



# ECU-C

## Installation and Configuration

English - 2020

# Agenda

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- Product Overview
- Installation
- ECU-C configuration

# Product Overview



# Monitoring gateway - ECU-C

- **Energy Communication Unit with advanced functions**



- Collection and transmission of inverter data
- Real time monitoring of each inverter
- Adapted to single or 3 phase
- Built-in WiFi
- Zigbee communication
  
- rail din mounted
- Metering Function (Electricity data monitoring)
- 0 Export function
- Redundant Energy Control

# ECU-3 Structure

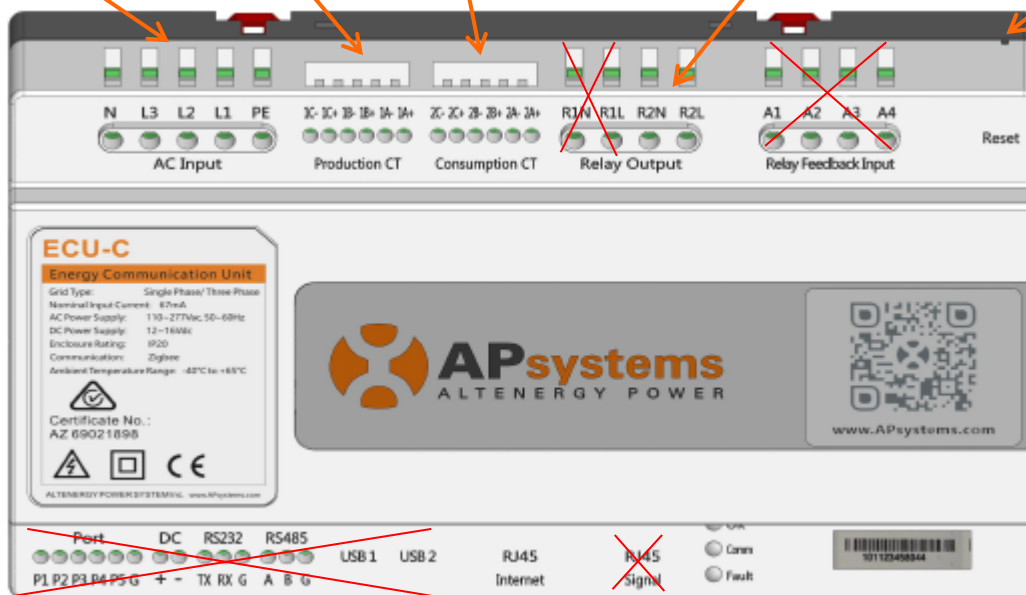
**Power Interface**  
Single phase systems :  
230V L1/N/PE  
3 phase systems :  
230/400V L1/L2/L3/N/PE

**Production CT(s)**

**Consumption CT(s)**

**Redundant Energy Control**

**Reset Button**



**WiFi antenna**

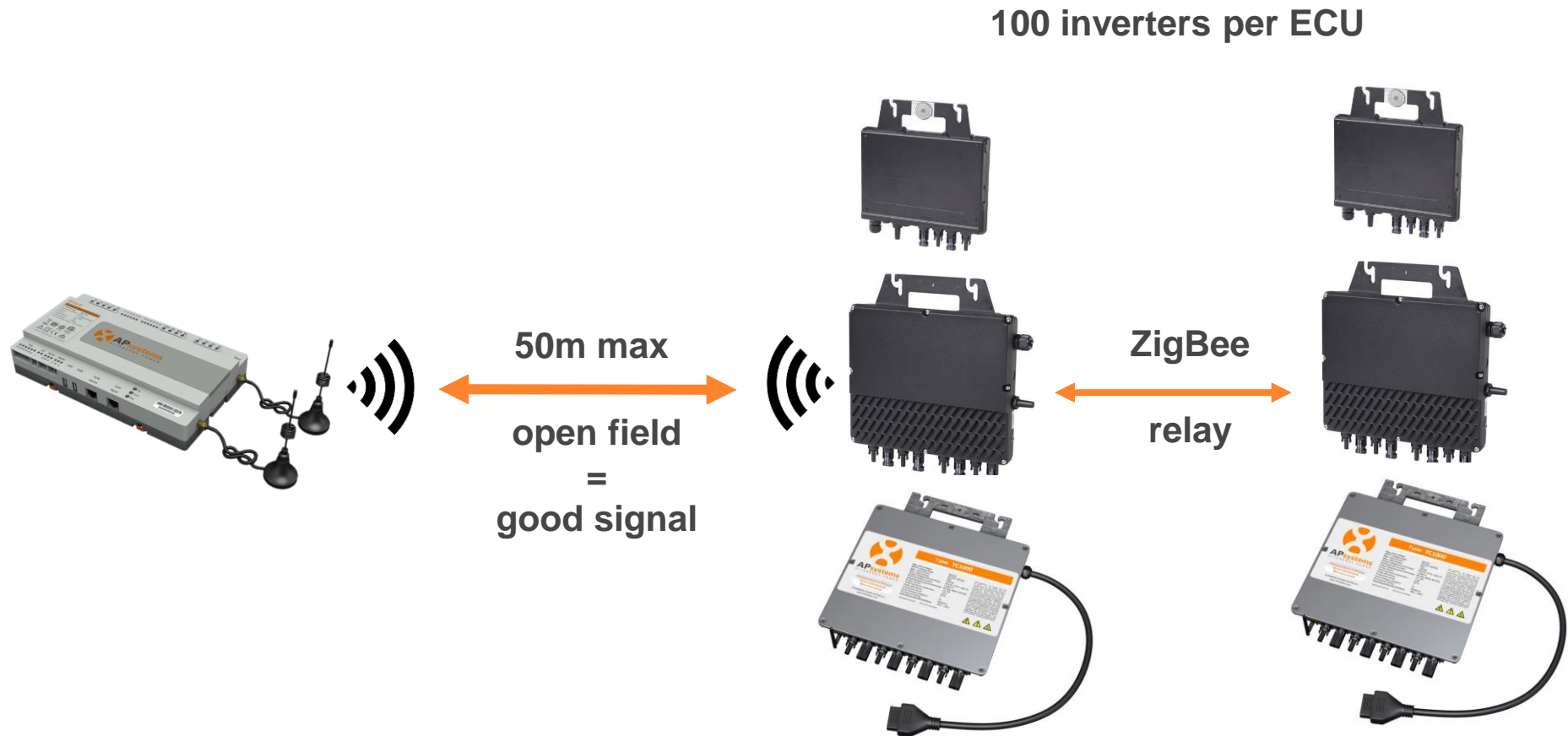
**ZigBee antenna**

**Network Interface**

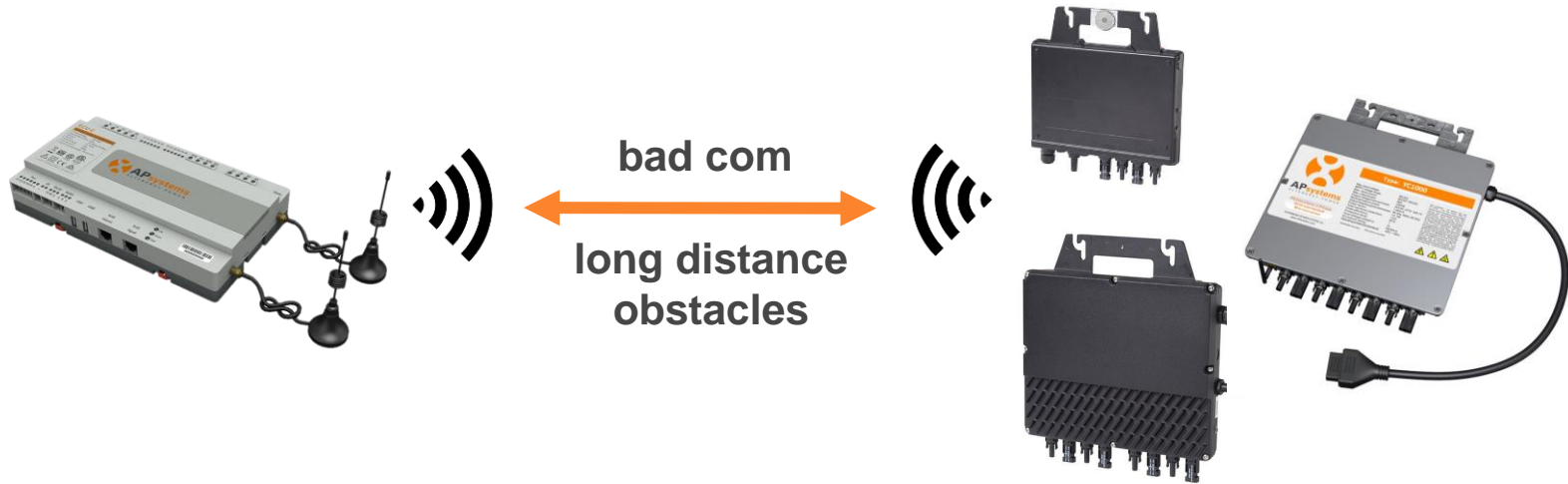
**Status led**



# ZigBee communication



# ZigBee communication



move Zigbee antenna of the ECU to a better location using extension cable for WiFi antenna 2,4GHz with SMA connectors male /female (not provided by Apsystems)



If the antenna is installed outside not protected from the rain change if for an appropriate version : WiFi antenna 2,4GHz outdoor (not provided by Apsystems)

# CTs for ECU-C



**80A**

**or**



**200A**

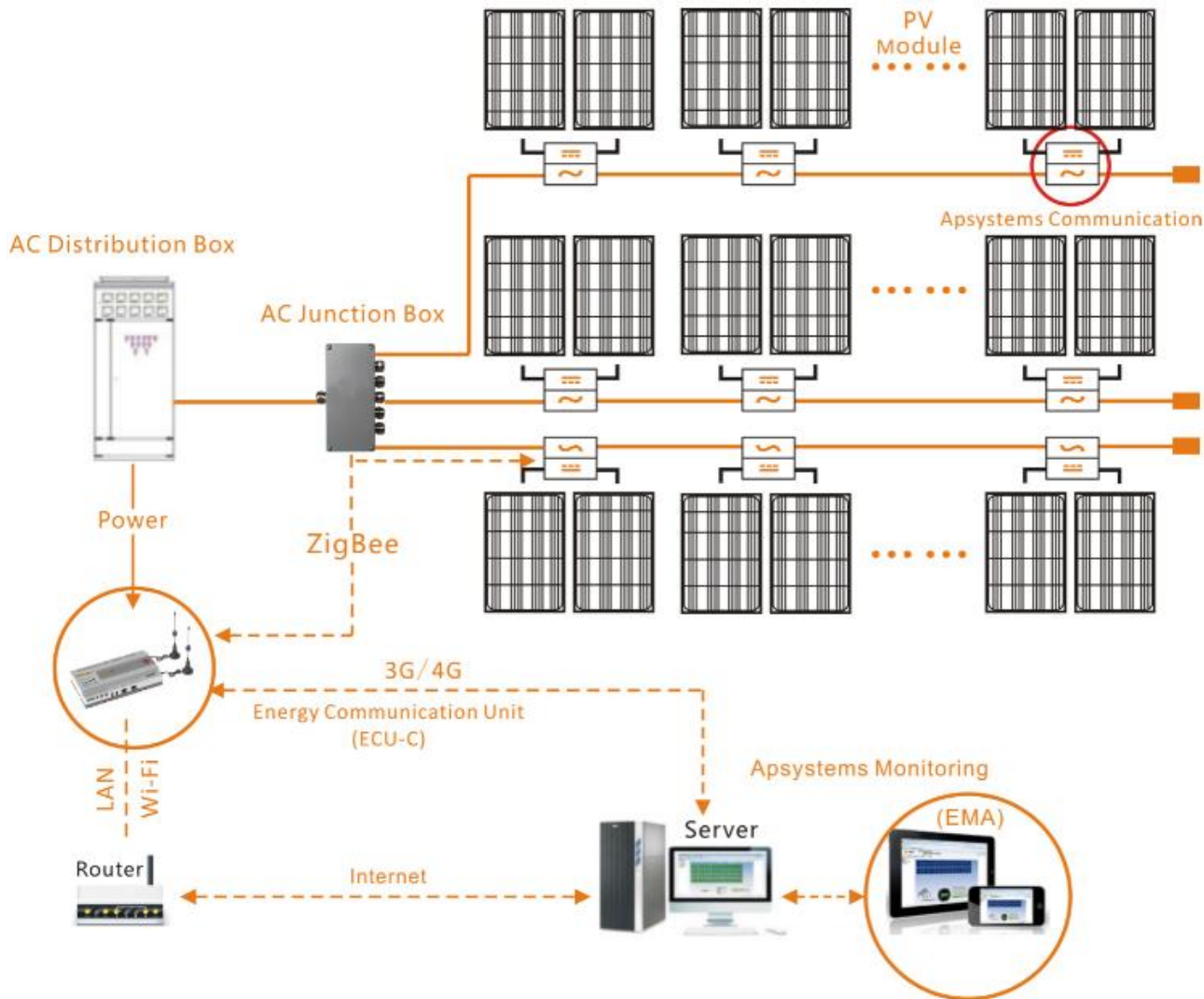




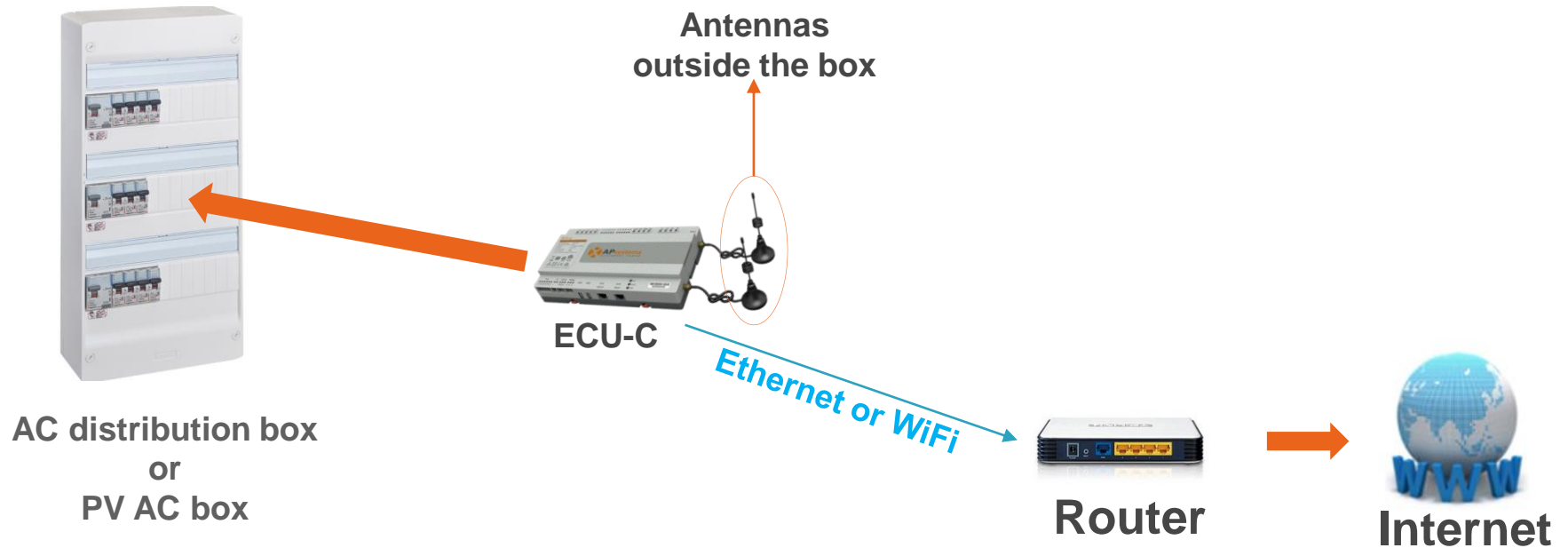
# Installation



# System overview



# Install ECU-C

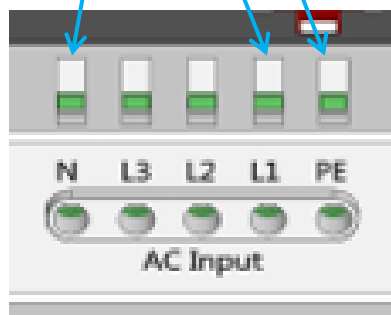


# Install ECU-C

Power interface wiring  
with  
standard EU Grid 230/400V–50Hz  
(L1, L2, L3, N, PE)

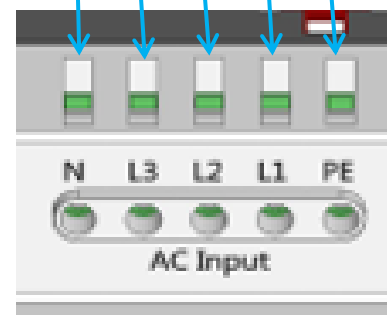
Single phase PV systems

N, L1, PE

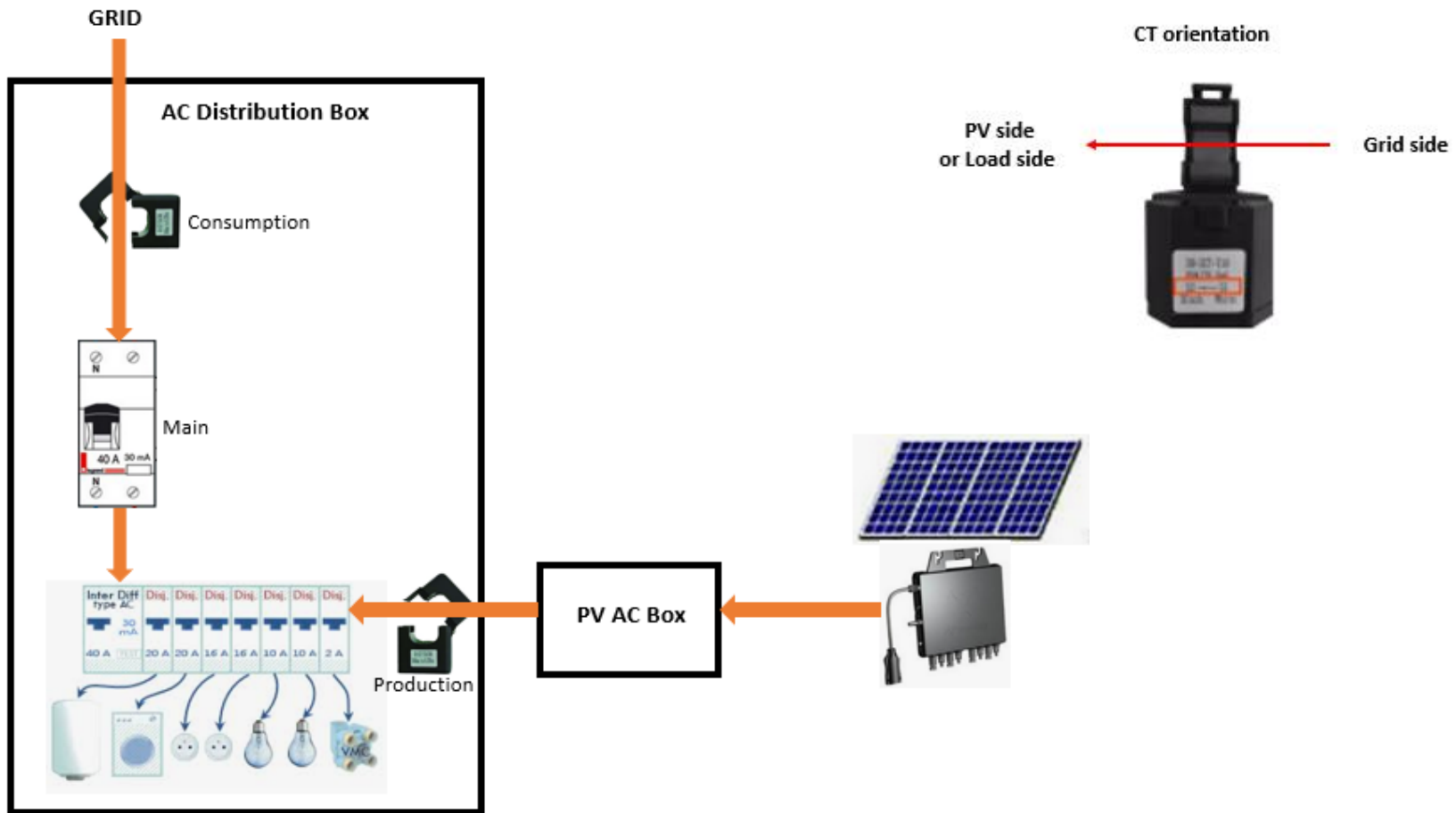


3 phase PV systems

N, L3, L2, L1, PE



# Install CT for ECU-C

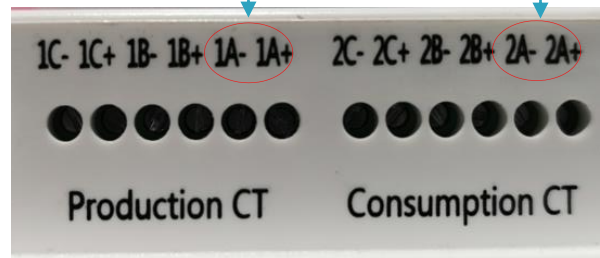


# Install CT for ECU-C

Single phase PV system  
2 CTs

Production

L1



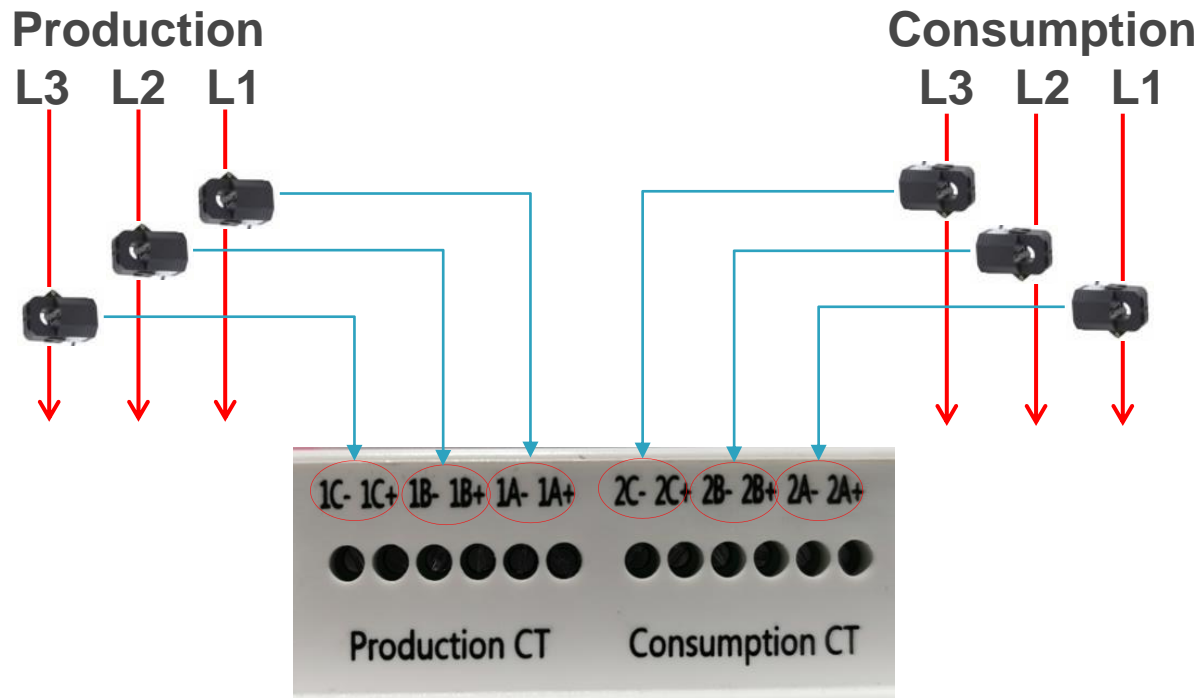
Consumption

L1



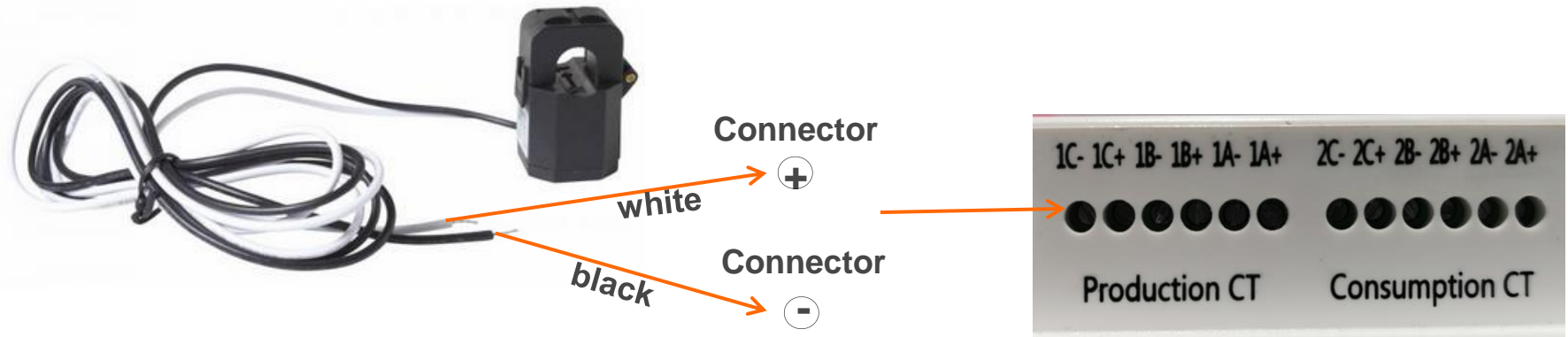
# Install CT for ECU-C

3 phase PV system  
6 CTs



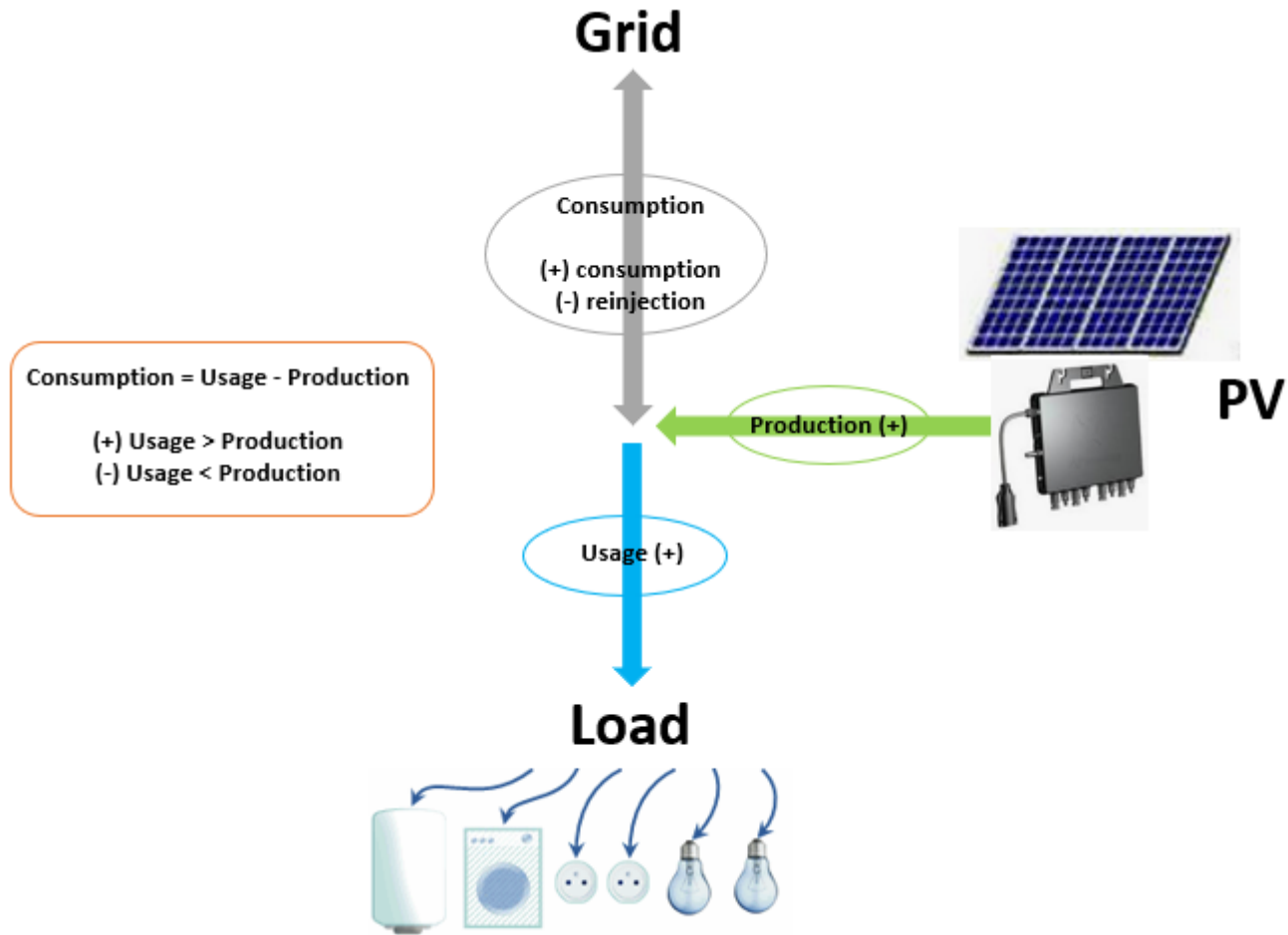
**Warning :** check phase are matching on  
ECU-C power port and CTs port

# Install CT for ECU-C

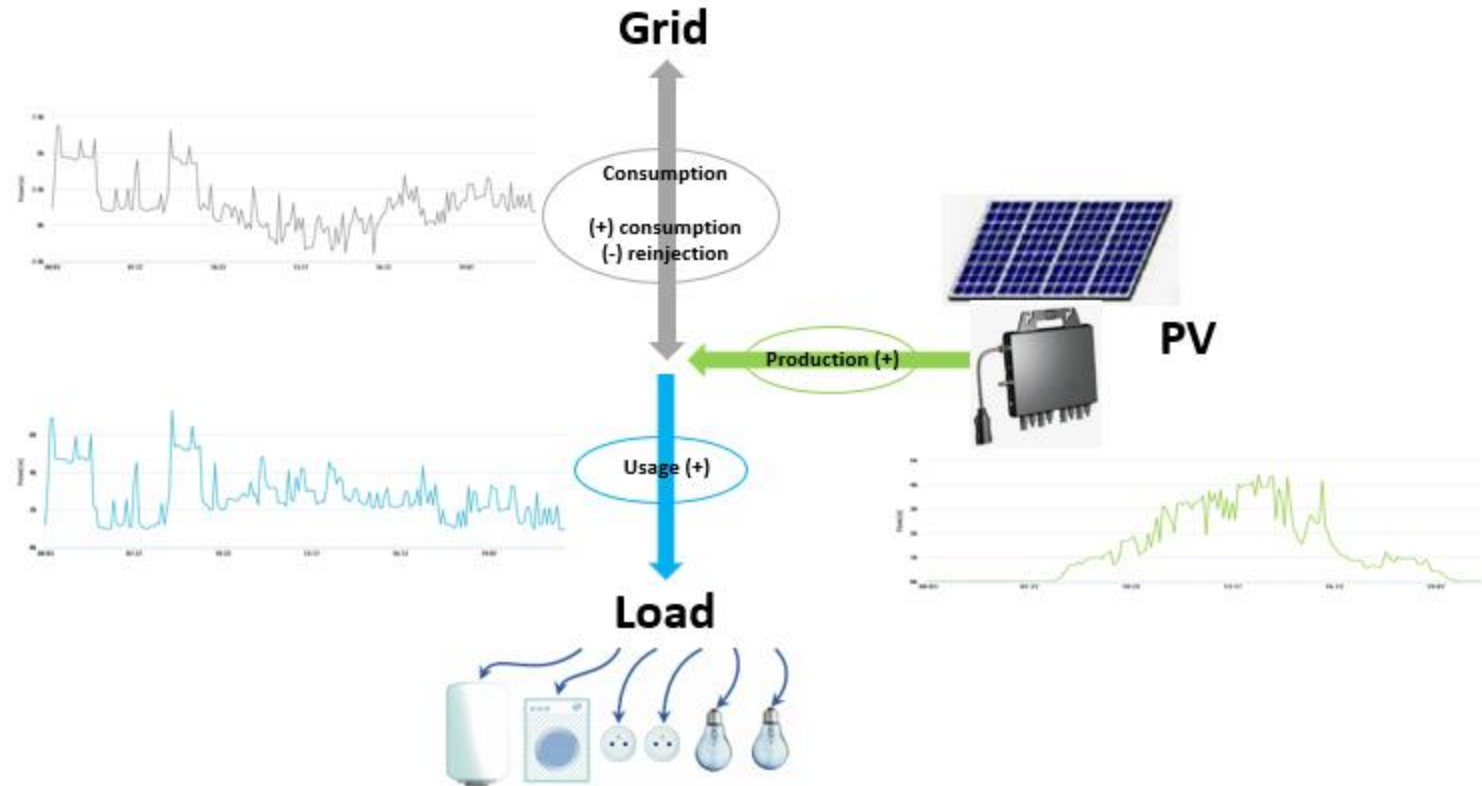




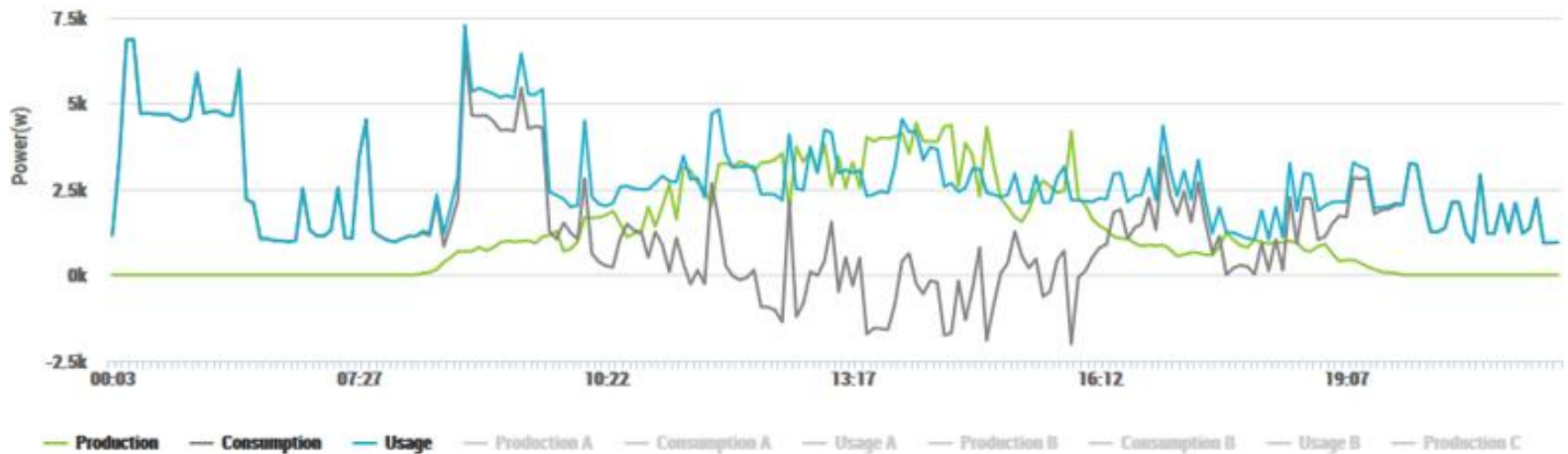
# Energy Metering



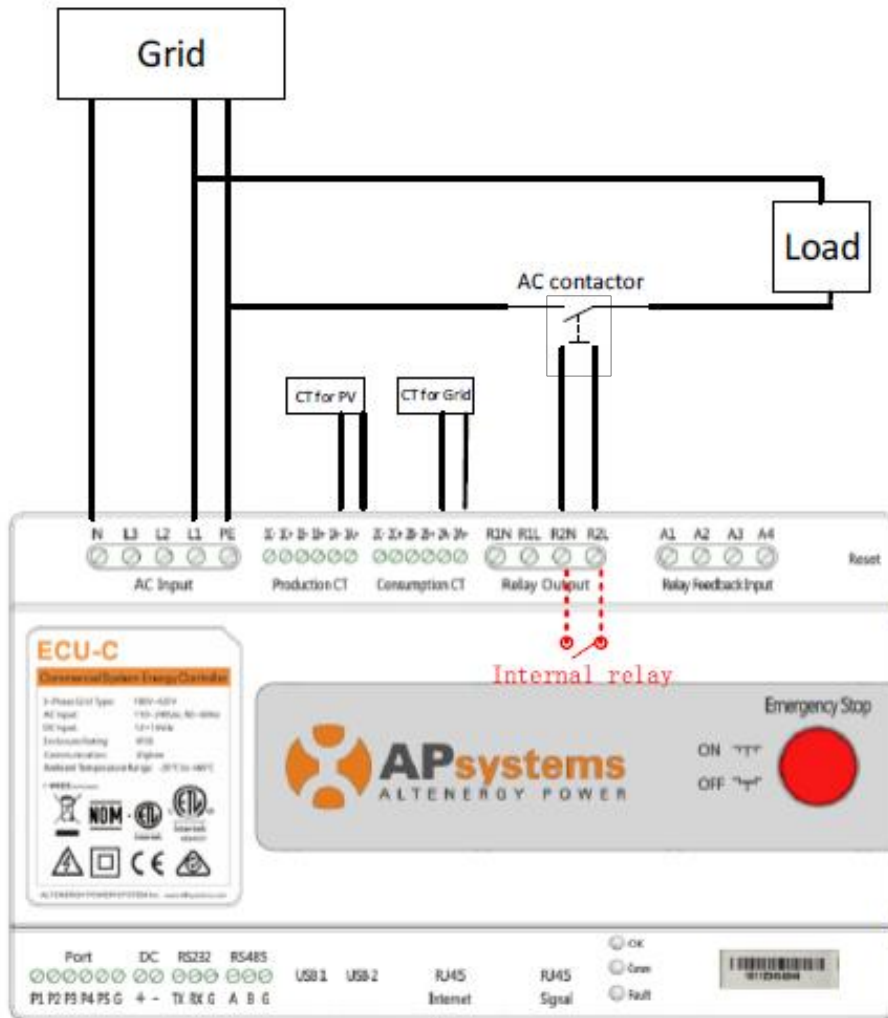
# Energy Metering



# Energy Metering



# Install ECU-C



**Redundant Energy Control :**  
works only single phase  
(only L1 monitored)

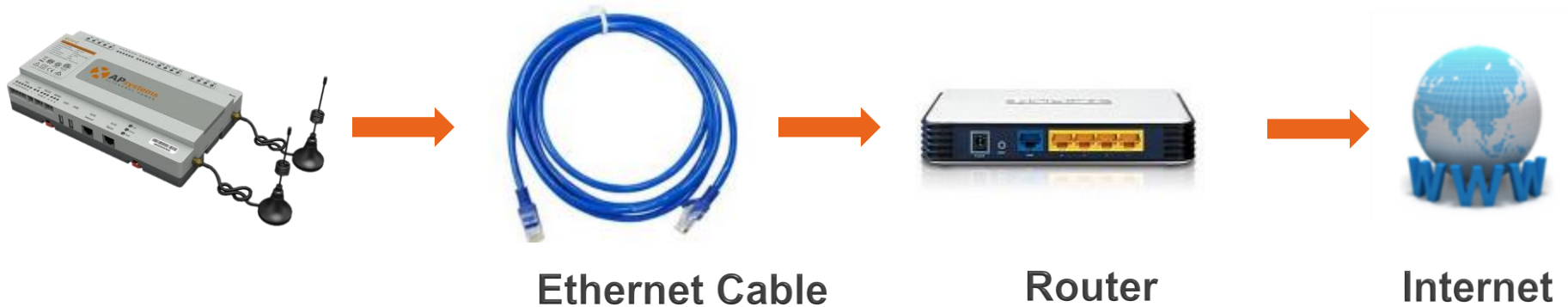
How it works :

This function allows ECU-C, in case of excess energy (PV power > load consumption) to power a load in order to improve self-consumption ratio.

When excess energy set up (Power Limit) is reached, contact #2 of **Relay output** port delivers N/L1 through **R2N/R2L** so you can power an external contactor and turn on a load.

# ECU internet connection

- Option 1: Wired Connection (recommended)



- Connect ECU to the router through the Ethernet cable
- Make sure the connection between the ECU & the router is ok
- Power ECU, it will obtain automatically IP address from the router
- Ensure the router connects to the internet, then the ECU will connect to the internet.

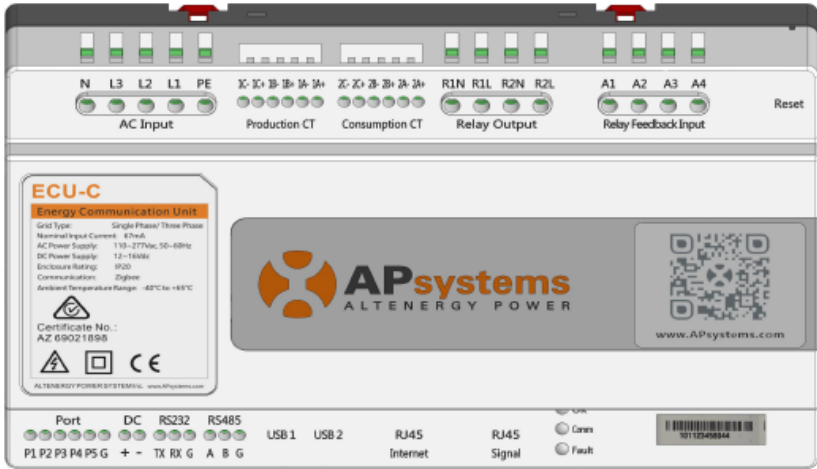
# ECU internet connection

- Option 2: Wifi Connection



- Connect the ECU-R or the ECU-C to the router through WiFi  
-> set up through ECU configuration

# ECU-C Configuration



# ECU ID and Version

ECU ID (12 digits) is located on the label stucked on the front face or the back of the ECU case.



ID starting with **215** -> ECU-C ZigBee for YC600, QS1 and YC1000



# Microinverter ID

It is a 12 digits ID located on a label sticked on the front of the ECU case.

UID helps to identify each microinverter and his version :

- starting with **501 or 502** -> **YC1000**
- starting with **406, 408 or 409** -> **YC600**
- starting with **801, 802** -> **OS1**



# Configuration Steps

- Connect your smartphone to ECU-C through WiFi
- Log on ECU-C local interface
- Set up ECU-C
- System check up

# connect to ECU-C WiFi hotspot



- Power the ECU-C, select WiFi network **ECU-WIFI\_XXXX** with your computer or smartphone, and connect your device (no password)

# Connect to ECU-C local interface

enter 172.30.1.1 in your internet browser :



click Enter to access to ECU-C local interface



English | Chinese






Home	
ECU ID	21500001976
Lifetime generation	0.38 kWh
Last System Power	0 W
Generation of Current Day	0 kWh
Last Connection to website	2020-03-03 14:07:54
Number of Inverters	2
Last Number of Inverters Online	0
Current Software Version	C1.1
Current Time Zone	Europe/Oslo
ECU Eth0 Mac Address	80:97:1B:00:D6:BB
ECU Wlan0 Mac Address	60:C5:A8:E6:78:FD

2020-03-03 14:09:41  
Tuesday

**ENVIRONMENTAL BENEFITS**

CO<sub>2</sub> Offset Equivalent to

	0
	GALLONS
	0
	TREES
	0
	KG



# ECU-C configuration

click «Administration»



ENERGY COMMUNICATION UNIT

English | Chinese

Home | Real Time Data | Meter | Administration

Home

ECU ID	21500001976
Lifetime generation	0.38 kWh
Last System Power	0 W
Generation of Current Day	0 kWh
Last Connection to website	2020-03-03 14:07:54
Number of Inverters	2
Last Number of Inverters Online	0
Current Software Version	C1.1
Current Time Zone	Europe/Oslo
ECU Eth0 Mac Address	80:97:1B:00:D6:BB
ECU Wlan0 Mac Address	60:C5:A8:E6:78:FD

2020-03-03 14:09:41  
Tuesday

#### ENVIRONMENTAL BENEFITS

CO<sub>2</sub> Offset Equivalent to



0  
GALLONS



0  
TREES



0  
KG

# Input Microinverter ID

Enter inverter ID in the tab, manually or via Barcode Scanner App with your smartphone (copy/past all IDs from word or xls doc)

Home | Real Time Data | Meter | Administration

ID Management

502000169828  
502000170409  
502000170478  
502000170885  
502000171026  
502000171225

Update Clear ID

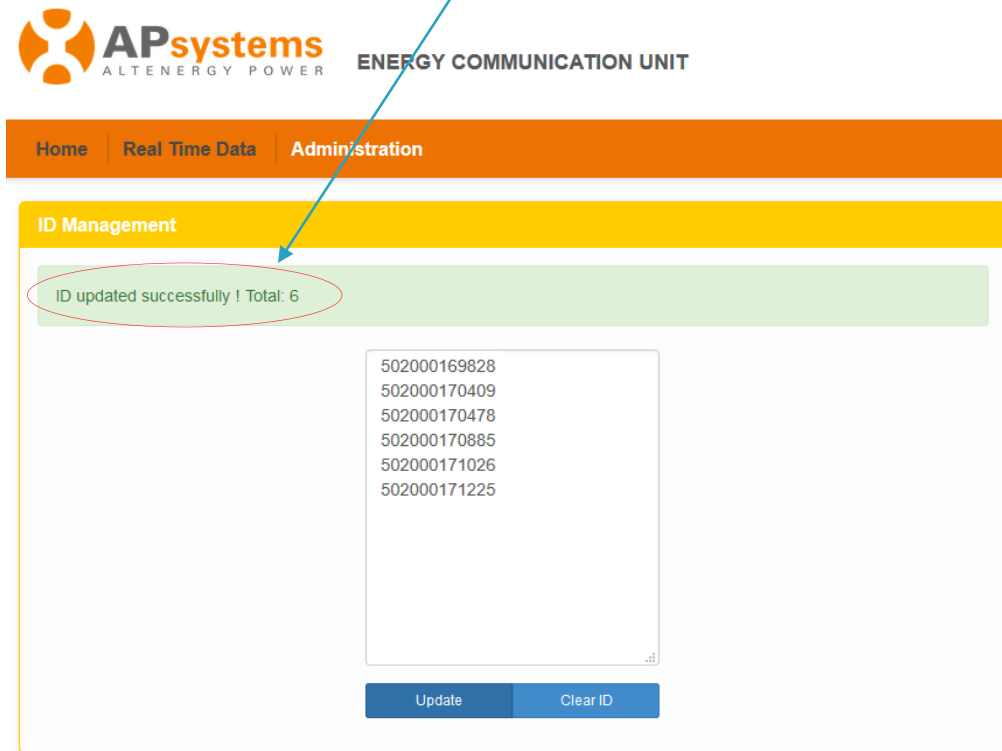
ID Management

- Grid Profile
- Meter / Zero Export / Redundant Energy Control
- Date, Time, Time Zone
- Language
- Network Connectivity
- WLAN
- Firmware Update

Then click  
«Update»

# Input Microinverter ID

Inverter ID are set up in the ECU



**APsystems**  
ALTENERGY POWER ENERGY COMMUNICATION UNIT

Home | Real Time Data | Administration

### ID Management

ID updated successfully ! Total: 6

- 502000169828
- 502000170409
- 502000170478
- 502000170885
- 502000171026
- 502000171225

Update Clear ID

# Set up Time zone

Click «Date, Time, Time zone»

Chose the right Time Zone in the rolling menu

Home | Real Time Data | Meter | Administration

Date, Time, Time Zone

Date Time: 2020/03/03 14:28:28 [Update]

Time Zone: Europe/Oslo [Update]

NTP Server: 0.asia.pool.ntp.org [Update]

ID Management  
Grid Profile  
Meter / Zero Export / Redundant Energy Control  
**Date, Time, Time Zone**  
Language  
Network Connectivity  
WLAN  
Firmware Update

**Warning : wrong Time Zone setting will display wrong time information in EMA and affect production curve**

then click «Update»

ECU configuration is completed



# Set up Grid Profile

Click on rolling menu

Click «Grid Profile»

Home | Real Time Data | Meter | Administration

Grid Profile

Grid profile: Please Select

Parameter	Value	Units(Range)

Reset Save

Actual value:

Inverter ID
502000169828
502000170409
502000170478
502000170885
502000171026
502000171225

ID Management  
Grid Profile  
Meter / Zero Export / Redundant Energy Control  
Date, Time, Time Zone  
Language  
Network Connectivity  
WLAN  
Firmware Update

# Set up Grid Profile

Select the right country

The screenshot shows the 'Administration' section of the APsystems web interface. The 'Grid Profile' tab is active. A dropdown menu is open, displaying a list of countries and standards. A blue arrow points to the 'Please Select' option at the top of the dropdown.

**Grid Profile**

**Grid profile**

**Parameter**

**Actual value**

Inverter ID
502000169828
502000170409
502000170478
502000170885
502000171026
502000171225

**Please Select**

- Australia AS4777\_2 2015
- France UTE C15-712-1
- France UTE C15-712-1(island 50Hz)
- Germany VDE AR-N-4105
- Netherlands 50438
- New Zealand NZS4777\_2 2015
- China NB/T 32004
- Spain RD1699
- Sri Lanka IEC61727,IEC61683
- US UL 1741/240
- US CA Rule 21
- US UL 1741/120
- Brazil/220 Standard range
- Brazil/127 Standard range
- Brazil/240 Standard range
- Brazil/120 Standard range
- Brazil/220 Maximun range
- Brazil/127 Maximun range
- Mexico/220
- Mexico/127
- Chile VDE AR-N-4105
- Sri Lanka2 IEC61727,IEC61683
- Sweden EN50438
- Denmark 1
- Portugal EN50438
- Belgium C10/11
- Denmark 2
- Puerto Rico
- Mauritius

**ID Management**

**Grid Profile**

Meter / Zero Export / Redundant Energy Control

Date, Time, Time Zone

Language

Network Connectivity

WLAN

Firmware Update

# Set up Grid Profile

Home | Real Time Data | Meter | Administration

Grid Profile

Grid profile: Germany VDE AR-N-4105

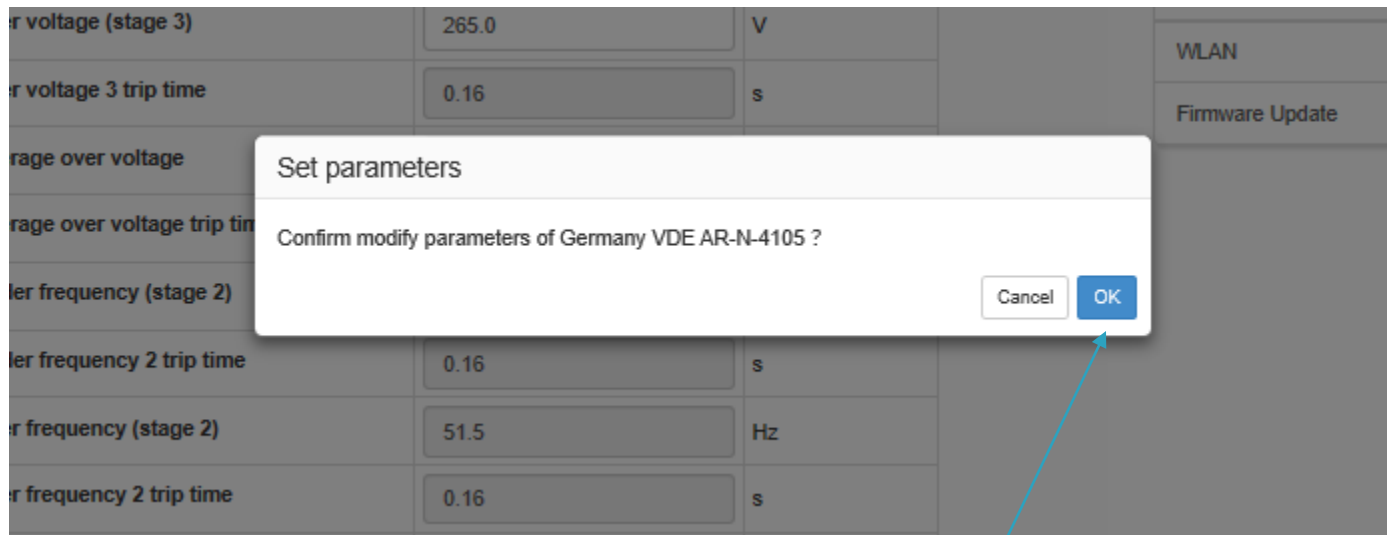
Parameter	Value	Units(Range)
Under voltage (stage 3)	184.0	V
Under voltage 3 trip time	0.16	s
Over voltage (stage 3)	265.0	V
Over voltage 3 trip time	0.16	s
Average over voltage	253.0	V
Average over voltage trip time	600.0	s
Under frequency (stage 2)	47.5	Hz
Under frequency 2 trip time	0.16	s
Over frequency (stage 2)	51.5	Hz
Over frequency 2 trip time	0.16	s
Reconnection time	80.0	s
Reconnection under voltage	196.0	V
Reconnection over voltage	253.0	V
Reconnection over frequency	50.2	Hz
Reconnection under frequency	47.5	Hz
cos φ (P)	Close	

Reset Save

- ID Management
- Grid Profile
- Meter / Zero Export / Redundant Energy Control
- Date, Time, Time Zone
- Language
- Network Connectivity
- WLAN
- Firmware Update

Then click «Save»

# Set up Grid Profile



Then click «OK»  
to confirm

# Set up Advanced Functions

Click «Meter/Zero Export/Redundant Energy Control»



English | Chinese

Home | Real Time Data | Meter | Administration

### Meter / Zero Export / Redundant Energy Control

Meter Display: OPEN

Zero Export: CLOSE

Power Limit: 0 KW

Redundant Energy Control: CLOSE

Power Limit: 0 KW

Save

- ID Management
- Grid Profile
- Meter / Zero Export / Redundant Energy Control**
- Date, Time, Time Zone
- Language
- Network Connectivity
- WLAN
- Firmware Update



# Set up Advanced Functions

## Option 1 : Metering only

The screenshot shows the APsystems Energy Communication Unit web interface. At the top left is the APsystems logo with the tagline 'ALTERNERGY POWER' and 'ENERGY COMMUNICATION UNIT'. At the top right are language options 'English | Chinese'. Below the logo is a navigation bar with 'Home', 'Real Time Data', 'Meter', and 'Administration'. The main content area is titled 'Meter / Zero Export / Redundant Energy Control'. It features a 'Meter Display' dropdown menu set to 'OPEN'. Below this are two columns of settings. The left column has 'Zero Export' set to 'CLOSE' and 'Power Limit' set to '0 KW'. The right column has 'Redundant Energy Control' set to 'CLOSE' and 'Power Limit' set to '0 KW'. A 'Save' button is located at the bottom center. On the right side, there is a sidebar menu with options: 'ID Management', 'Grid Profile', 'Meter / Zero Export / Redundant Energy Control' (highlighted in green), 'Date, Time, Time Zone', 'Language', 'Network Connectivity', 'WLAN', and 'Firmware Update'.

**Setting :**  
**Meter Display : OPEN**  
**Zero Export : CLOSE**  
**Redondancy Energy Control : CLOSE**  
**Then click «Save»**

# Set up Advanced Functions

## Option 2 : Metering + Redundant Energy Control

The screenshot shows the APsystems Energy Communication Unit web interface. The top navigation bar includes 'Home', 'Real Time Data', 'Meter', and 'Administration'. The main content area is titled 'Meter / Zero Export / Redundant Energy Control'. It features a 'Meter Display' dropdown menu set to 'OPEN'. Below this are two main configuration boxes. The first box, 'Zero Export', has a dropdown set to 'CLOSE' and a 'Power Limit' input field with the value '0' and a 'KW' unit. The second box, 'Redundant Energy Control', has a dropdown set to 'OPEN' and a 'Power Limit' input field with the value '1' and a 'KW' unit. A 'Save' button is located at the bottom center of the configuration area. On the right side, there is a sidebar menu with options: 'ID Management', 'Grid Profile', 'Meter / Zero Export / Redundant Energy Control' (highlighted), 'Date, Time, Time Zone', 'Language', 'Network Connectivity', 'WLAN', and 'Firmware Update'. The top right corner of the interface has links for 'English' and 'Chinese'.

**Setting :**

**Meter Display : OPEN**

**Zero Export : CLOSE**

**Redondancy Energy Control : OPEN**

**Power Limit : enter a value a little bit higher than load power**

**Then click « Save »**

# Set up Advanced Functions

## Option 3 : Metering + Zero Export

Nota : Redundant Energy Control and Zero Export cannot be activated in the same time

The screenshot shows the APsystems Energy Communication Unit web interface. The top navigation bar includes 'Home', 'Real Time Data', 'Meter', and 'Administration'. The main content area is titled 'Meter / Zero Export / Redundant Energy Control' and contains the following settings:

- Meter Display: OPEN
- Zero Export: OPEN
- Power Limit: 0 KW
- Redundant Energy Control: CLOSE
- Power Limit: 0 KW

A 'Save' button is located at the bottom of the configuration area. On the right side, there is a sidebar menu with the following items: ID Management, Grid Profile, Meter / Zero Export / Redundant Energy Control (highlighted), Date, Time, Time Zone, Language, Network Connectivity, WLAN, and Firmware Update.

Set up as follow :

Meter Display : OPEN

Zero Export : OPEN – enter Power Limit

Redondancy Energy Control : CLOSE

Then click « Save »



# Wire connection with router

If you connected ECU-C to the router with an Ethernet cable, check IP address is fine :

Click  
« Network Connectivity »

The screenshot shows the ECU-C web interface. At the top, there is a navigation bar with 'Home', 'Real Time Data', 'Meter', and 'Administration'. Below this, a yellow bar highlights 'Network Connectivity'. On the right side, a sidebar menu lists various settings: 'ID Management', 'Grid Profile', 'Meter / Zero Export / Redundant Energy Control', 'Date, Time, Time Zone', 'Language', 'Network Connectivity' (highlighted in green), 'WLAN', and 'Firmware Update'. A blue arrow points from the text 'Click « Network Connectivity »' to the 'Network Connectivity' menu item. The main content area shows 'Eth0 IP address' with the value '192.168.0.109'. Below this, under 'IP Settings', there are two radio buttons: 'Obtain an IP address automatically' (selected) and 'Use the following IP address'. A blue 'Update' button is located below the radio buttons. A blue arrow points from the text 'IP address cannot be 192.168.131.228' to the IP address field.

IP address cannot be 192.168.131.228

# WiFi connection with router

If you cannot connect ECU-C to the router through Ethernet cable (recommended),  
configure a WiFi connection :



ENERGY COMMUNICATION UNIT

[English](#) | [Chinese](#)

**Cliquer sur « WLAN »**

Home | Real Time Data | Administration

## WLAN

WLAN | LWA

### Available Networks

TP-LINK\_703C 📶

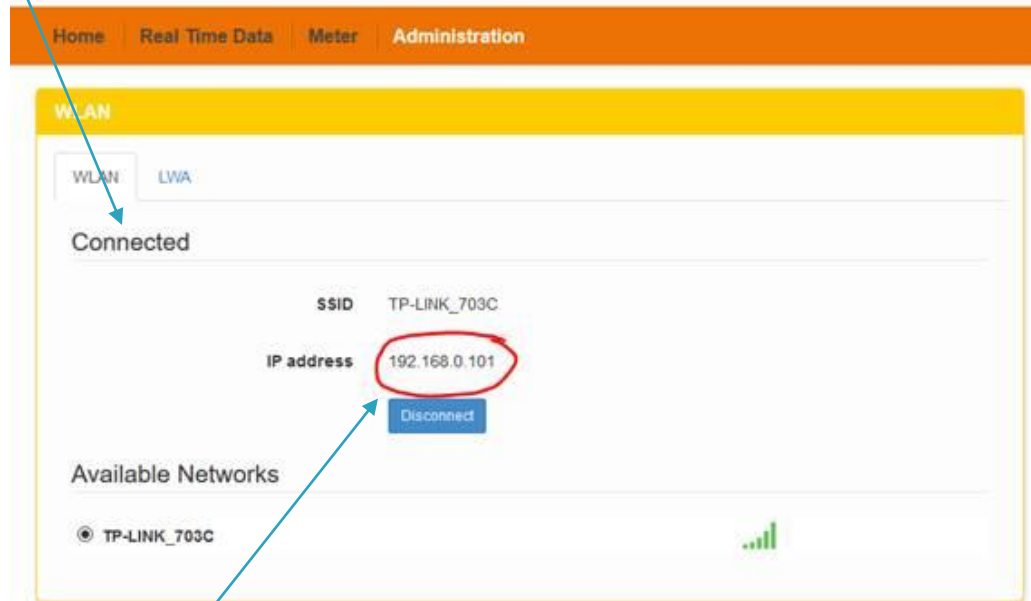
**Select WiFi network,  
enter password,  
then click « Connect »**

- ID Management
- Date, Time, Time Zone
- Language
- Network Connectivity
- WLAN**
- Firmware Update



# WiFi connection with router

Check ECU-C is properly connected



And IP address is fine  
Cannot be 192.168.131.228

# Check communication with inverters

Cliquer sur « Real Time Data » (5mn après avoir paramétrer l'ECU)

The screenshot shows a web interface with a top navigation bar containing 'Home', 'Real Time Data', 'Meter', and 'Administration'. Below this is a 'Real Time Data' section with a table of inverter data and a sidebar with 'Power' and 'Energy' options.

Inverter ID	Current Power	Grid Frequency	Grid Voltage	Temperature	Reporting Time
408000025770-1	23 W	50.0 Hz	227 V	48 °C	2019-06-28 18:11:20
408000025770-2	18 W		227 V		
408000024096-1	120 W	50.0 Hz	229 V	49 °C	2019-06-28 18:11:20
408000024096-2	30 W		229 V		
408000024049-1	0 W	50.0 Hz	227 V	41 °C	2019-06-28 18:11:20
408000024049-2	0 W		227 V		
408000026693-1	0 W	50.0 Hz	227 V	48 °C	2019-06-28 18:11:20
408000026693-2	0 W		227 V		
408000023981-1	0 W	50.0 Hz	227 V	47 °C	2019-06-28 18:11:20
408000023981-2	0 W		227 V		

Vérifier que chaque panneau (N° du micro-onduleur-N° entrée DC) affiche des données, si ce n'est pas le cas vérifier que le N° enregistré est le bon.

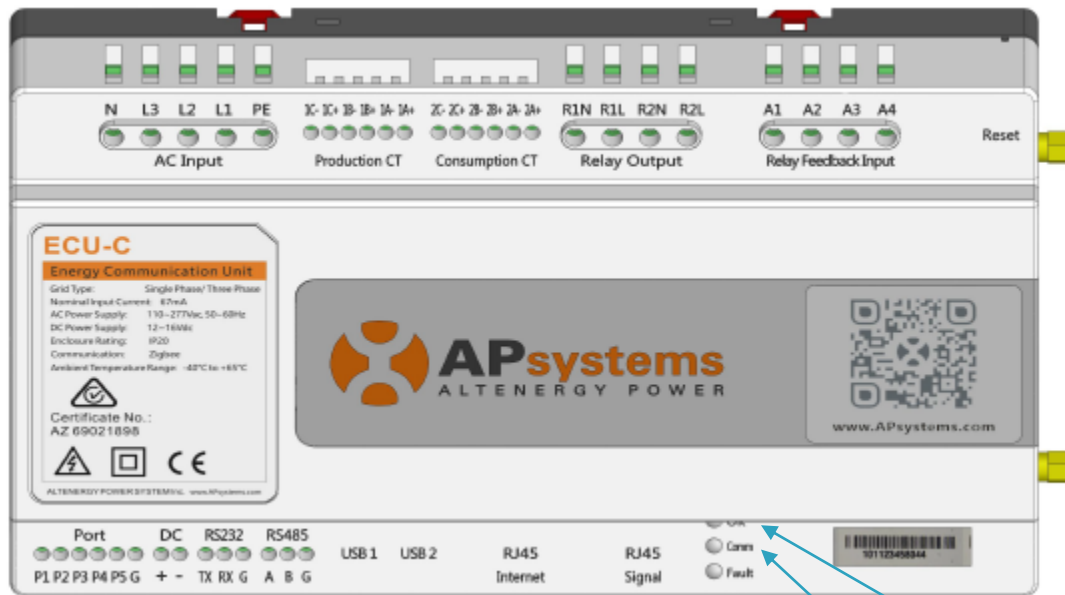
# Check system is working well

wait 10mn after ECU-C configuration,  
then, through « Real Time Data » menu check all PV modules are producing

Inverter ID	Current Power	Grid Frequency	Grid Voltage	Temperature	Reporting Time
408000025770-1	23 W	50.0 Hz	227 V	48 °C	2019-06-28 18:11:20
408000025770-2	18 W		227 V		
408000024096-1	120 W	50.0 Hz	229 V	49 °C	2019-06-28 18:11:20
408000024096-2	30 W		229 V		
408000024049-1	0 W	50.0 Hz	227 V	41 °C	2019-06-28 18:11:20
408000024049-2	0 W		227 V		
408000026693-1	0 W	50.0 Hz	227 V	48 °C	2019-06-28 18:11:20
408000026693-2	0 W		227 V		
408000023981-1	0 W	50.0 Hz	227 V	47 °C	2019-06-28 18:11:20
408000023981-2	0 W		227 V		

and grid parameters are good

# Communication with EMA monitoring



Lights up green -> ECU is powered

Lights up green -> send data to EMA

ECU-C is connected to internet and EMA monitoring