

2024 **TECHNICAL** **DOCUMENT**

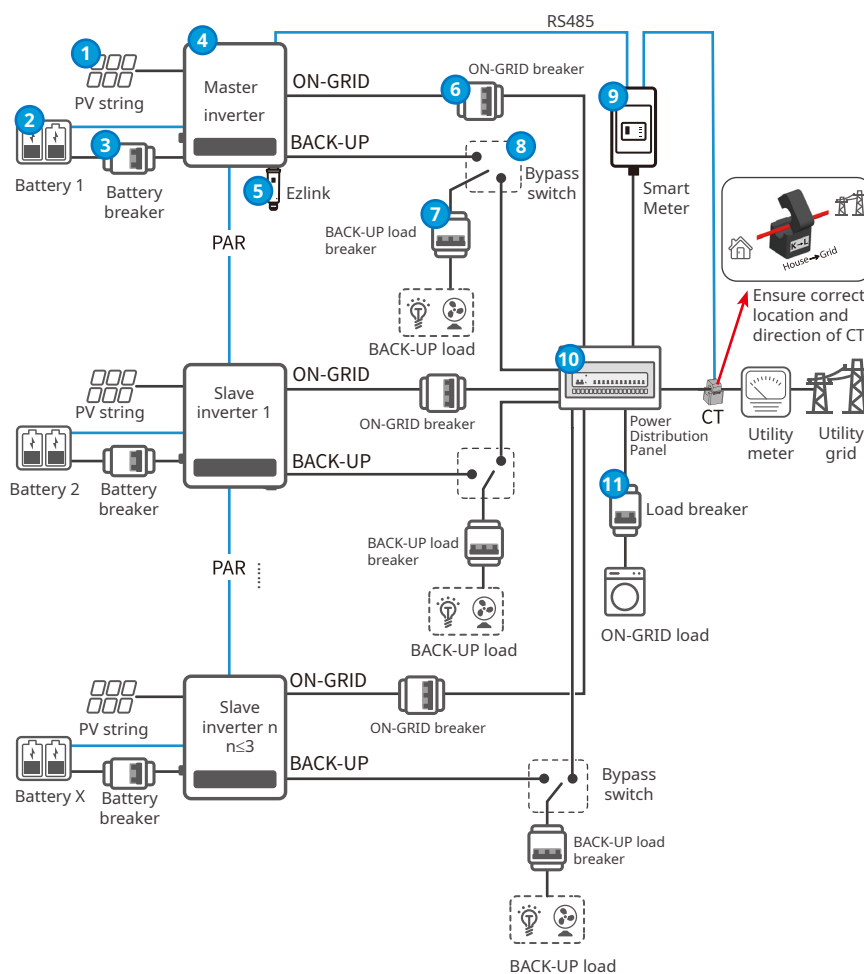
ET15-30K parallel solution



1. Background

With the increase of household load power, some specific applications, a single machine can not satisfy the load power requirements. Especially for the European market needs to meet the small commercial and industrial application scenarios, the demand for grid-parallel is becoming more and more urgent. The rapid development of information technology, the capacity, performance and reliability of its power supply system requirements are increasingly high, but also promote the power electronics technology research continues to further develop, the research field continues to broaden. Parallel connection to achieve large-capacity power supply is recognized as one of the important directions in the development of today's power conversion technology. Parallel connection can realize high-capacity power supply and redundant power supply, and improve the flexibility of the system, so that the volume and weight of the power system can be greatly reduced. Fundamentally improving reliability, reducing costs and increasing power density, GoodWe has therefore launched the On-grid parallel function of the ET15-30K series.

2. System diagram and introduction



- Currently, only support On-grid parallel connection, do not support off-grid parallel systems, please do not connect the Back-Up ports of each inverter in parallel. If the inverter does not have battery access, it is not recommend to connect loads on the Back-Up side, otherwise the loads may be disconnect at night.
- Maximum support for 4 units in parallel.
- Support the inverter manufactured after February 2023.
- Use the parallel system for load control, remote shutdown, DRED/RCR, etc. Please set up by master inverter.
- Use Ezlink module for paralleling, the one that plugs into the Ezlink module is the master, the slave should not plug with WIFI or LAN module.
- Battery selection based on inverter and battery matching lists.
 - a)Support for using different brands and capacity of battery in parallel systems.
 - b)Do not connect a single battery to multiple inverters otherwise damage to the inverter may occur.
 - c)The SOC is automatically balanced for each battery in the parallel system.
- Support ET15-30k series inverter mix-parallel, i.e. support different power models
- Before paralleling, it is necessary to make sure that the software of each inverter is higher than the following versions, otherwise need to complete the upgrade of the single inverter first, and then install the paralleling system. Software version: DSP version higher than 07, ARM version higher than 08, Ezlink version higher than 04, Solargo version higher than 5.3.0.
- The dip switches of all inverters in the parallel system are OFF by default, and can be parallelized normally without operation. If there is a communication problem, try to turn the dip switches of the first and last inverters to ON state.

3.Required devices and usage

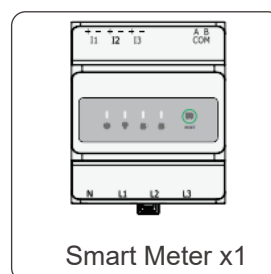
3.1 Required devices

Ezlink module and meter have to be separately purchased.

- **EzLink:** Customer need to purchase the standard Ezlink and prepare standard network cable themselves for communication connection.



- **Smart Meter GM330:** GMA0300-15-00P



3.2 Usage Pre-cautions

- **EzLink:**

Installation place: Share the same USB port with the WIFI module and recommend to install on the first machine.



Choose Master: Use different power inverter to from parallel, it is recommended to use the model with the largest power as the master inverter and plug in Ezlink module. The main consideration is that the above 25K models have two battery inputs, and when the setup of the master is completed, it will automatically go down to the two battery inputs of the slave inverter. If you use below 25K as the master, the master can not give a command to the inverter who has the second battery, and need to go to set the slave's batter parameters separately.

Communication: The master is normal, if there is a slave abnormal, the slave does not work, the whole parallel system can operate normally; if the host is abnormal, the whole system can not work.

- **Network cable:**

Customers need to prepare their own cables, because the different using scenario.

Using standard STP CAT5E, CAT6 cable and the length is better within 5m. If the length is more than 5m, it is recommended to use CAT7, but the total length should not exceed 10m.

Communication cables are daisy-chained for each inverter.



- **GM330:**

There is no CT in the delivery, customer needs to prepare N:5A CT, or you can order from the GoodWe official website.

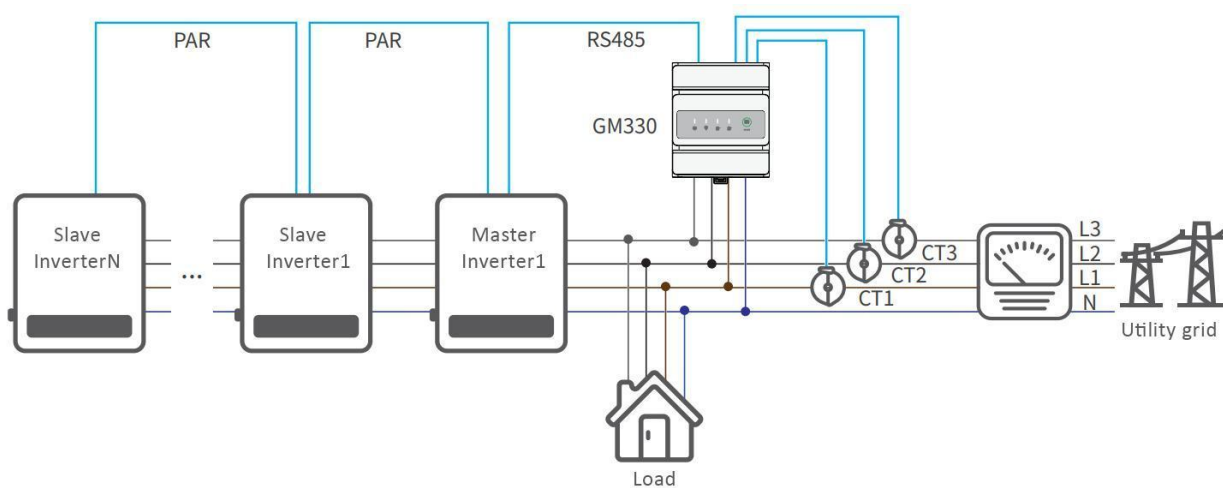
The red and black wires of the RS485 adapter cable are connected to the two PIN green terminals in the accessory package.

Plug the adapter cable into the COM A and B ports, red to A, black to B.



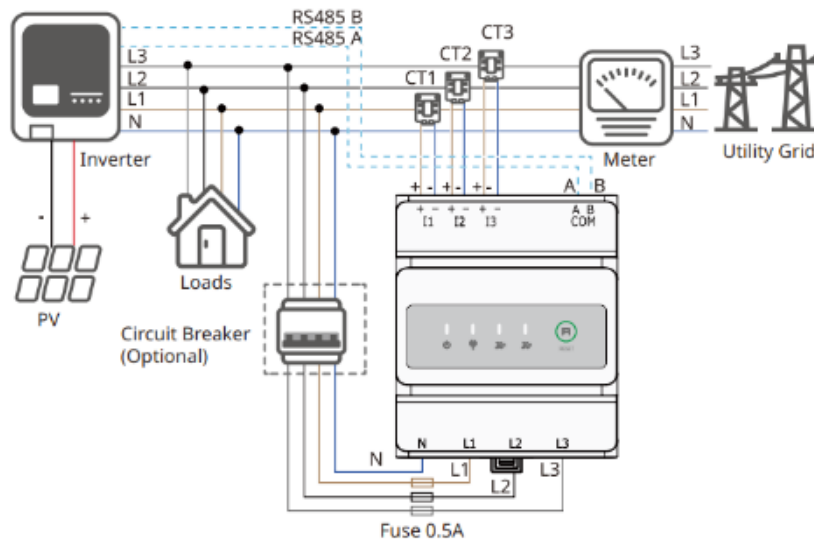
Plug the network cables from the accessory pack into the Meter port of the inverter and the port of the GM330 adapter.

Please install the smart meter to the master inverter, otherwise it may lead to abnormal communication.



• Current Transformer:

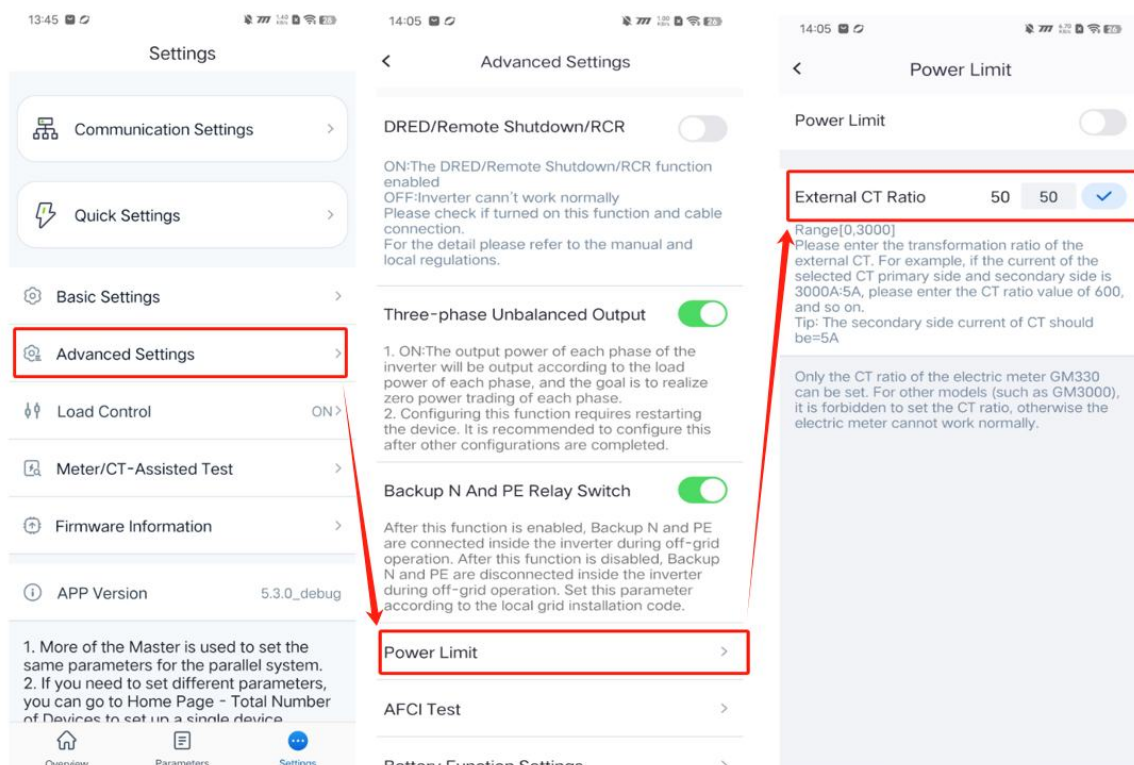
The CT is connected to the I1, I2 and I3 ports of the meter respectively.



Note the direction of the CT current, from House to Grid.

When selecting CT, pay attention to the size of the hole opening and the specifications of the copper plate, to avoid that the specifications are satisfied and the hole opening is not enough.

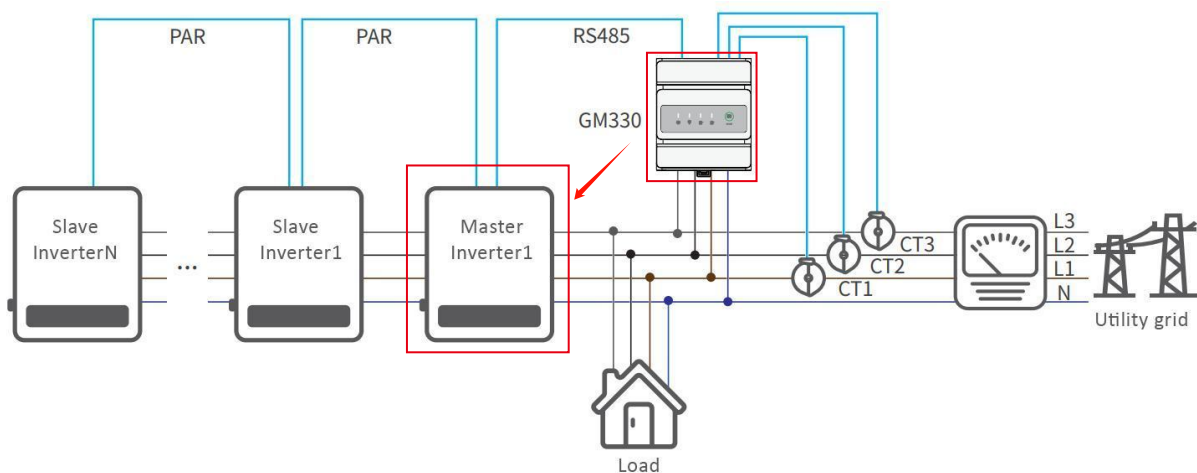
Process of setting CT ratio in Solargo.



4. Power Limit Solution

With GM330 to realize the function of export power limit when the system contains multiple inverters in parallel connection. Smart meters should be installed and connected to the master inverter, otherwise it may lead to abnormal communication, which may cause the whole system not working normally.

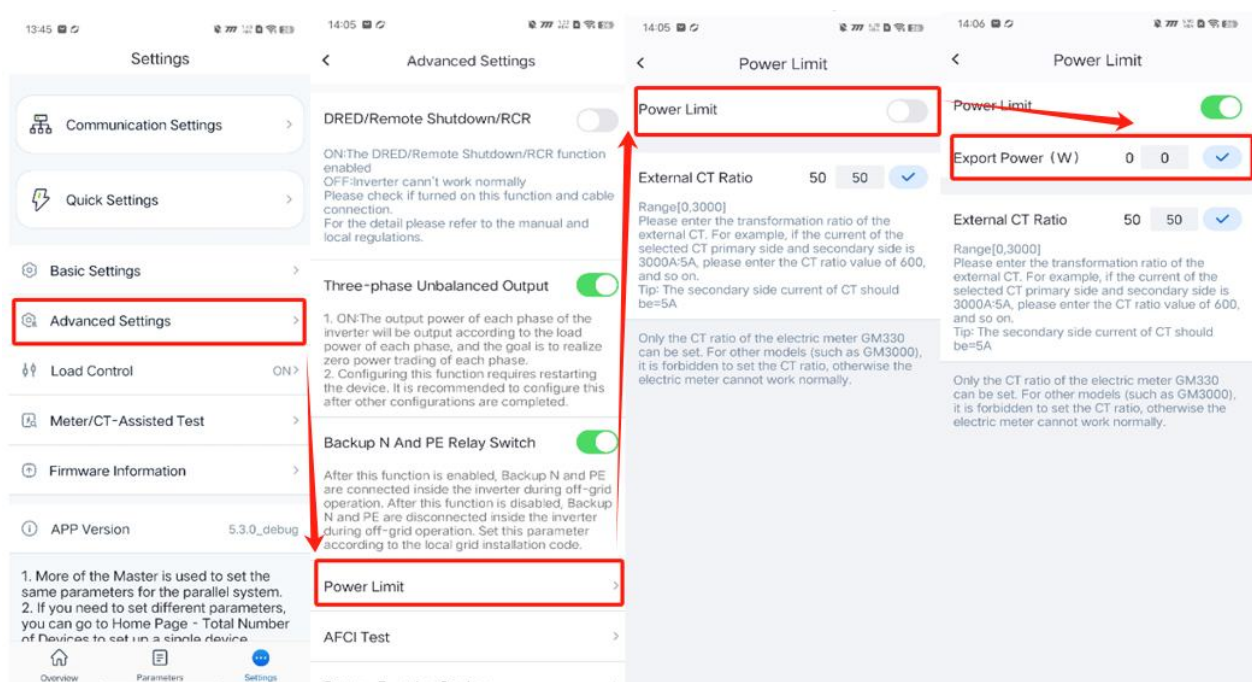
Diagram for export power limit solution:



Steps for setting up the value of power limit in Solargo:

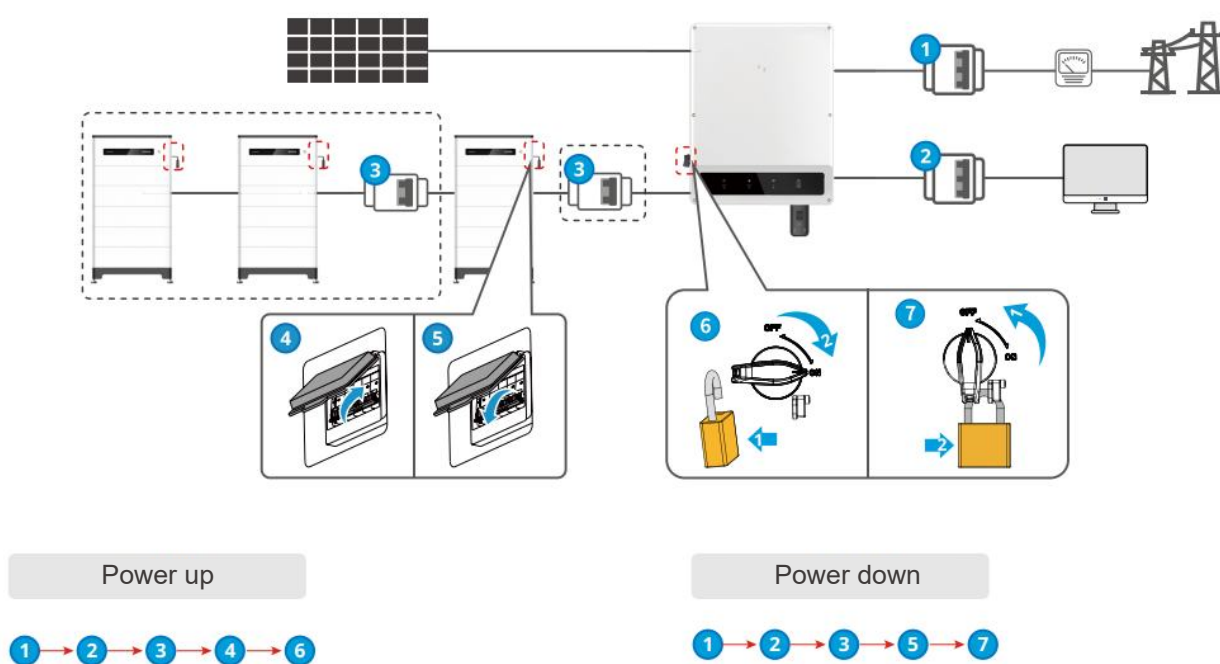
Export Power unit in W and this value can be set positive, negative or zero. Here we set positive 100, negative 100 and zero as an example.

- +100W: Continuously deliver up to 100W to the grid.
- -100W: Continuous purchase of 100W from the grid.
- 0W: Zero export, limit upstream power to 0W.



5. System power up/down

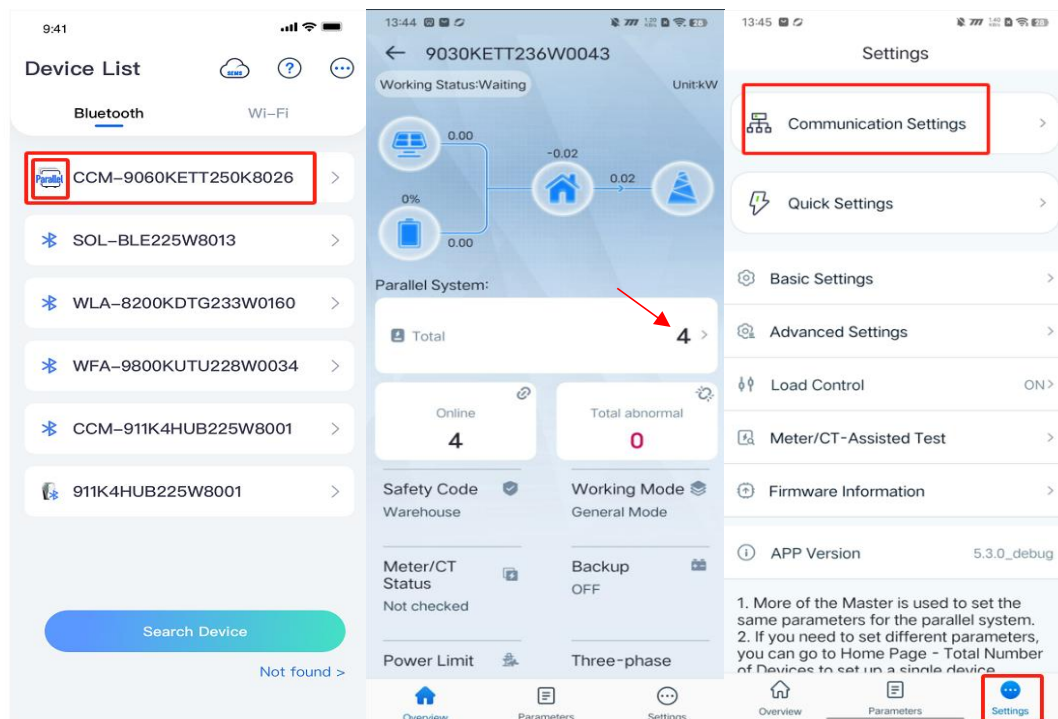
- Ensure that the AC power is applied to the master first, meanwhile, the slave needs to be powered up within one minute.
- When power down, to ensure that the other machines are normally On-Grid and parallel, need to shut down the slave first, and the master at last.

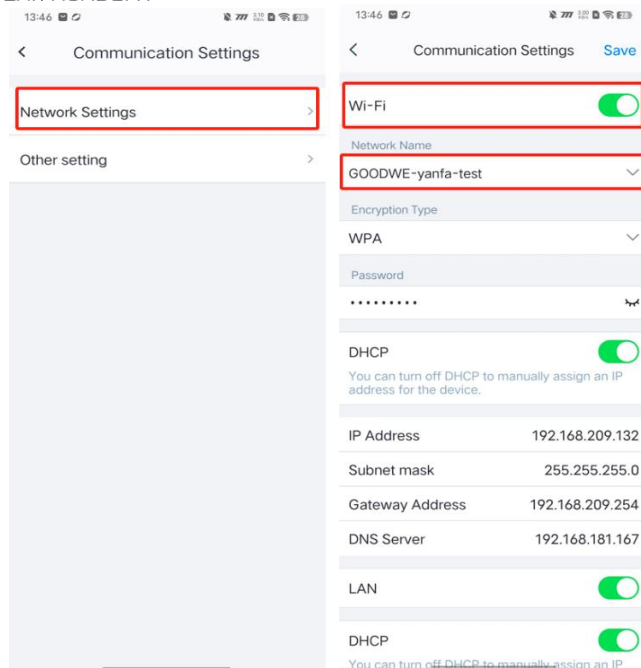


Nr.	Name
1	On-grid AC breaker
2	Back-up AC breaker
3	Battery breaker
4	Air switch On
5	Air switch Off
6	DC switch On
7	DC switch Off

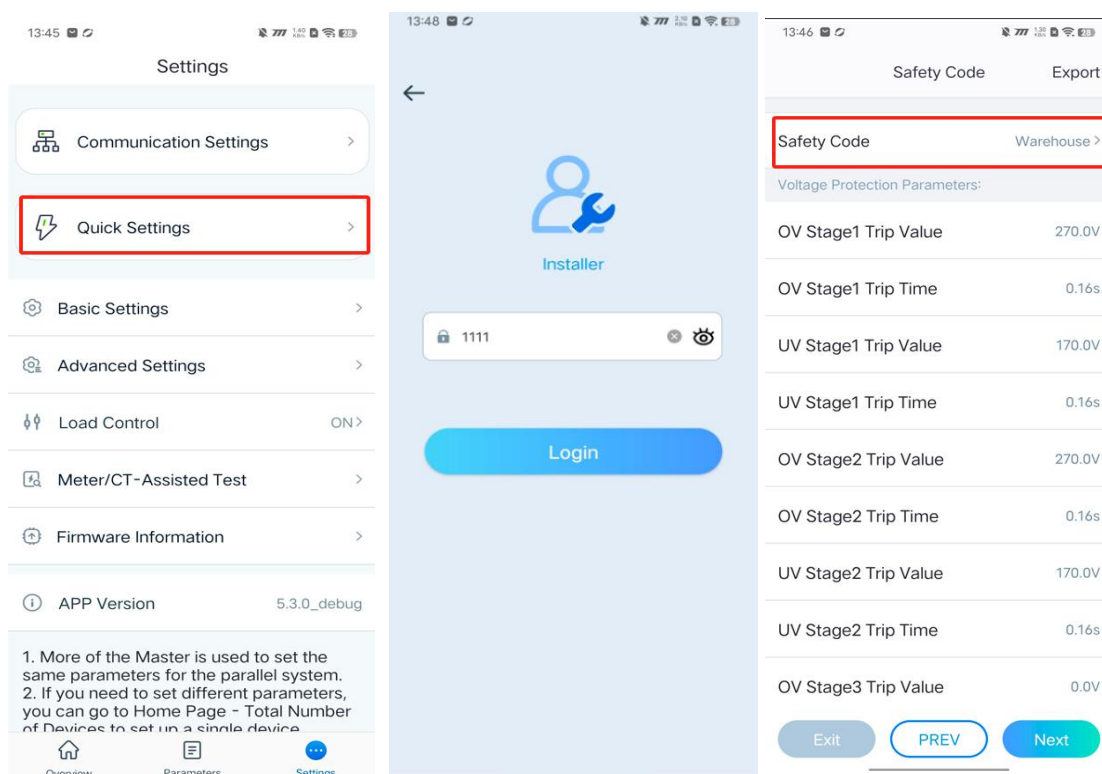
6. Set parameters in parallel system

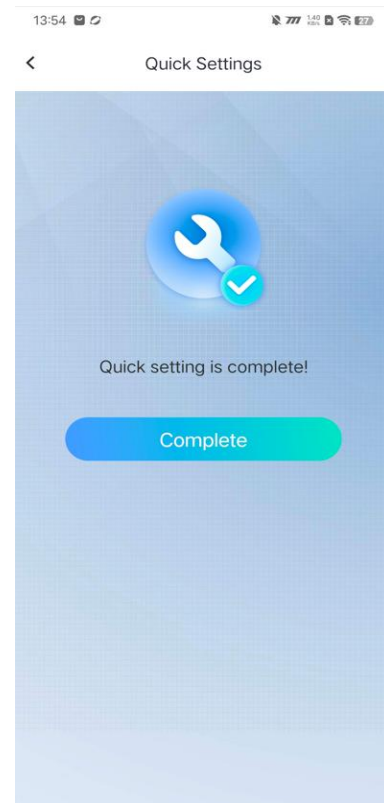
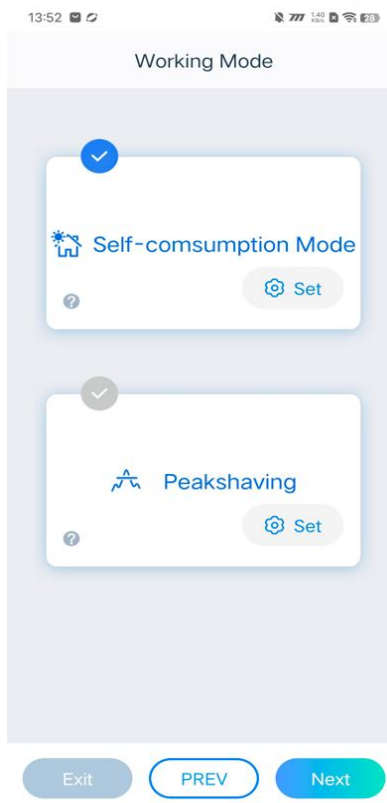
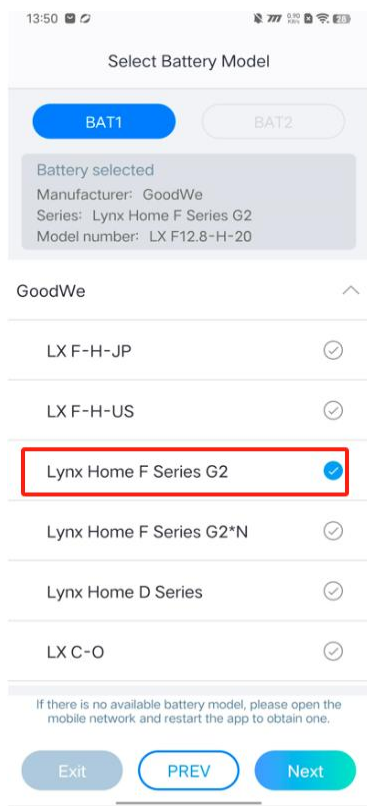
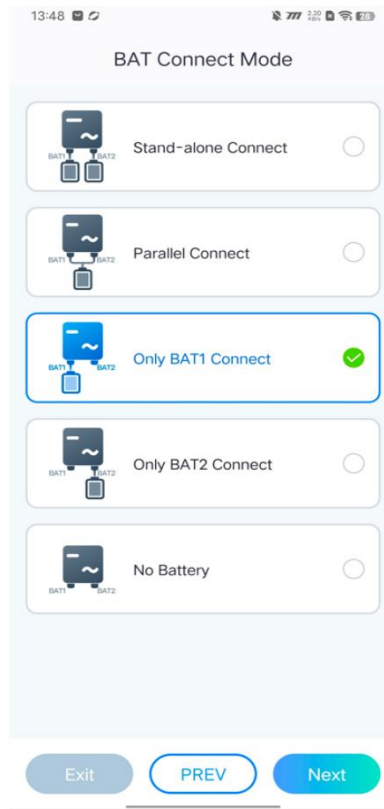
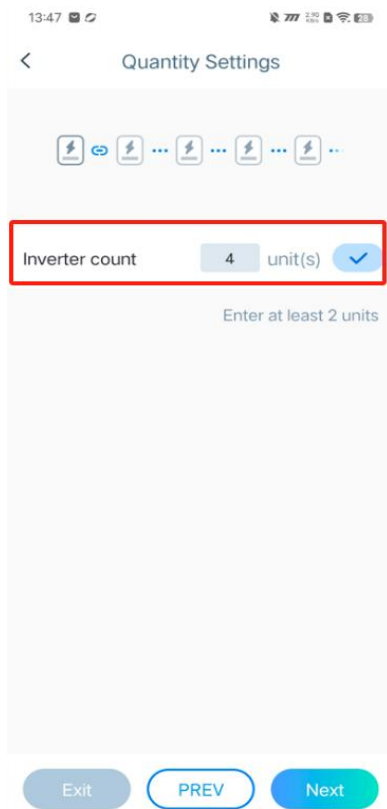
- Please check the inverter firmware version through SolarGo app first, make sure all the inverters have the same firmware version, DSP higher than 07, ARM higher than 08, Ezlink higher than 04, Solargo higher than 5.3.0. Otherwise please contact Goodwe to upgrade the software version.
- Connect the Ezlink3000 of the master inverter with Bluetooth in Solargo (check the master's SN), the first part will have a Parallel icon, CCM means the Ezlink3000, the rear part is SN. Enter into the parallel interface, at this time the Ezlink3000 will have a process of automatic detection of the number of parallel. Click Settings and select Communication Settings to configure the network. (The Ezlink3000 can only be connected via Bluetooth, then connect WIFI to enter Local Area Network).



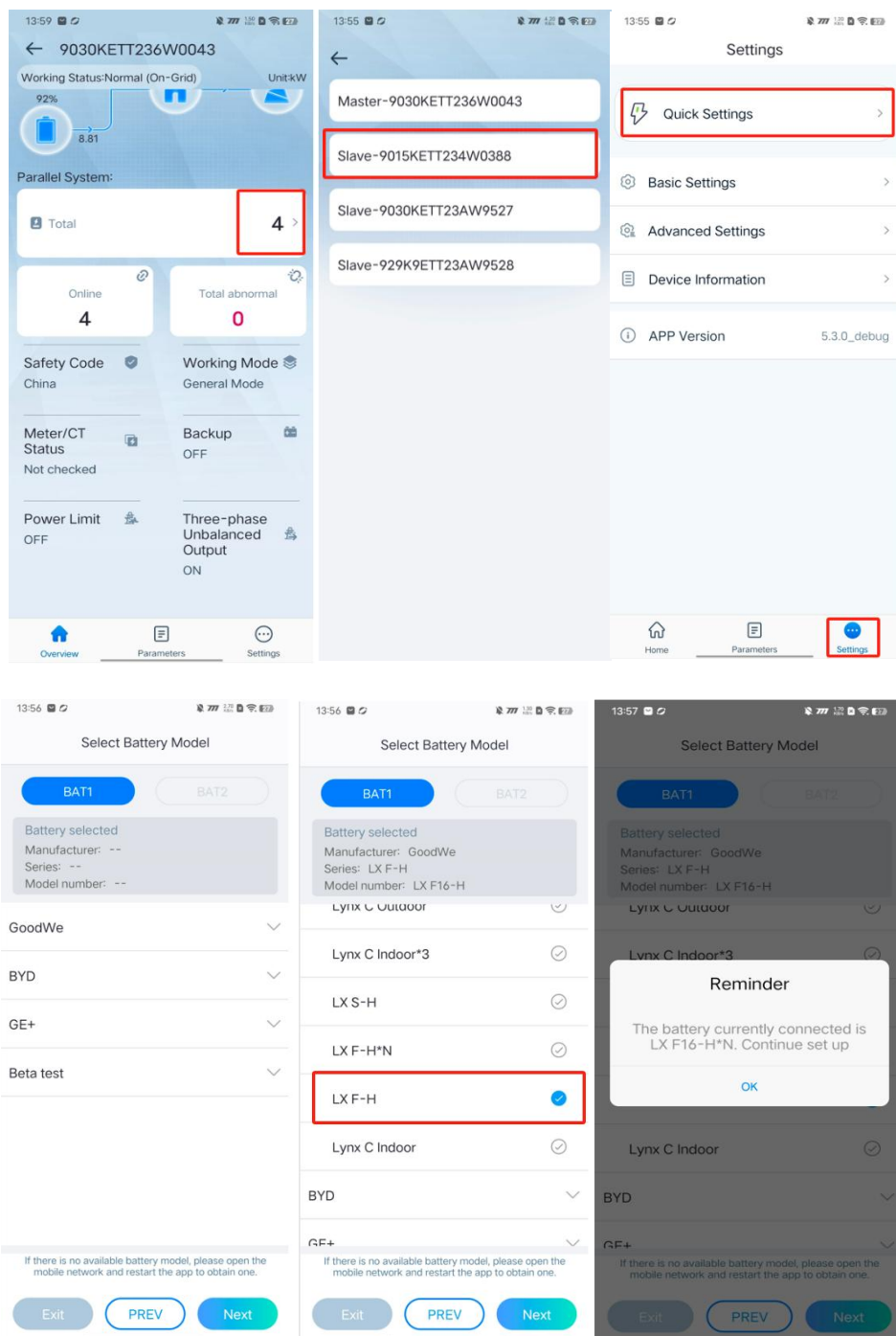


- Click Quick Setup, enter the password goodwe2010 or 1111, set the parameters of the master inverter such as safety regulations, number of parallel connection, battery connect mode and working mode, and send the settings to the slaves by broadcasting.





- If the slave machine connect a different brand of battery compared to the master, you can return to the parallel interface, click on the number of parallel button will display all the machine serial number, select the serial number of the slave machine, and set the battery access of the slave machine individually.



- When setting the parameters of the parallel system, please make sure that the working mode of each inverter is consistent.