APsystems
ALTENERGY POWER

White Paper 2026

Master-Slave Function Instruction



This white paper systematically elaborates on Master-Slave Functionality for Export Limit Control solution developed by APsystems, covering its hardware requirements and detailed configuration guidelines for both ECU-C and ECU-R master-based setups including system schematics, remote and local configuration procedures via EMA Web and EMA Manager, data display, and third-party meter selection to ensure effective Export Limit in multi-ECU system.

Table of Contents

Application scenarios 3

Hardware requirements 3

Option 1: ECU-C Master—Slave Export Limit Control Solution 4

1.1 schematic diagram 4

1.2 Schematic diagram of master-slave communication 5

1.3 How to remotely configure 7

1.4 Energy analysis data display 9

Option 2: ECU-R Master—Slave Export Limit Control Solution 10

2.1 schematic diagram 10

2.2 How to remotely configure 12

2.3 Configure on EMA Manager 15

2.4 Display on EMA Web 17

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Application scenarios

It's used in the “Export Limit” system with multiple ECU units.

Hardware requirements

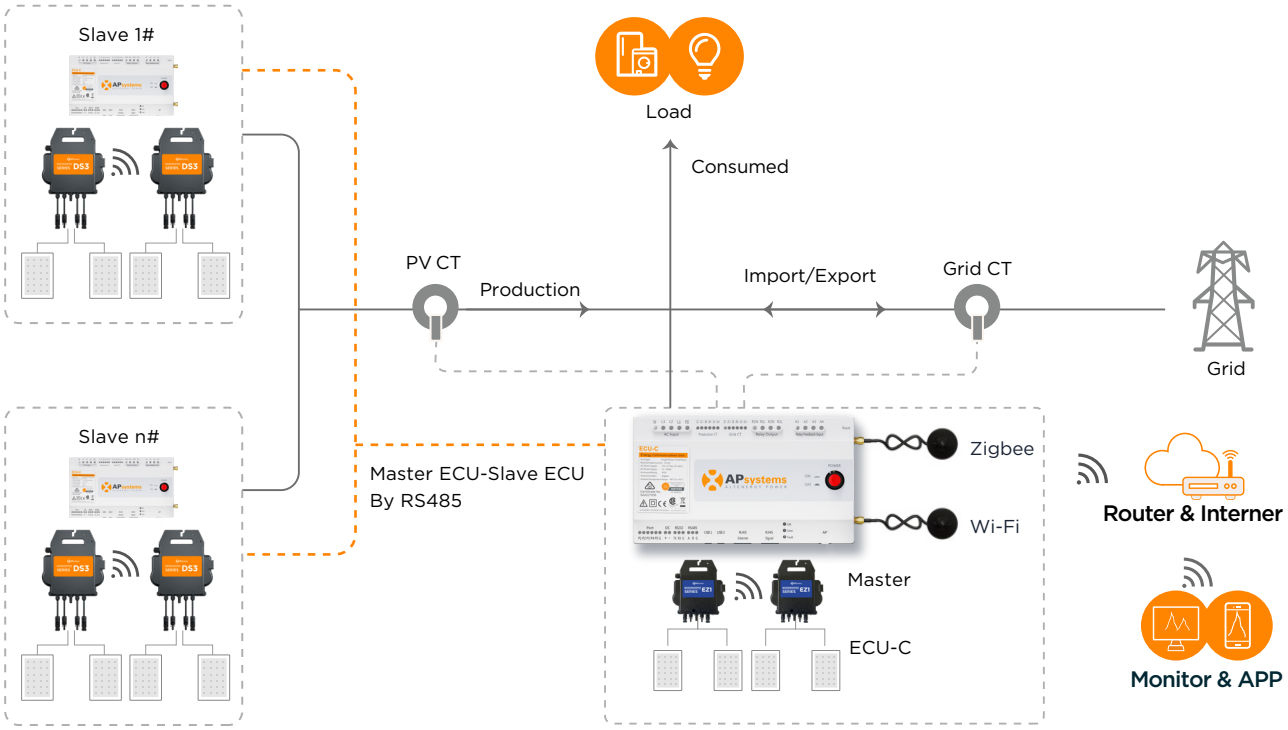
ECU-C starting with 2150, software version:Above C1.2.21.
ECU-R starting with 2160, software version:Above R2.1.23 + third party meter;
ECU-R starting with 2162, software version: Above R1.3.16 + third party meter;

Tips:
The ECU-C comes with a built-in energy meter function, while the ECU-R requires an external third-party energy meter to achieve Export limit Control.
The remote setting steps for ECU-C and ECU-R in EMA Manager are basically the same. ECU-C does not need to select and configure the electricity meter, and other steps are consistent with ECU-R operation.
When the ECU activates "Meter Display," it is considered the Master ECU. In the Master-Slave system, the Slave ECU can no longer activate "Meter Display." The system-wide data displayed in the EMA will be shown by the Master ECU.

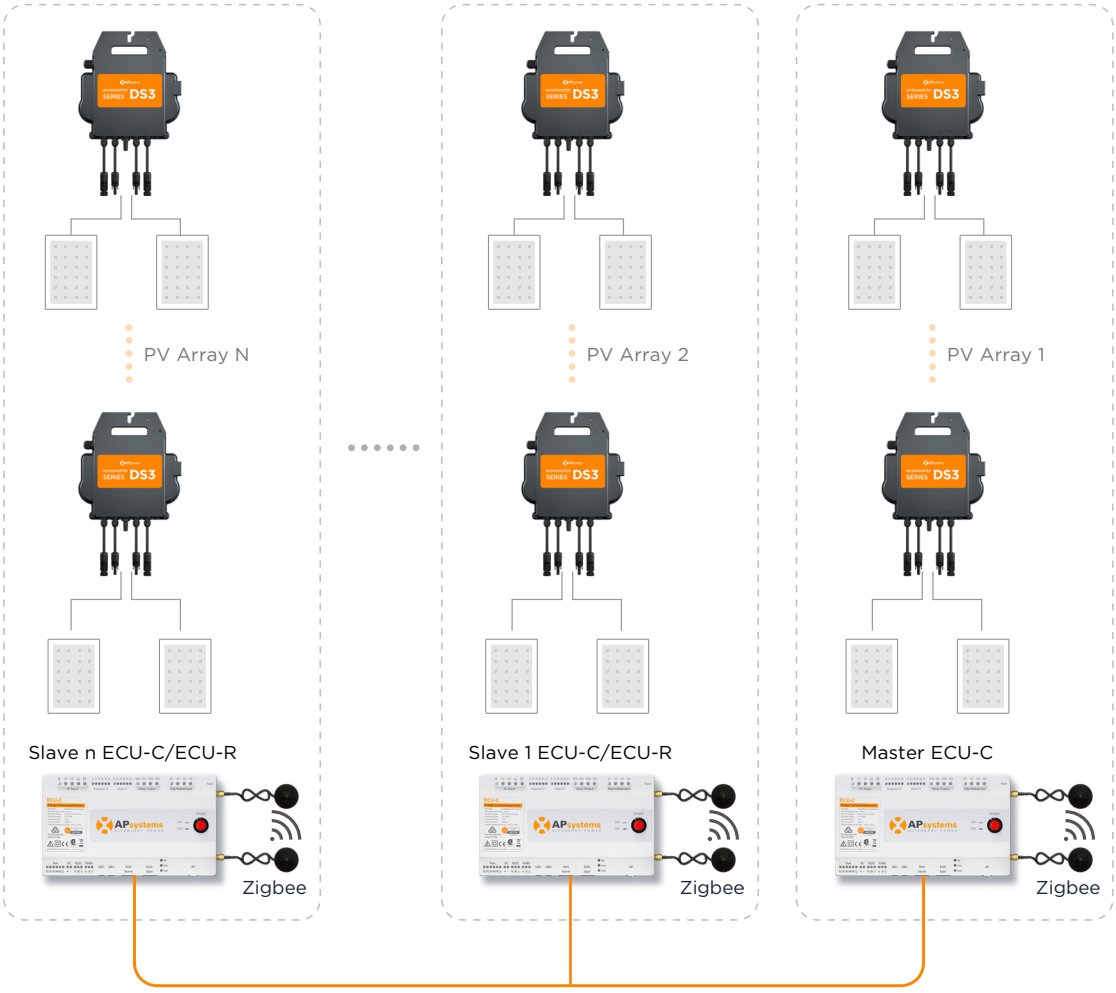
Option 1: ECU-C Master—Slave Export Limit Control Solution

1.1 schematic diagram

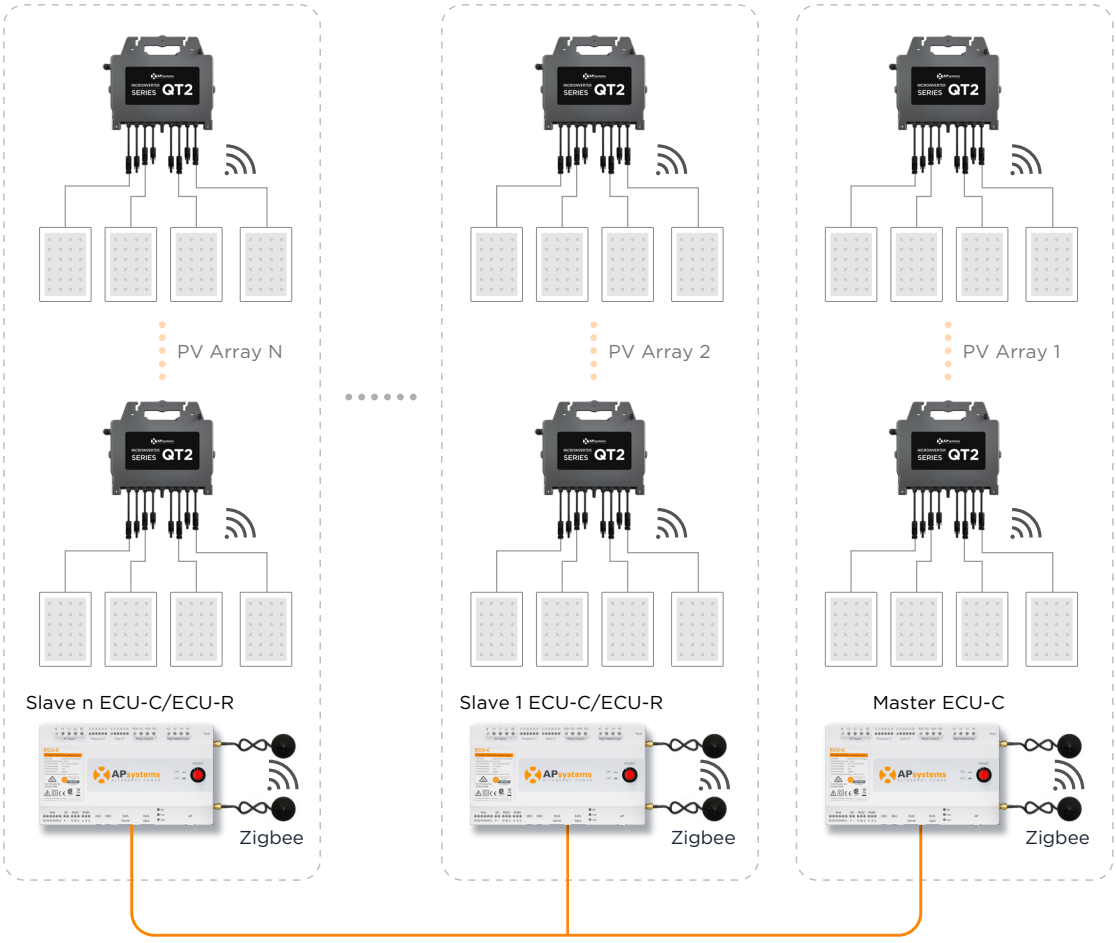
In this scheme, ECU-C serves as the master, while the slave can be either ECU-C or ECU-R. Please refer to the detailed information in the following picture.



1.2 Schematic diagram of master-slave communication

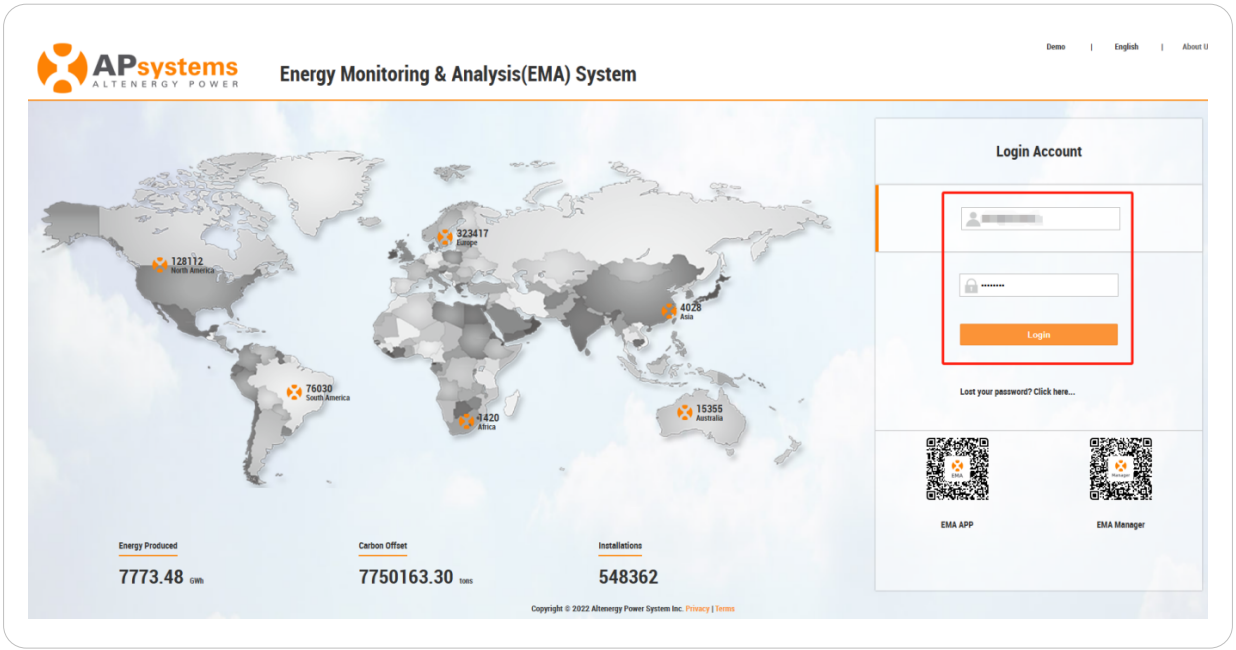


Single-phase system



Three-phase four wire system

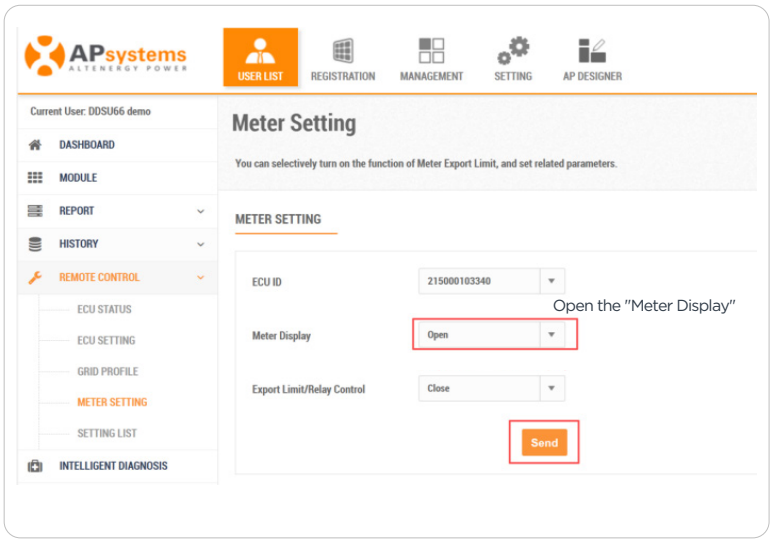
1.3 How to remotely configure

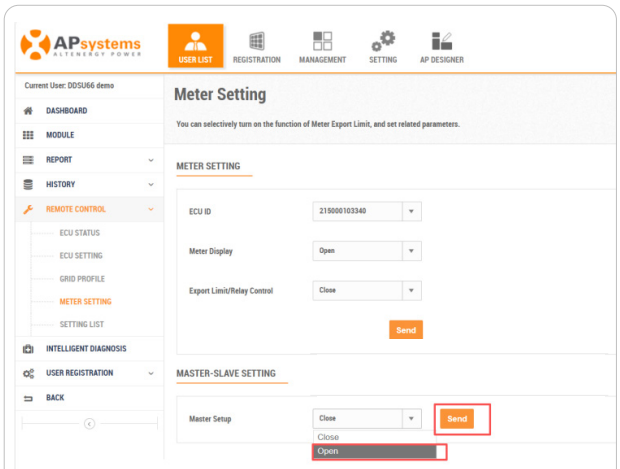


- Contact the super administrator to enable "ECU master-slave setting" and"Remote Control-Meter On/Off And Zero Export Setting"for the installer or distributor.
- Log in to the installer account on EMA Web（Website address：www.apsystemsema.com）
- Locate the corresponding photovoltaic system.

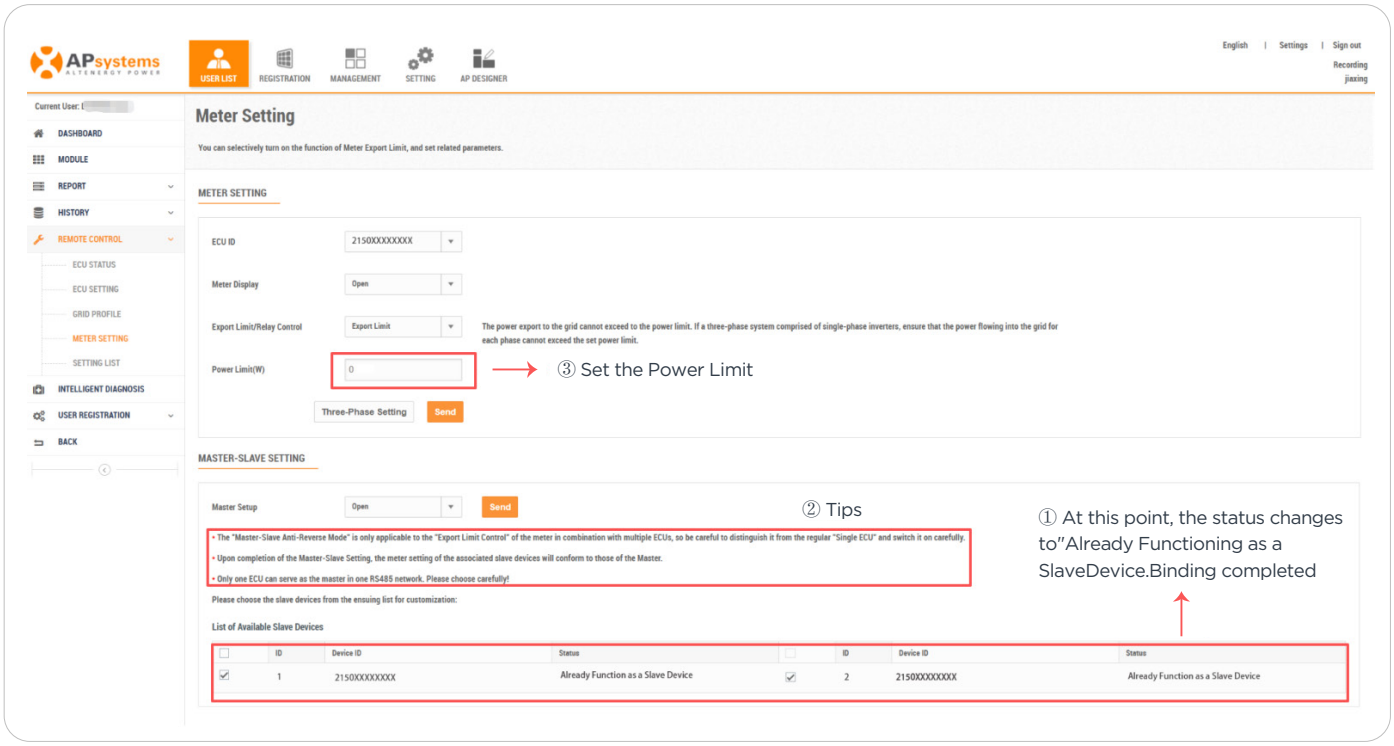
Meter Setting step

- Open the "Meter Display"
- Open "Master Setup", check the box for Slave ECU-C, then click "Send". Wait until the status of Slave ECU-C changes to "Already Function as a Slave Device".
- Open "Export Limit/Relay Control" and set the value for "Power Limit".

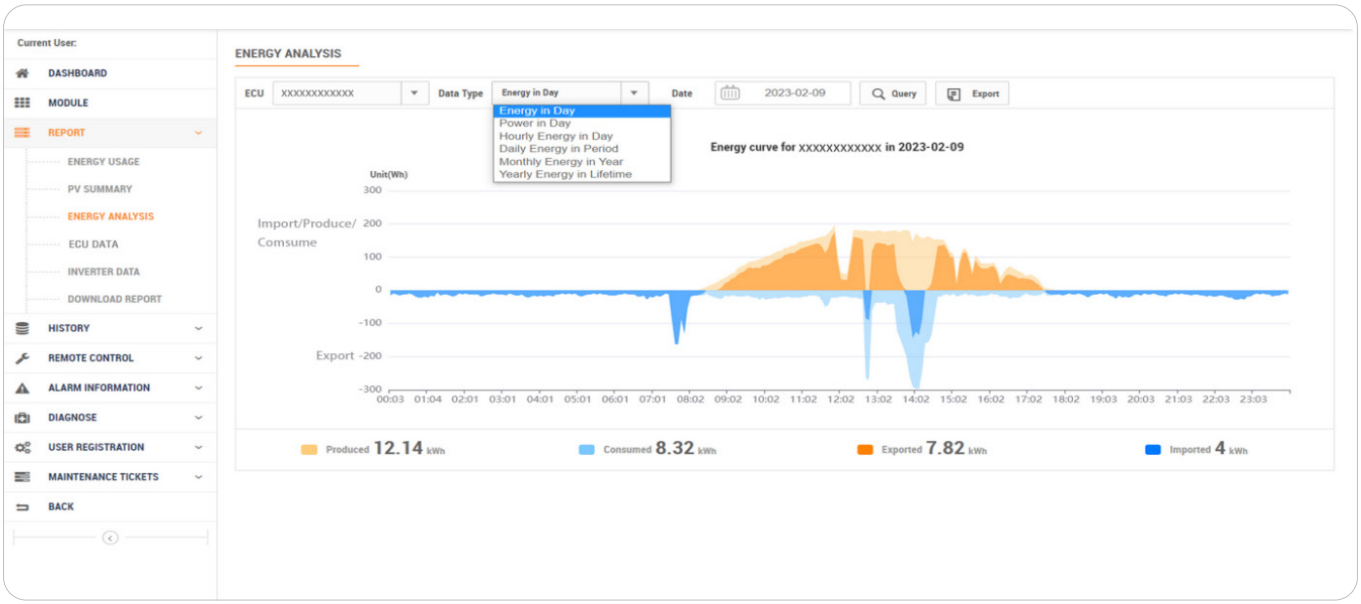




After selecting ECU-C as the host and enabling"Meter Display", you can perform "Master Setup", then click "Send" and wait for the command to take effect



1.4 Energy analysis data display

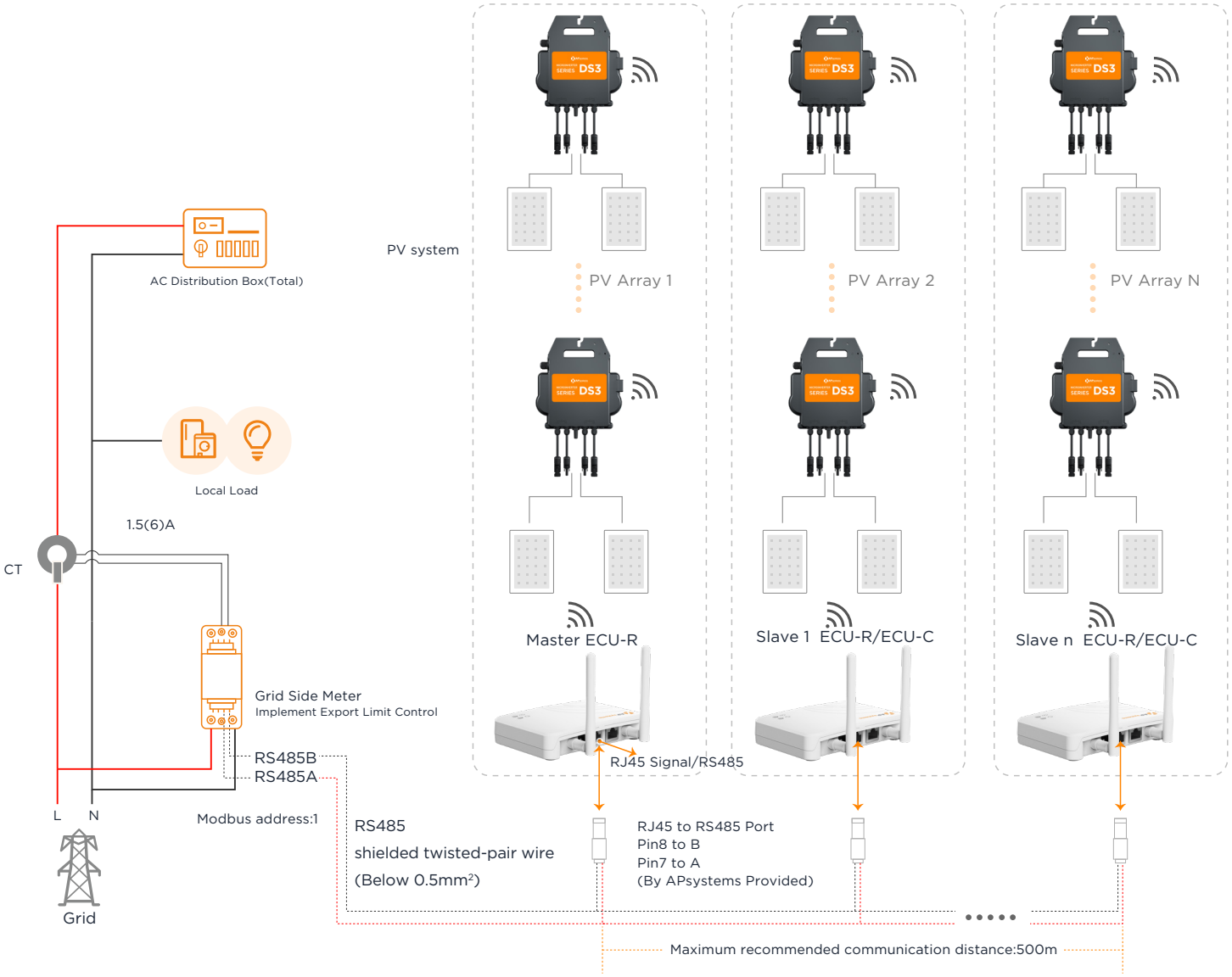


Option 2: ECU-R Master—Slave Export Limit Control Solution

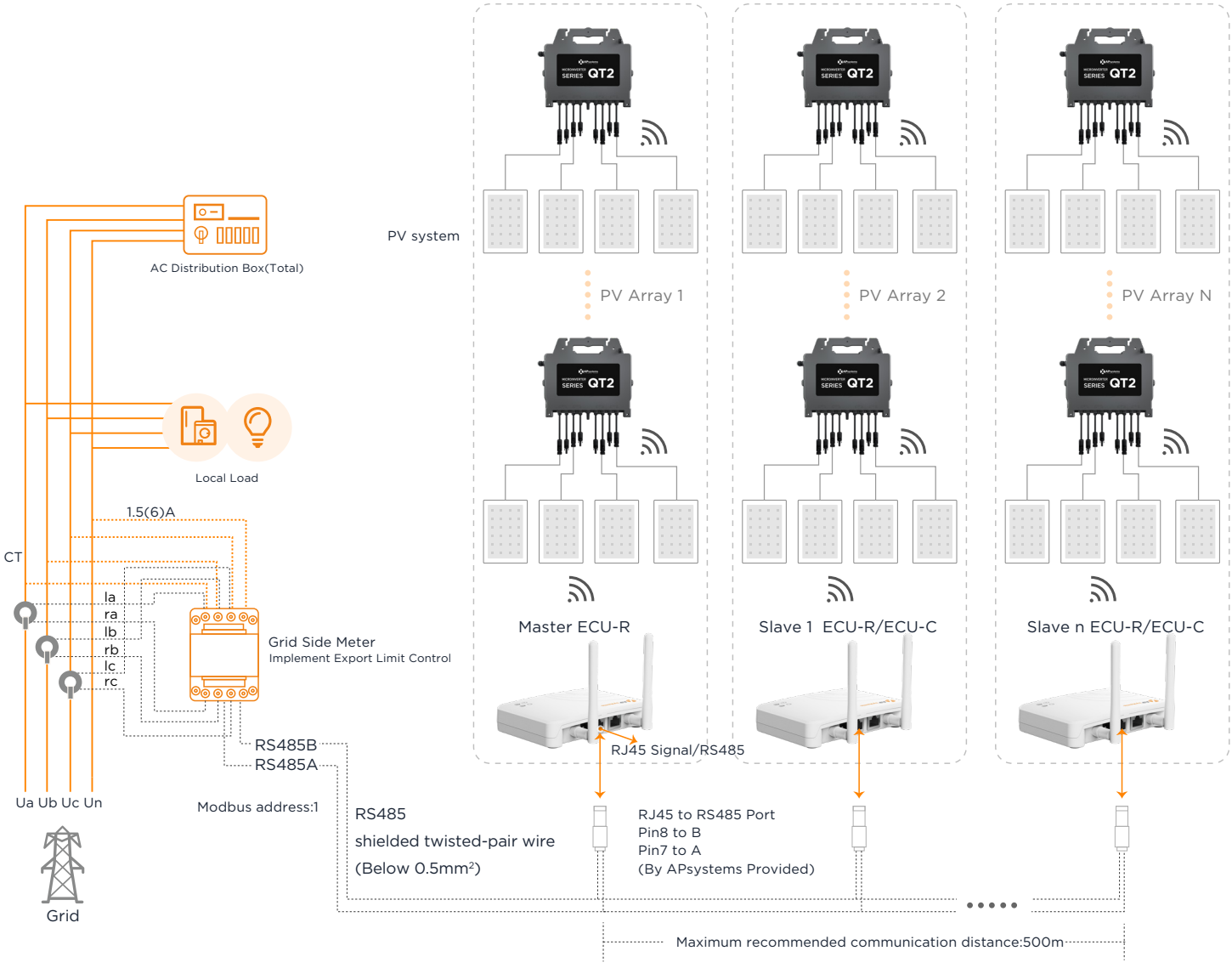
2.1 schematic diagram

In this scheme, ECU-R serves as the master, while the slave can be either ECU-C or ECU-R. All ECU-Rs in the local master/slave system must be connected to a third-party meter through RS485 cables. Please refer to the detailed information in the following picture.

Tips: Supports only one electricity meter systems (with meters installed on the grid side).



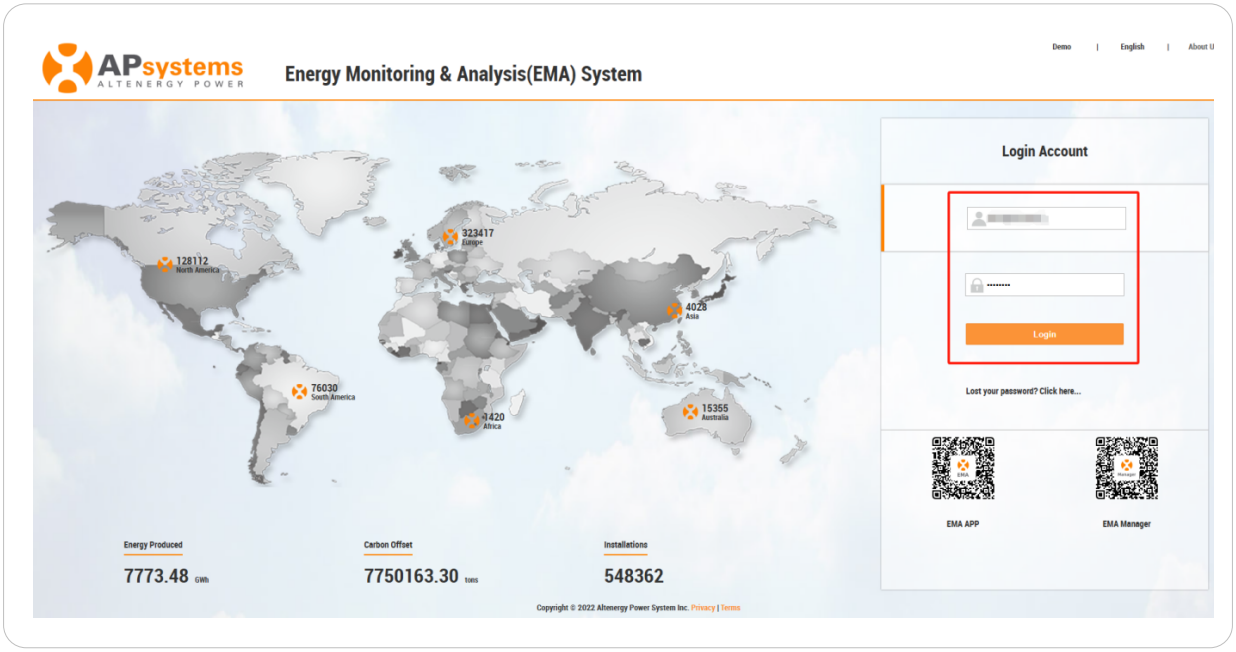
Single-Phase diagram



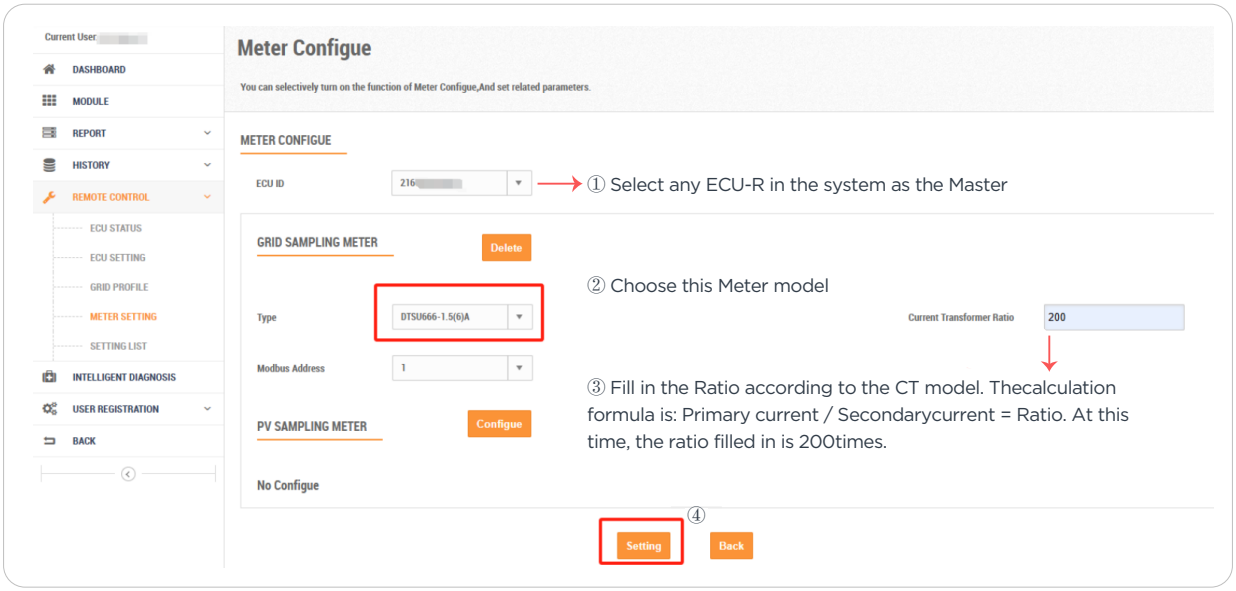
Single-Phase diagram

2.2 How to remotely configure

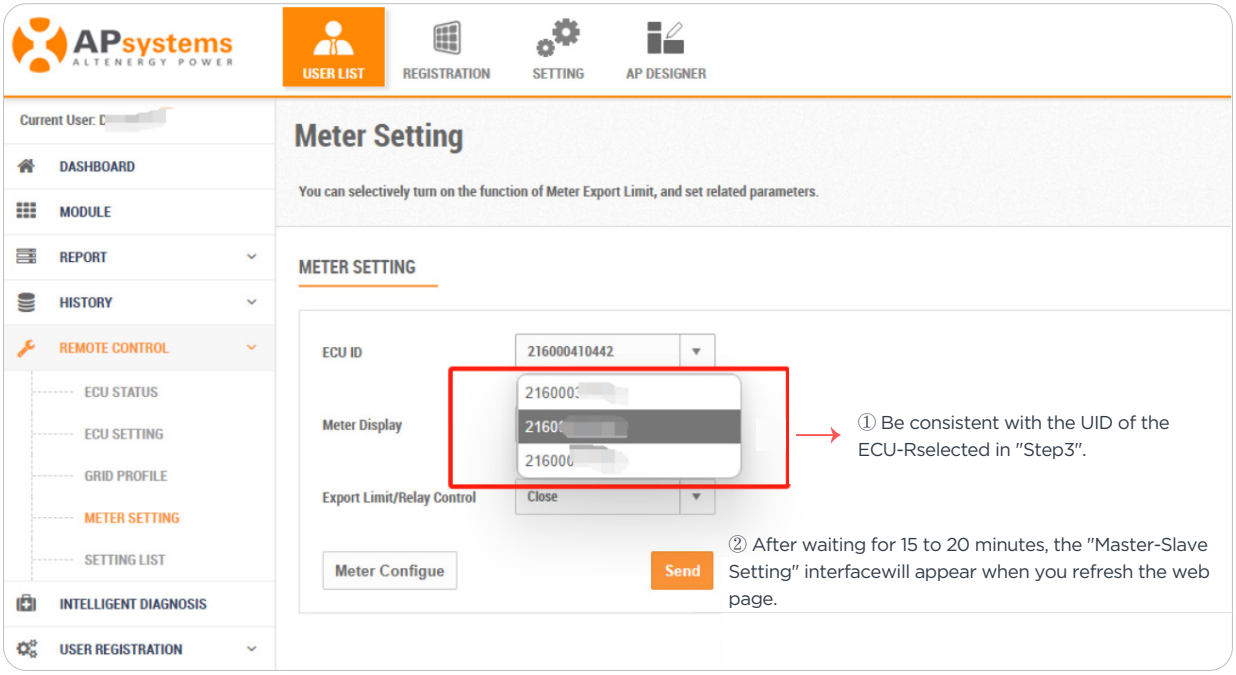
2.2.1Configure on EMA Web



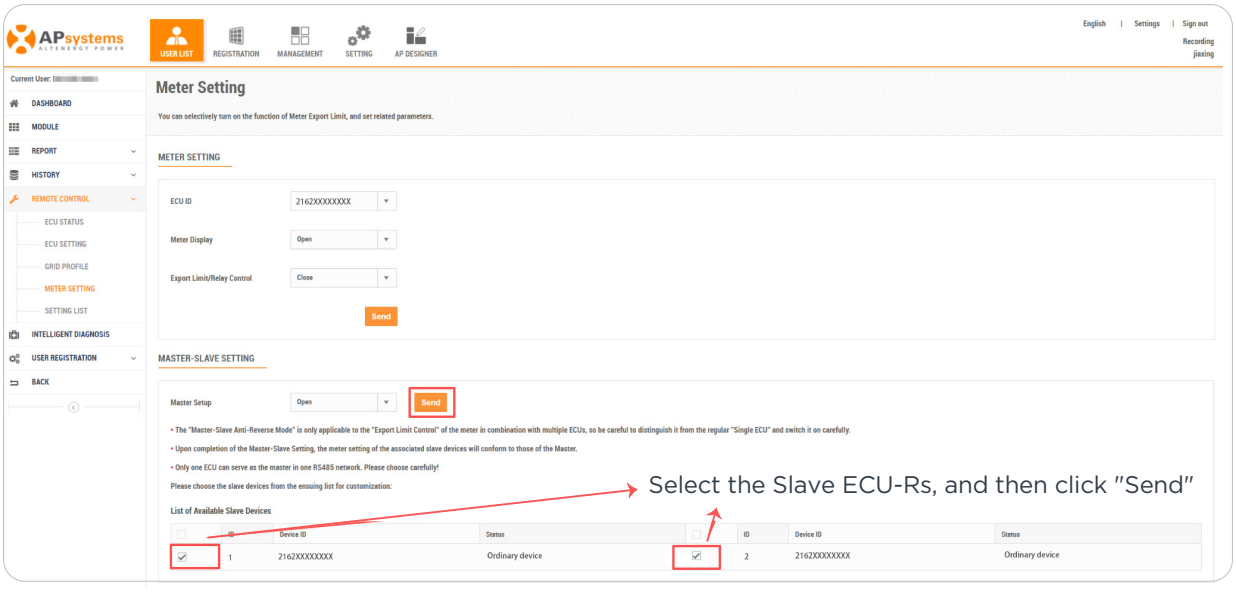
- Step ①: Contact the super administrator to enable "ECU master-slave setting" and"Remote Control-Meter On/Off And Zero Export Setting"for the installer or distributor.
- Step ②: Log in to the installer account on EMA Web（Website address：www.apsystemsema.com）
- Step ③: Locate the corresponding photovoltaic system.



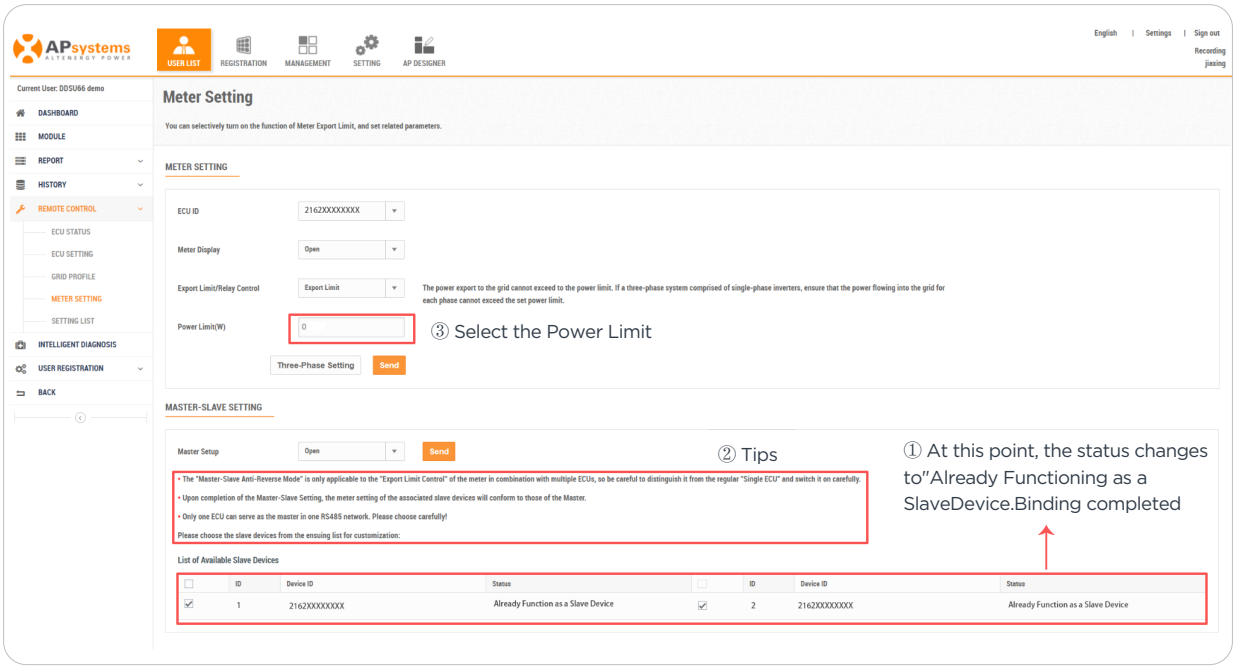
- Step ④: Select the ECU UID of ECU-R that is consistent with "Step③". Issue the instruction, wait for 15 to 20 minutes, until "Master-Slave Settings" appears.



- Step ⑤: Check the Slave ECU-Rs, then click "Send".Wait for 15 to 20 minutes. The status of the ECU-Rs will change from "Ordinary device" to "Already Function as a Slave Device".



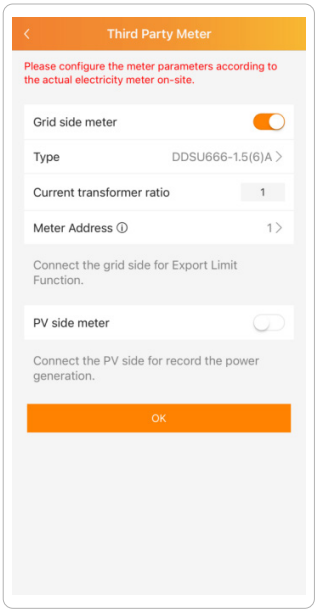
- Step ⑥: Set the value for “Power Limit” in each phase.

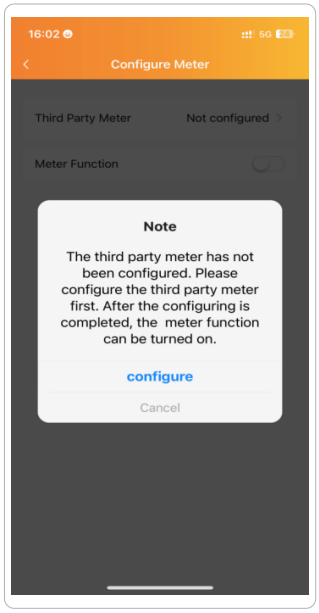


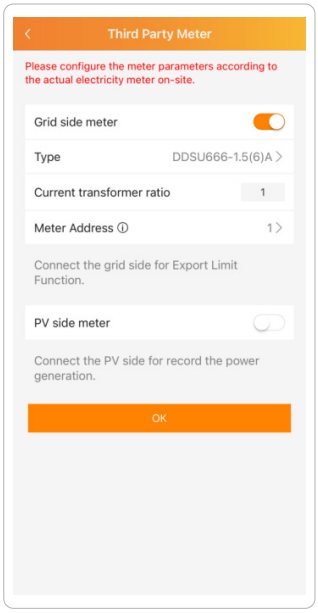
2.3 Configure on EMA Manager

Tips: ECU-C does not require configuration and selection of third-party meters.

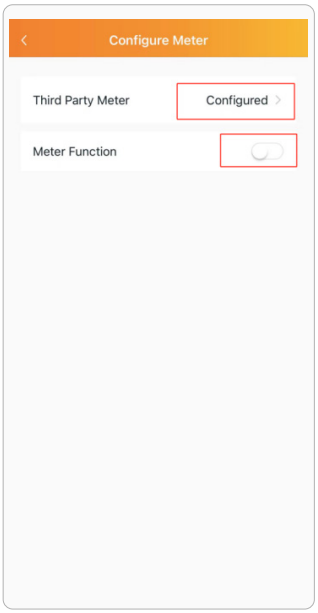
Step ①: Configure Third Party Meter： Fill in "Grid side Meter" to achieve Export Limit Control； Fill in "PV side Meter" to Fill in "Grid side Meter" to obtain PV power generation data. The Grid side and PV side electricity meters can work independently, depending on the actual functional configuration.

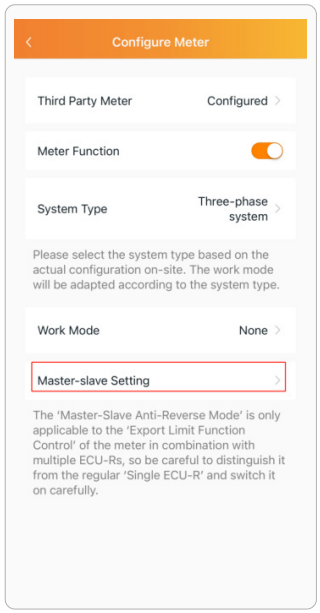


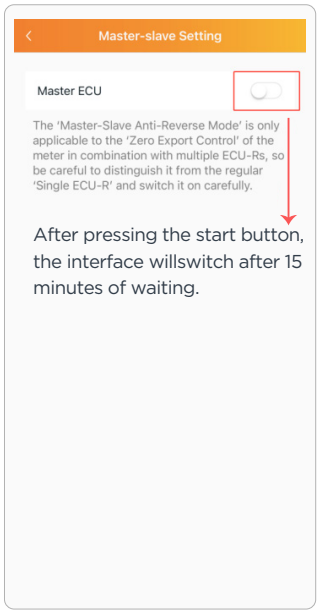


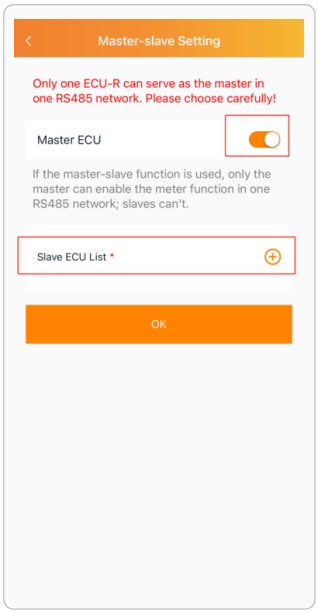


Step ②: Open“Master-Slave Setting”.After pressing the start button, the interface will switch after 15 minutes of waiting.

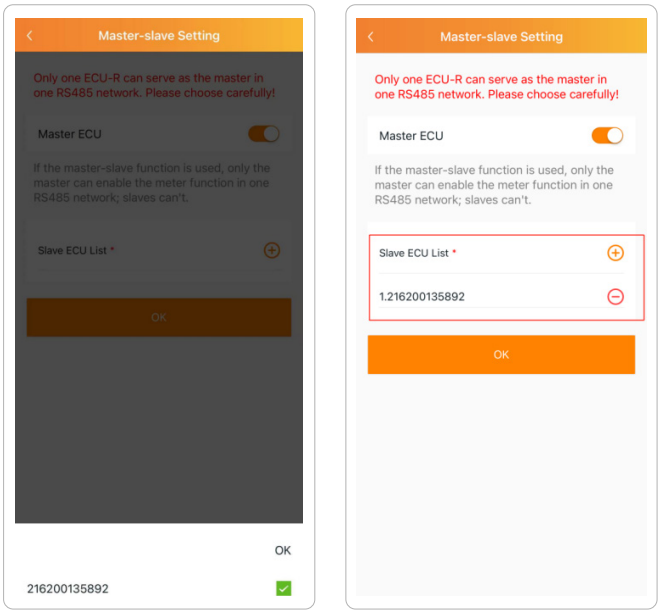




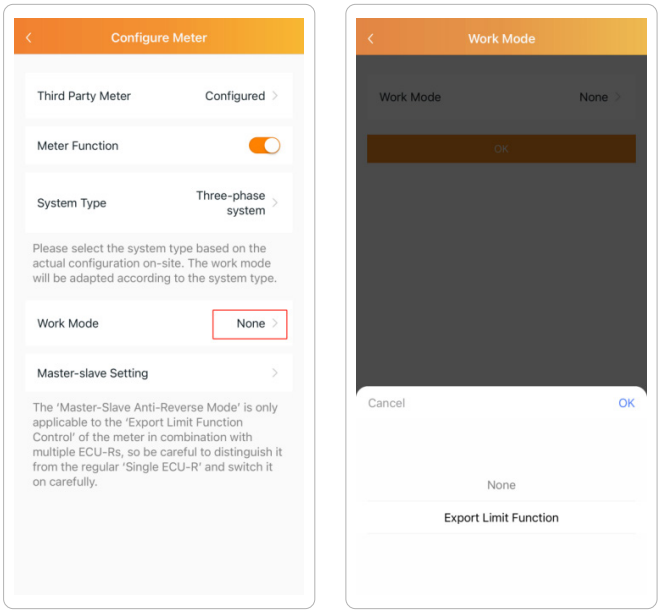




Step ③: Check the option for the slave ECU-R.Wait for 15 minutes. After the host binds the slave device successfully, return to the 'work mode' interface, select the working mode, and set the value of Export Limit Control.



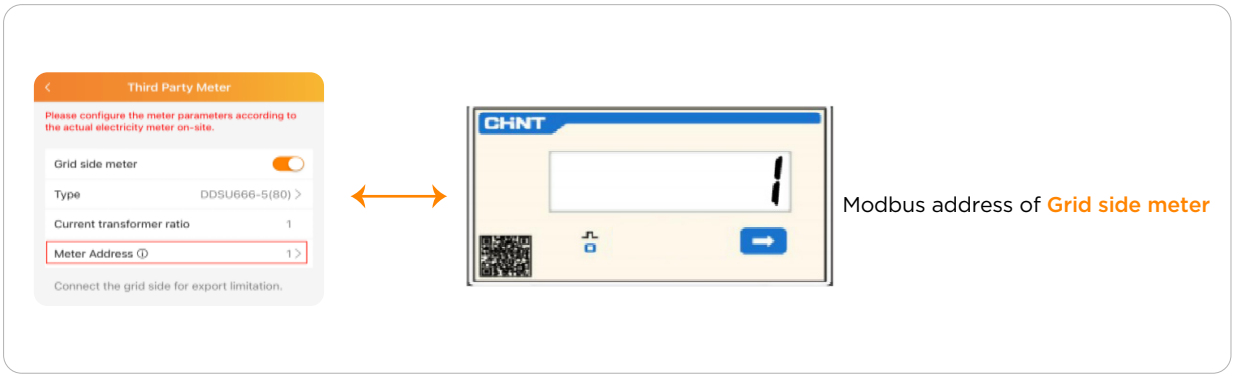
Step ④:return to the 'work mode' interface, select the working mode, and set the value of Export Limit Control."Power Limit" refers to the limit value for each phase.



2.3.1 The Modbus address is consistent(Only applicable to ECU-R)

Tips: ECU-C does not require configuration and selection of third-party meters.

When remotely configuring the electricity meter, it should be noted that the information filled in should be consistent with the actual internal Modbus address of the electricity meter; the current transformation ratio should be calculated based on the nameplate of the CT and filled in (for example: DDSU666-1.5(6), DTSU666-1.5(6) need to fill in the current current transformer transformation ratio. If the CT is 200/5A, the current ratio = 40.)



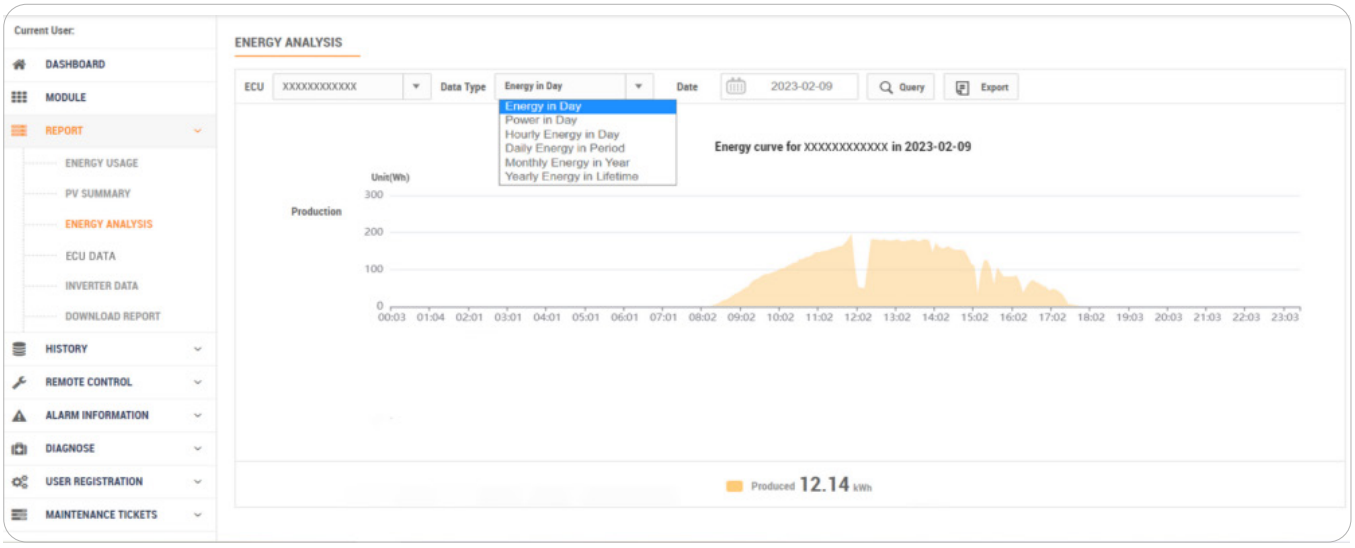
2.4 Display on EMA Web

The electric meter transfers export/import power data and photovoltaic power generation data to the ECU-R via RS485. Then, the ECU-R uploads the data to the EMA platform by using the router or a wireless network. Users can view energy information on the EMA platform or through the mobile application.

2.4.1 Export/Import Data (Meter is installed on the Grid Side)



2.4.2 PV Power Generation Data (Meter is installed on the PV Side)



2.4.3 PV Power Generation, Consume energy, and Export/Import energy Data (Meter is installed on the PV Side and Grid Side)



Tips: The entire system's photovoltaic data is only displayed on the host ECU-R. The slave ECU-R shows "No Data". Please select the UID of the host ECU-R for viewing.

2.4.4 Third Party Meter Selection

Grid Type	APsystems Material Part No.	CHINT Menter Model	Reference Voltage & Frequency	Current Access Type	CT	Application
Single-phase (1P2W)	2273020003	DDSU666-5(80)A	220/230V 50/60Hz	Direct connection	No need	Circuits whose current is within 80A
	2273001003	DDSU666-100A/40mA	220/230V 50/60Hz	Via CT	Including 100A CT	Circuits whose current is withIn 100A
	2273002013	DDSU666-1.5(6)A	220/230V 50/60Hz	Via CT	Purchased by the customer: 1 CT, secondary current must be 1A or 5A.	Maximum CT ratio less than 9999
Three-phase four-wire (3P4W)	2270105003	DTSU666-250A/50mA	3×230/400V 50/60Hz	Via CT	Standard configuration: 3 CTs of 250A, with package;	Circuits whose current is within 250A
	2270107003	DTSU666-1.5(6)A	3×230/400V 50/60Hz	Via CT	Purchased by the customer: 3 CTs, secondary current must be 1A or 5A.	Maximum CT ratio less than 9999

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