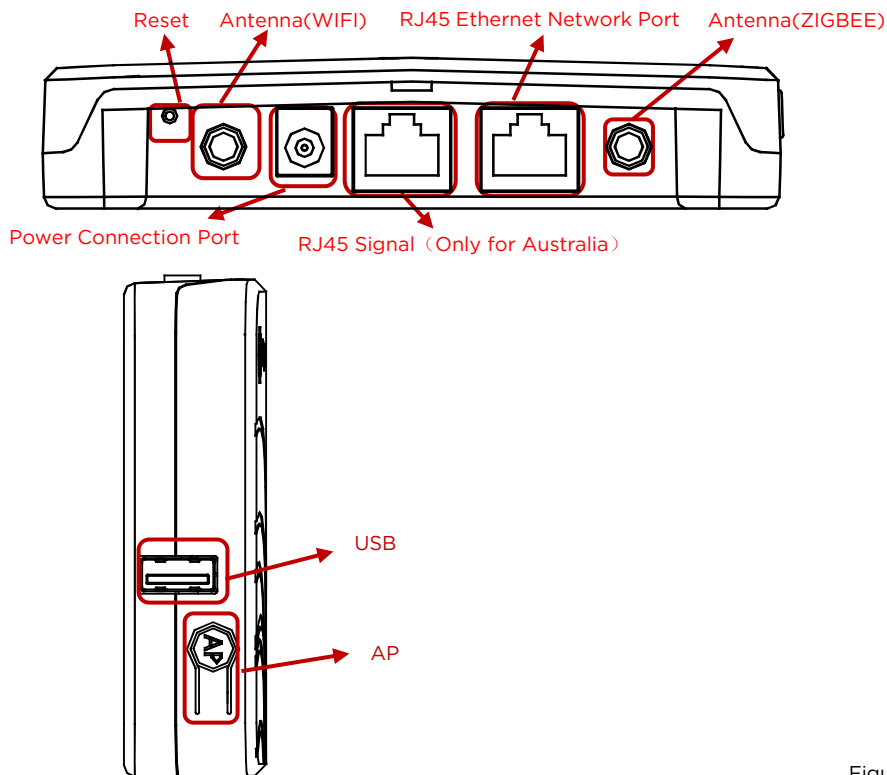


Figure 2

2.2 Reset

Press the Reset button for three seconds or longer, and the ECU-R will automatically return to the default settings.



NOTICE

The wireless password will be changed to “88888888”.

2. Interface Explanation

2.3 Power Connection Port

The power connection port connects power through the power adapter.

2.4 RJ45 Ethernet Network Port

The ECU-R allows the user to communicate with the EMA.

2.5 RJ45 Signal (Only for Australia)

The RJ45 Signal is designed for DRM0, it should be connected by RJ45 connector in the package otherwise the inverter will not work.



NOTICE

Please do not plug out the RJ45.

2.6 Antenna

The antennas in the package should be connected to ECU-R. One antenna is used for the communication between ECU-R and inverters, the other antenna is used for the Wi-Fi connection between ECU-R and router.

2.7 USB port

The USB interface is reserved.

2.8 AP

Press the AP button to turn on AP. Then the ECU-R can be scanned by phone. ECU-R will turn off it automatically in one hour.

2. Interface Explanation

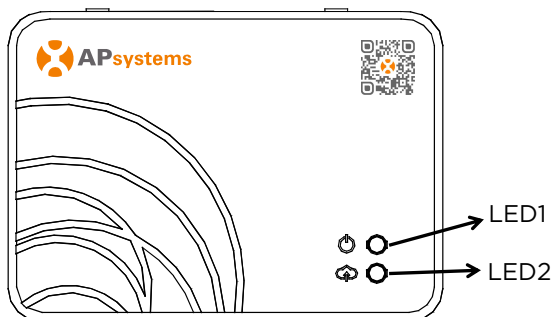


Figure 3

2.9 LED1

LED1 will be on When the ECU-R works well.

2.10 LED2

LED2 will be on When the ECU-R connects to the sever.

3. Hardware Installation

3.1 Preparation

Make sure you have the following components ready before beginning to install the ECU-R:

- A dedicated standard AC electrical outlet (located as close to the array as is possible).
- A broadband Internet connection available for your use.
- A broadband router with either a CAT5 Ethernet, or a wireless router.
- A phone with APP (see page 11).

3.2 Selecting an Installation Location for the ECU-R

- Choose a location that is as close to the array as possible

3.3 Installation

1) Using a Wall Mount

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

- Depending on the wall surface you are mounting the ECU-R to, use either two drywall screws or wall anchors, installed 100 mm apart (The drywall screws and wall anchors are not included in the ECU-R kit).
- Align and slide the ECU-R onto the mounting screws.

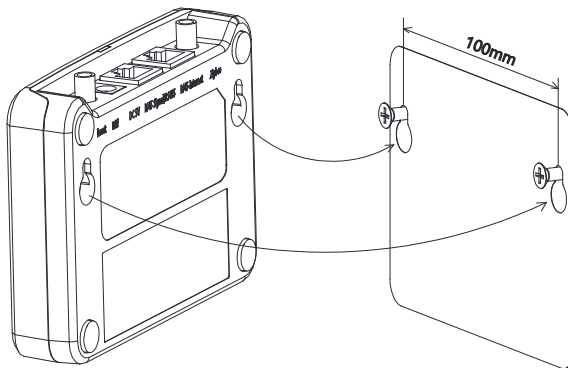


Figure 4

3. Hardware Installation

3.4 Cable Connection

1) Using a Wall Mount

- Connect the adapter to the power connection port on the top of the ECU-R.

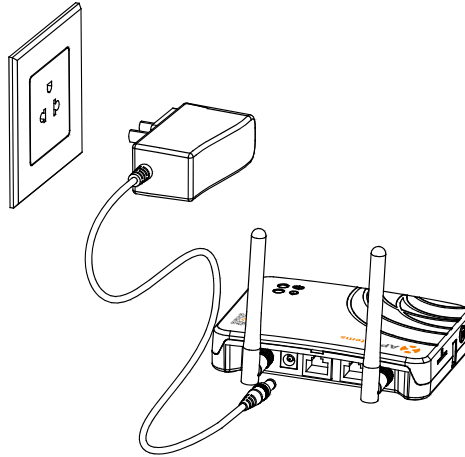


Figure 5



NOTICE

The antennas used for Zigbee port and WI-FI port are exactly the same type, no need to distinguish.

3. Hardware Installation

3.5 Internet Connection

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

Option 1: Direct LAN cable connection.

- 1) Make sure the LAN cable is connected to the network port on the bottom of the ECU-R.
- 2) Connect the LAN cable to a spare port on the broadband router.



Figure 7

Option 2: Wireless Connection.

Use ECU-R internal WLAN (see Manage the WLAN connection).

4. ECU-R User Interface

Please use mobile browser to scan the QR codes to download ECUAPP :



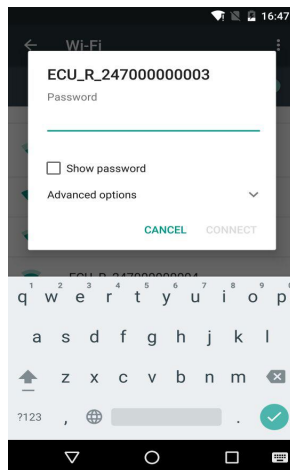
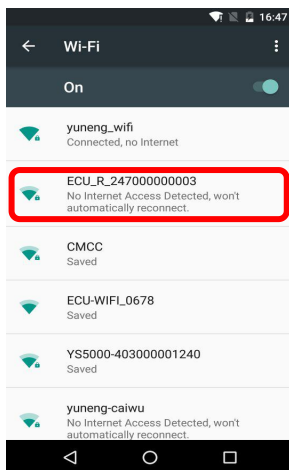
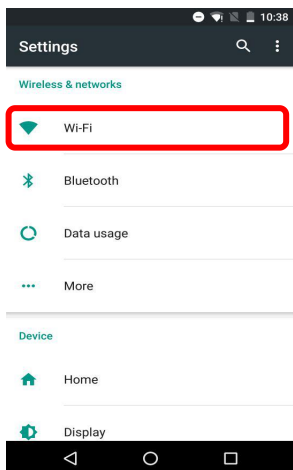
(iOS)



(Android)

4.1 Connecting to the ECU-R via the Local Wireless

- Open Wi-Fi setting in your smartphone, select ECU-R hotspot.
- Connecting to the ECU-R via the Local Wireless, the default password is “88888888”.
- Open the ECUAPP.
- Check ECUAPP is connected to ECU-R in the Home page.



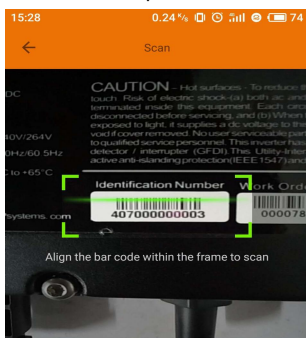
NOTICE

Before the first time to add the UID, users must set the date and time in advance.
Please refer to the 4.6.3 Time Management.

4. ECU-R User Interface

4.2 Add UID

- Click "Settings", select "ID Management", input the UID manually or scan the UID by camera. If there is no need to modify, then click "SYNC" to update the UIDs onto ECU.

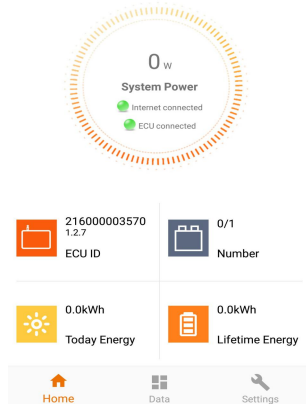


4.3 Delete UID



- Select the UIDs, click "DELETE" then click "SYNC". The UIDs selected are deleted on the ECU-R.

4.4 Homepage

- Click "Home" at the bottom of the page. The information about systems info of ECU-R, ECU-R ID, version, total number of inverters, the number of connected inverters, intraday power output, historical Power output and current system power shall be displayed.



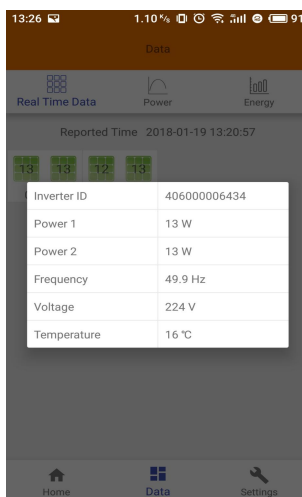
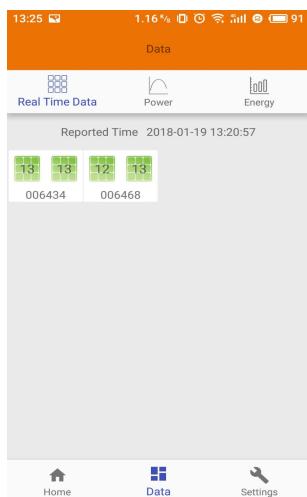
4. ECU-R User Interface

-  Green light indicates the mobile phone is connected to the ECU-R.
-  Grey light indicates the mobile phone fails to connect to the ECU-R.

4.5 Data

4.5.1 Real Time Data

- This page shall display the added inverter. According to different models of inverter, each inverter would have the corresponding modules displaying the real time power.
- Click "Module", the detailed information of the inverter shall be displayed, including inverter ID, PV module power, grid voltage, frequency and temperature.



Green panel indicates the inverter is successfully connected.

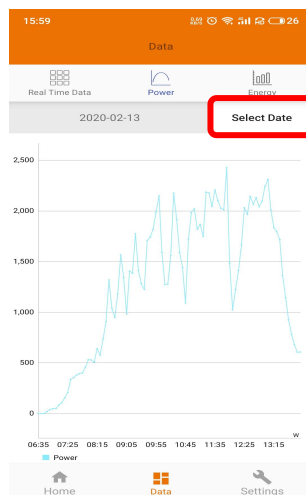


Grey panel indicates the inverter is disconnected.

4. ECU-R User Interface

4.5.2 Power

- To This page displays the daily system power curve. Click "Power" at the real time data page to view the historical system power curve.

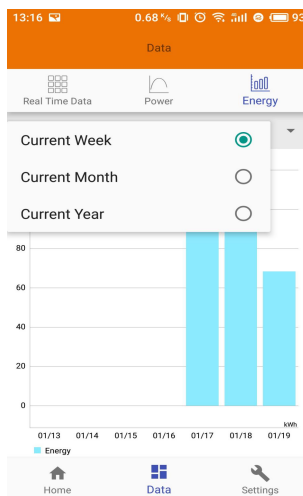
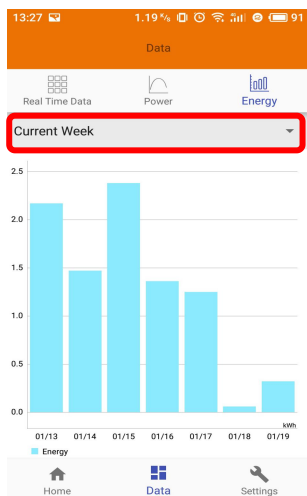


4.5.3 Power generation statistics

- Press "Energy" at the real-time data page to view the system power generation of the solar system.

The statistics of power generation shall be displayed.

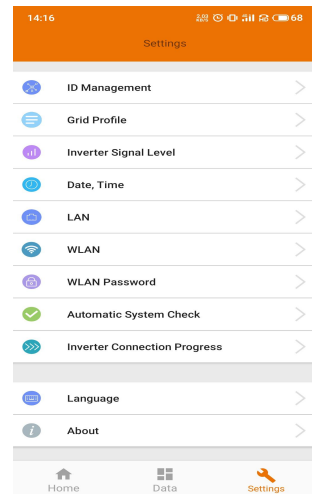
The energy histogram of current week:



4. ECU-R User Interface

4.6 Settings

- Click "Settings" and enter into the "settings page".



4.6.1 Manage IDs

- Please refer to 4.2 to add UID.

4.6.2 Grid Profile

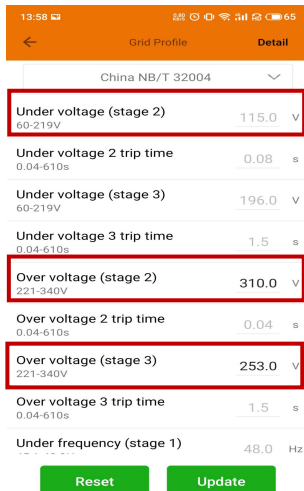
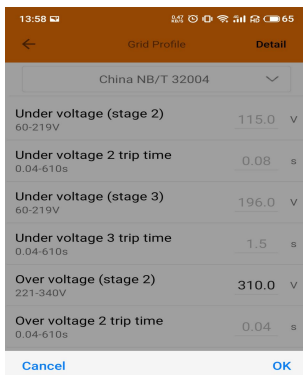
- User needs to select grid profile when installing the system.

4.6.3 Inverter Signal Level

- Show the direct communication quality between each inverter and ECU.

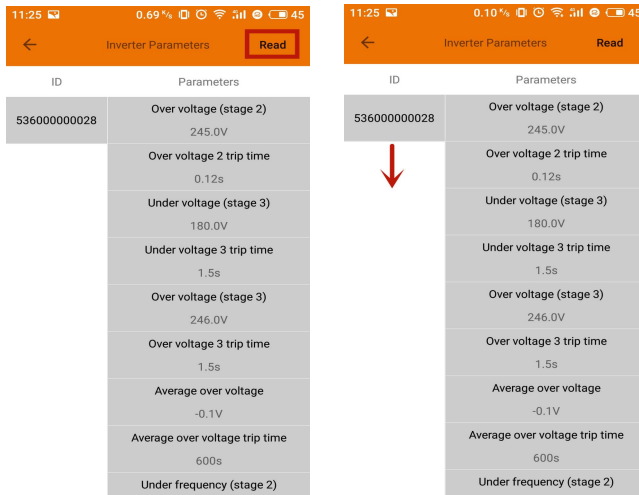
NOTICE

If you select the wrong grid profile, the inverters will not work normally.



4. ECU-R User Interface

- Enter the Detail page, you can view the inverters' parameters. Click Read, ECU will get the parameters from inverters. You can swipe down the ID list to view the result after about 5 minutes later.

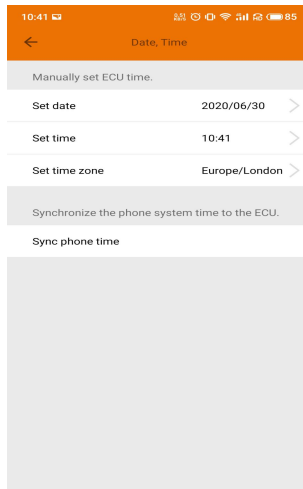


ID	Parameters
536000000028	Over voltage (stage 2) 245.0V
	Over voltage 2 trip time 0.12s
	Under voltage (stage 3) 180.0V
	Under voltage 3 trip time 1.5s
	Over voltage (stage 3) 246.0V
	Over voltage 3 trip time 1.5s
	Average over voltage -0.1V
	Average over voltage trip time 600s
	Under frequency (stage 2)

ID	Parameters
536000000028	Over voltage (stage 2) 245.0V
	Over voltage 2 trip time 0.12s
	Under voltage (stage 3) 180.0V
	Under voltage 3 trip time 1.5s
	Over voltage (stage 3) 246.0V
	Over voltage 3 trip time 1.5s
	Average over voltage -0.1V
	Average over voltage trip time 600s
	Under frequency (stage 2)

4.6.4 Time management

- Enter the page, the time of ECU-R shall be displayed on the right side of the page. Click "date" or "time" to modify.
- Click "Sync phone time", APP will set the date and time of the phone for ECU, user doesn't need to set date and time manually.



10:41 0.69% 0.10% 45

← Date, Time

Manually set ECU time.

Set date 2020/06/30 >

Set time 10:41 >

Set time zone Europe/London >

Synchronize the phone system time to the ECU.

Sync phone time

4. ECU-R User Interface

4.6.5 Manage the Network Connection

- ECU-R's wired network setting has 2 options: automatically obtain an IP address or use a fixed IP address. Obtaining an IP address automatically means the router would distribute IP to ECU-R automatically. When choose user fixed IP, users shall use the following IPs.

14:50 LAN

Obtain an IP address automatically ☒

MAC address 80:97:1B:01:10:FA

IP address 192.168.131.228

14:51 LAN

Obtain an IP address automatically ☐

MAC address 80:97:1B:01:10:FA

IP address 192.168.1.103

Subnet mask 255.255.255.0

Default gateway 192.168.1.1

Preferred DNS server 220.189.127.108

Alternate DNS server 220.189.127.107

Update

4.6.6 Manage the WLAN connection

- The page will show up ECU's wireless connection status. Click "Refresh" button, the available SSID would show up.
- Click the SSID and enter the password.
- The ECU-R would restart after sending the password. Please reconnect the ECU-R.

15:37 WLAN Disconnect

ECU_R_TEST ECU connected

apsystems

yunengsheji

TP-LINK_9529

HainingYuneng

TDG-TECH

TDG-PRD

TDG-TECH

TP-LINK_BA8E

13:17 WLAN

TP-LINK_0580_1 connected

ECU-WIFI_0777

TP-LINK_6964_3

Please enter the password

SEND

ECU-WIFI_0721

ECU-WIFI_0200

TP-LINK_43C9_2

ECU-WIFI_5074



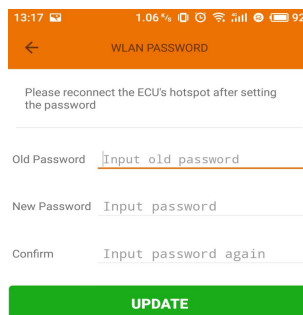
NOTICE

After the password is sent, ECU-R will restart. Please reconnect to ECU-R.

4. ECU-R User Interface

4.6.7 WLAN PASSWORD

- Please reconnect the ECU-R hotspot after setting the password. On the page, you can change Password.
- If user forget the password, hardware reset could be carried out. The initial password would be "88888888".



13:17 1.06% 100% 92

← WLAN PASSWORD

Please reconnect the ECU's hotspot after setting the password

Old Password

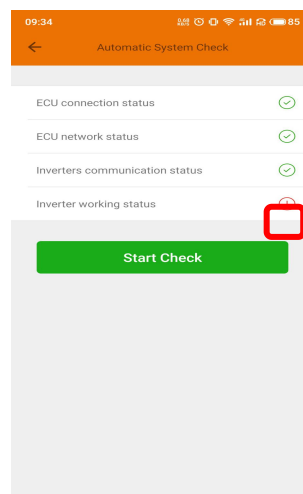
New Password

Confirm

UPDATE

4.6.8 Automatic System Check

- Check the running status of the system, if there are issues, click the icon to view the reason and get the way to solve it.



09:34 100% 85

← Automatic System Check

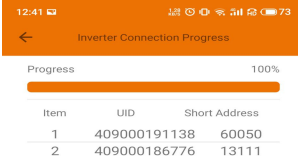
ECU connection status	✓
ECU network status	✓
Inverters communication status	✓
Inverter working status	ⓘ

Start Check

4. ECU-R User Interface

5.6.9 Inverter Connection Progress

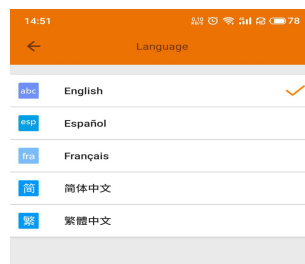
- User can see the connection progress of the inverters, 100% means the connection is finished.



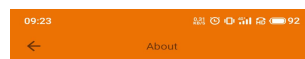
Item	UID	Short Address
1	409000191138	60050
2	409000186776	13111

4.6.10 Language

- Select Language.



4.6.11 Help



ECUAPP 1.8.7

Introduction

This smart phone application is designed to control and monitor an APsystems ECU as part of an APsystems solar microinverter system. App users can see the working status of the ECU and its inverters, optimizer, Rapid Shutdown Device and can reset the device configuration.

The APsystems Energy Communication Unit (ECU) is the information gateway to and from APsystems solar microinverters, optimizer, Rapid Shutdown Device. The unit collects module performance data from each microinverter unit, optimizer, Rapid Shutdown Device and transfers this information to an online database in real time, requiring only an Internet connection (via wired CAT5 or Wi-Fi) and power cable. Through the APsystems Energy Monitoring and Analysis (EMA) cloud-based service, the ECU gives the homeowner precise analysis of each microinverter, optimizer, Rapid Shutdown Device and module in their solar installation.

Features:

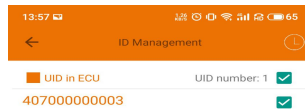
- See the status and configuration of the ECU gateway and monitor each inverter, optimizer, Rapid Shutdown Device.

- Display real-time energy production and other performance data.

4. ECU-R User Interface

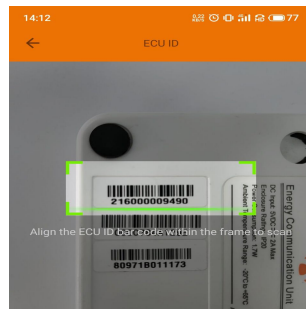
4.7 EMA Registration function

- Register the inverters'ID into ECU on ID Management screen. Make sure the IDs have been synced to ECU.



4.7.1 Scan ECU's ID

- Scan the ECU's ID which is a 12 digits number starting with a 2, then click OK.



4. ECU-R User Interface

4.7.2 Create Customer

- Connect your phone to internet instead of to the ECU. Then enter the information and click “Sync EMA”. User name, password, city and country/state are necessary.

11:28 78%

Do-it-Yourself registration

* User name diytest

* Password *****

* Confirm password *****

Full name

* Email diy@gmail.com

* Phone 123456789

* Country/State China/Beijing

* City diy

* Address diy

ECU ID 216000009490

* Module Maximum Power(Pmax) 600 W

* Grid type 230V Single-phase

Sync EMA

5. Technical Data

Communication Interface

Integrated Wi-Fi	802.11b/g/n
Communication	802.15.4
Ethernet	10/100M Auto-sensing, Auto-negotiation
Wireless security	WEP,WPA2-PSK
USB Interface	5Vdc-1.4A Output

Power Requirements

AC Adapter	5V 2A
Power Consumption	1.7W
Maximum Communicating Inverter Qty	30

Mechanical Data

Dimensions (W×H×D)	122mm×87mm×25mm(4.8"×3.4"×0.98")
Weight	150g(0.33lbs)
Ambient Temperature Range	-20°C to +65°C(-4°F to +149°F)
Cooling	Nature Convection; No Fans
Enclosure Environmental Rating	Indoor - NEMA 1

Features

Compliance	IEC 62368-1,EN 62368-1,EN 300 328, EN 301 489-1 ,EN 301 489-17,IEC/EN 61000 AS/NZS 62368.1,AS/NZS 4268, AS/ZNS 61000,CSA C22.2 No.62368-1/UL 62368-1,FCC part 15.
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Specifications subject to change without notice.

Please ensure you are using the most recent update found at www.APsystems.com.

5. Technical Data

:: WEEE (for Europe)



Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2002/96/EC.
2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

CAUTION

The professional person is allowed to replace the battery.

Do not ingest battery, Chemical Burn Hazard.

This product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. Keep new and used batteries away from children. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

6. Contact Information

ALTENERGY POWER SYSTEM Inc.

www.APsystems.com

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Mail: info@APsystems.com

APsystems Europe

Rue des Monts dor ZAC de Folliouses Sud-Les Echets 01700 Miribel, France

Tel: +33-481 65 60 40

Mail: emea@APsystems.com



FCC Statement:

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

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.