

# PV MASTER USER MANUAL

VER: 02    UPDATED ON JANUARY 9<sup>TH</sup>, 2020



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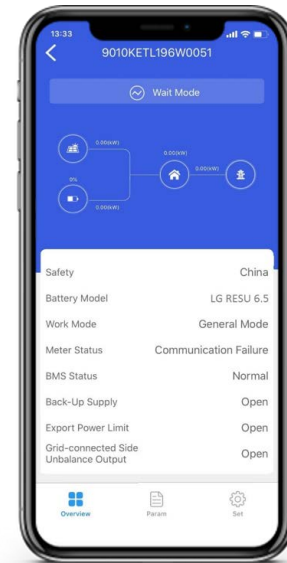
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## 1. INTRODUCTION

PV Master is GoodWe self-designed application for installers and users to do in GoodWe hybrid systems:

- System Commissioning
- Local Monitoring
- System Diagnosing
- Troubleshooting Assistance

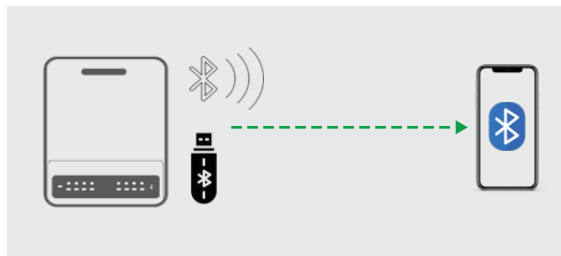
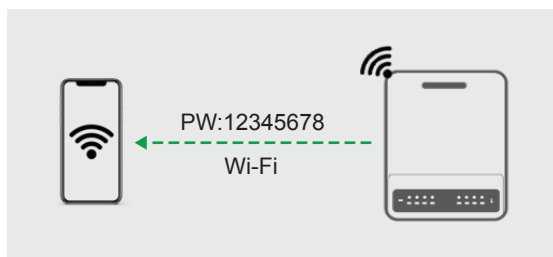
PV Master supports both android and iOS systems and multiple languages like Chinese, English and German. Functions inside shows up differently based on different inverter models.



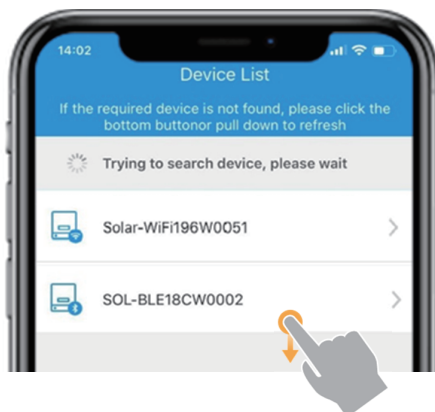
## 2. WIRELESS CONNECTION

PV Master App is only usable if your smart phones connected to GoodWe hybrid inverter by Wi-Fi or Blue tooth method.

- By Wi-Fi: support direct connection to inverter Wi-Fi signal (Solar-WiFi \*\*\*\*\*) or connect smart phone(s) and inverter(s) in the same intranet system



- By Blue Tooth: please replace Wi-Fi module with blue tooth device in the components box and power inverter up. Then search Blue Tooth device "SOL\_BLE\*\*\*\*\*" on PV Master



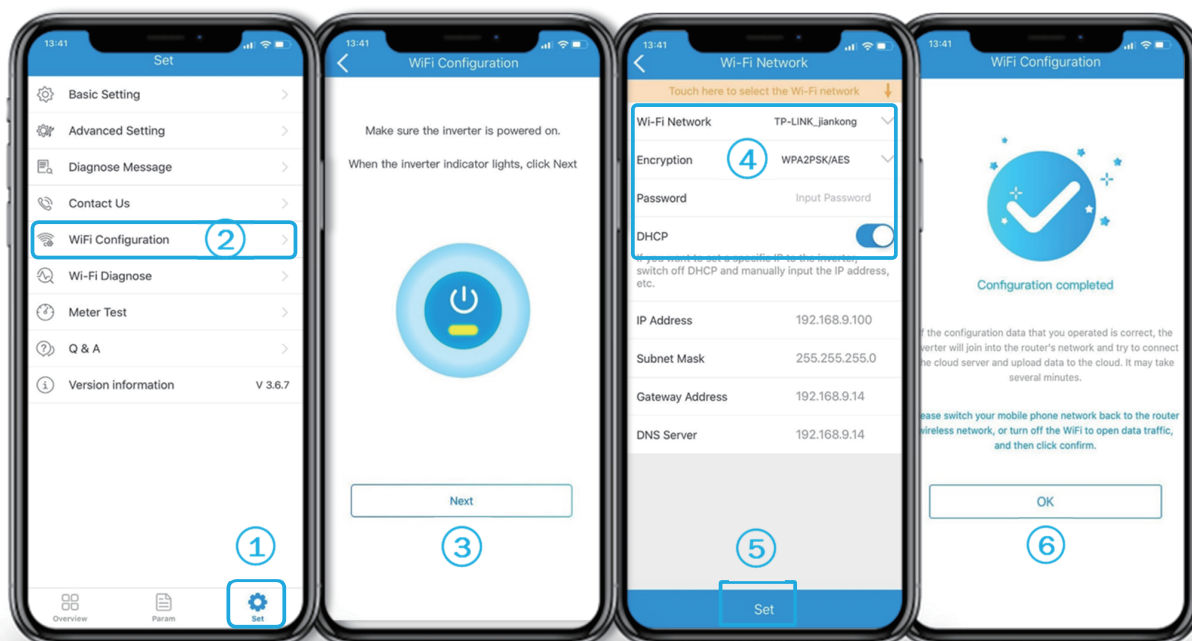
- "\*\*\*\*\*" means the last 8 characters of the inverter serial No.
- Scroll down the page to refresh device list
- Click the device to do further commissioning
- If cannot see the device by refresh, please reboot PV Master to check again.

### 3. SYSTEM COMMISSIONING

#### 3.1 Wi-Fi Configuration

Connect inverter Wi-Fi to local network for remote monitoring on GoodWe platform – SEMS Portal

Steps: Connect “Solar-Wi-Fi” → Open App → Choose the inverter you want configure → Click “Set” → “Wi-Fi Configuration” → “Next” → choose network and fill in password → Click “Set” → Configuration Completed



**NOTE:**

1. “Configuration Completed” doesn’t mean network connection (inverter—network—GoodWe server) successfully. It means only the configuration process finished. Please follow “Wi-Fi” led statues on inverter to make sure Wi-Fi connected successfully to GoodWe server or not.
2. In step ④ “DHCP” function could be closed to set fixed IP address accessible to local network (if there is firewall for local network)

#### 3.2 Operation Commissioning

Operation commissioning is the key function of PV Master, which enables the energy storage system works normally as expected

**Clause Explanation:**

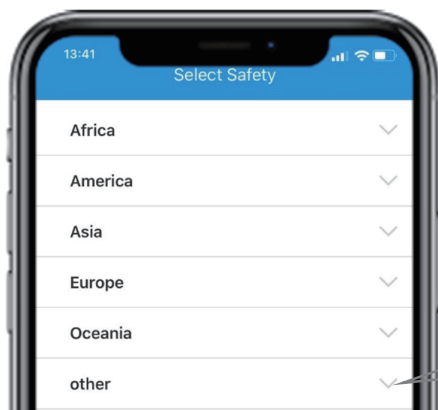
**Basic Setting:** must-be settings to ensure the system work normally for all installations like safety code, battery model, operation mode etc.

**Advanced Setting:** specially expected functions, which is optional depends on individual requirement like export power limit, unbalance output function etc.



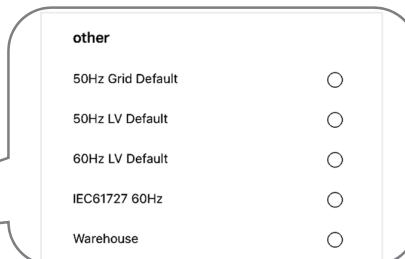
## ● Basic Settings

Steps: Connect "Solar-Wi-Fi" → Open App → Choose the inverter you want configure → Click "Set" → "Basic Setting" → Choose "Safety Country" → Select operation mode → Select battery model → CT Test



### → Select Safety Code:

Please select the right safety code based on your installation area. If it is not on the list, then please find one in "Other"



### → Select Operation Mode:

Here is 4 commonly used operation modes, which has its own operation logics as below:

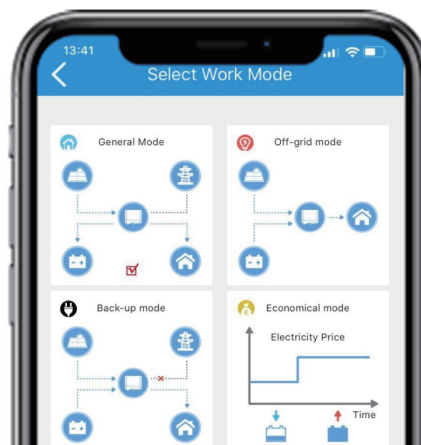
#### A. General Mode

General Mode is to maximize self-use of PV power and minimize importing power from grid, and the default logic as below:

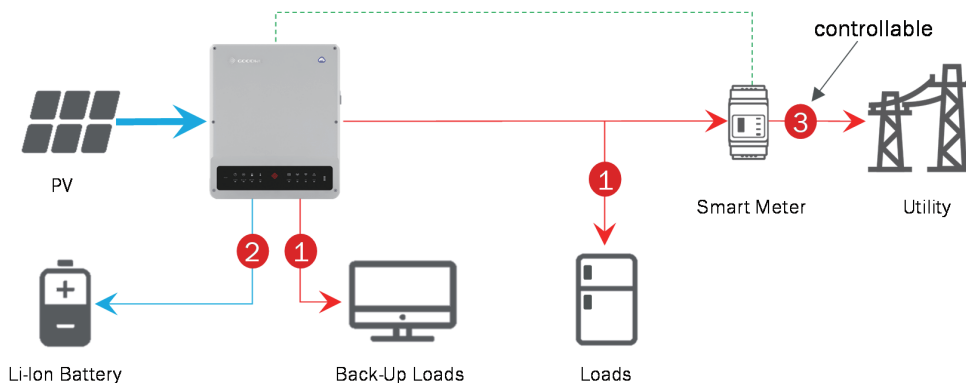
- a. PV power is used to supply loads in priority (both Back-Up loads and On-Grid loads), then charge battery. And, if there has exceeded power, will export to grid (Controllable)

- Back-Up loads and On-Grid loads are supplied together with same priority

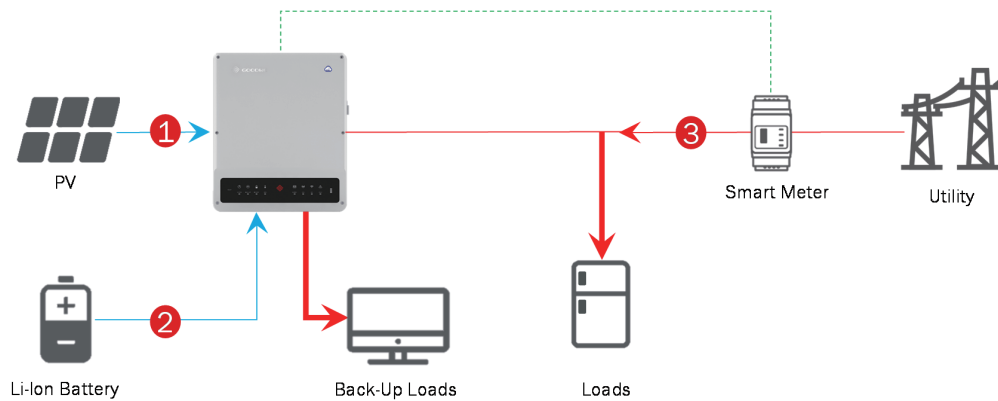
- b. (If load power is higher) load will consume from PV power in priority, and battery do supplement, then, if still not enough, buy power from utility



*PV Supply Priority:*



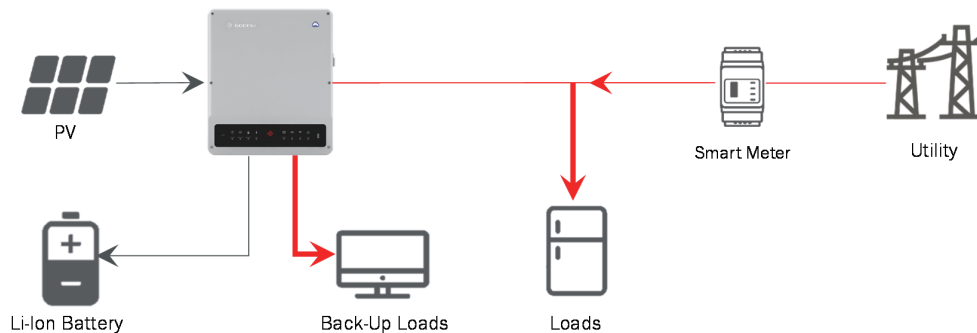
*Load Consumption Priority:*



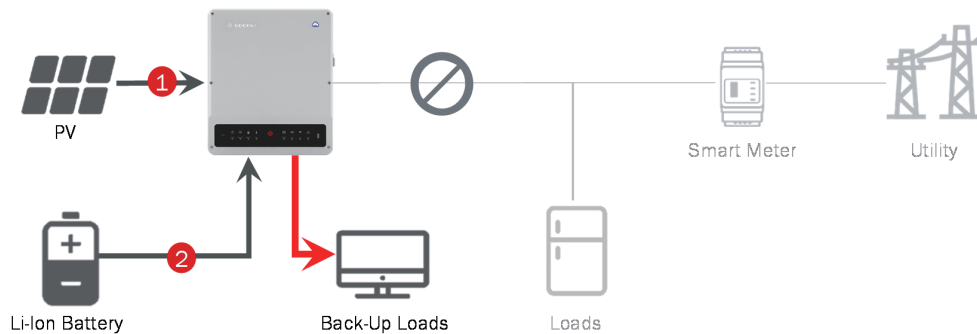
**B. Back-Up Mode**

Back-Up mode is to save power into battery for emergency use during utility outage. Under back-up mode, battery will stay at charge statues, if utility is available, to make sure the battery has enough power reserved. During utility outage, battery charge/discharge will follow default logic to supplement PV supply to loads or charge if PV power is higher than loads.

*System Logic When Utility is Available:*



*System Logic During Utility Outage:*

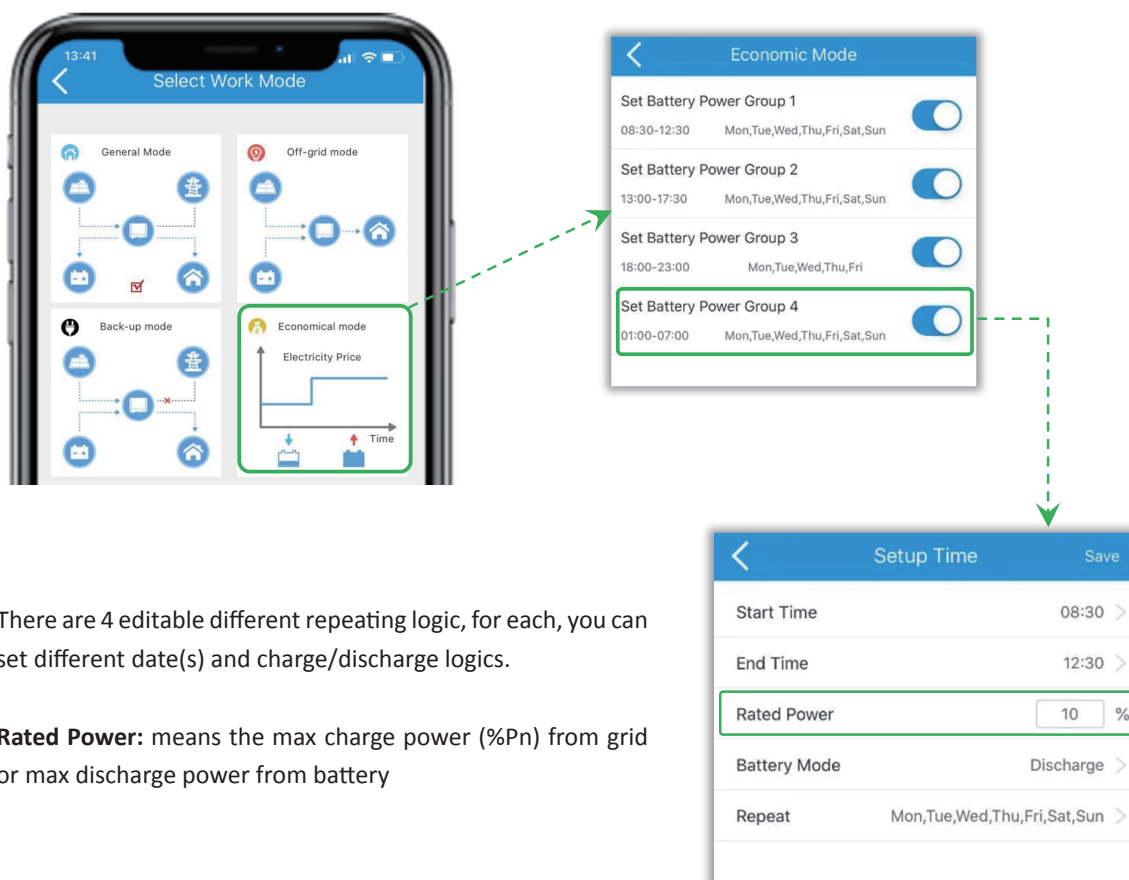


### C. Off-Grid Mode:

Off-grid mode means does not connect to grid. There will not be any electrical connection between solar storage system and utility because inverter itself will always cut off connection to utility no matter AC cable is wired or not.

### D. Economical Mode

Economical mode is an option to self-define battery charge/discharge time and power



There are 4 editable different repeating logic, for each, you can set different date(s) and charge/discharge logics.

**Rated Power:** means the max charge power (%Pn) from grid or max discharge power from battery

#### NOTES:

- All charge or discharge settings only work when utility is available. During utility outage, economical mode does not work and whole system follow the default mode
- If an overlap of charge & discharge time happened at the same date & time, then charge logic takes the priority
- If a same charge or discharge date & time repeated in different options, then the priority drops from Group 1 to Group 4

### → Select Battery:

With GoodWe energy storage inverters, all compatible batteries will be list inside the APP and the relative parameters of battery charge/discharge had been preset inside individual battery selections. Selecting the right battery (same as what you use) for your system is very important for:

- Make sure the battery and inverter works on the preset parameters so that battery can work at its best condition and contribution
- Make sure BMS communication between inverter and battery works normally (*selecting wrong battery will cause BMS communication failure*)



PV Master will read inverter information and selectively shows the compatible battery list for different inverter types

HV battery list shows up when click this button

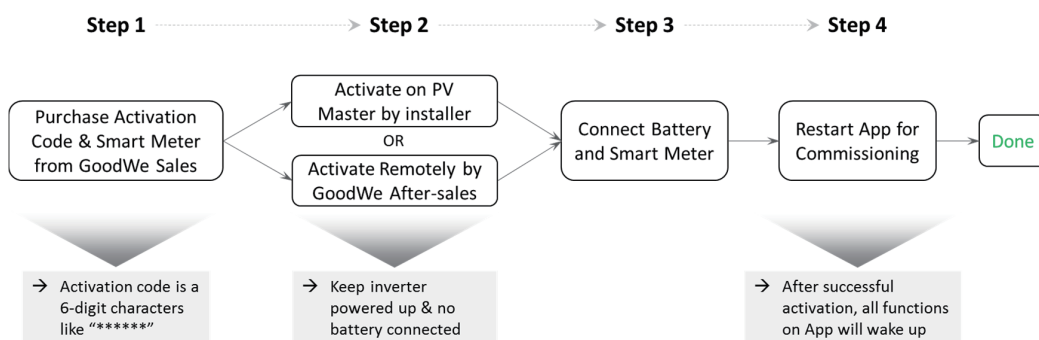
GoodWe HV selection is only for practice third-party HV lithium battery compatibility with GoodWe energy storage inverters. For LV batteries, it will show "Default" option

	DEFAULT	
	Default	
	Default(Lithium 50Ah)	
	Default(Lithium 100Ah)	

If have any confusions on battery selection, please contact GoodWe for consultancy first before select on PV Master

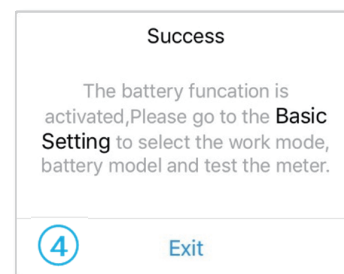
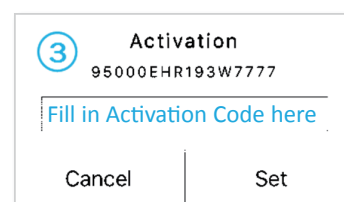
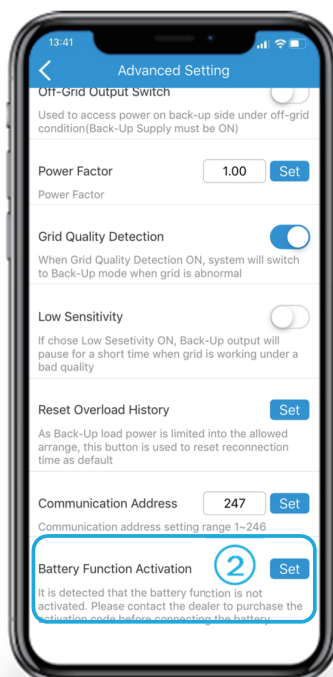
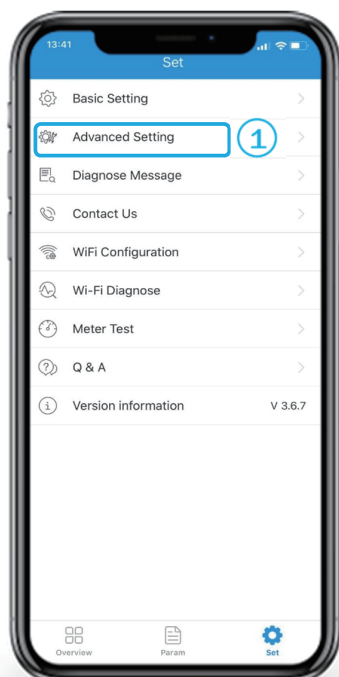
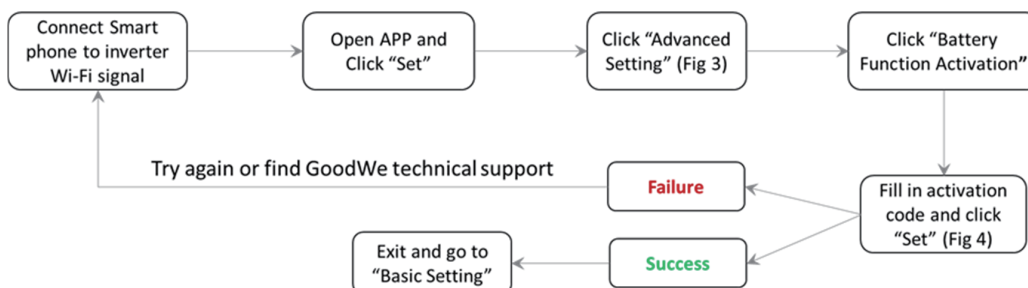
### ● Battery Ready Commissioning (only for EHR)

For EHR series, if battery function need to be activated to update the system to be energy storage, an activation code should be purchased from GoodWe or a Smart Meter as well. The whole activation procedure goes as below:



### ➔ Activation Locally on PV Master

Steps: Connect "Solar-Wi-Fi" or Blue Tooth ➔ Open App ➔ Choose the inverter you want configure ➔ Click "Set" ➔ "Advanced Setting" ➔ Choose "Battery Function Activation" ➔ Fill in Activation Code ➔ Success Notice ➔ Exit and go for Basic Setting



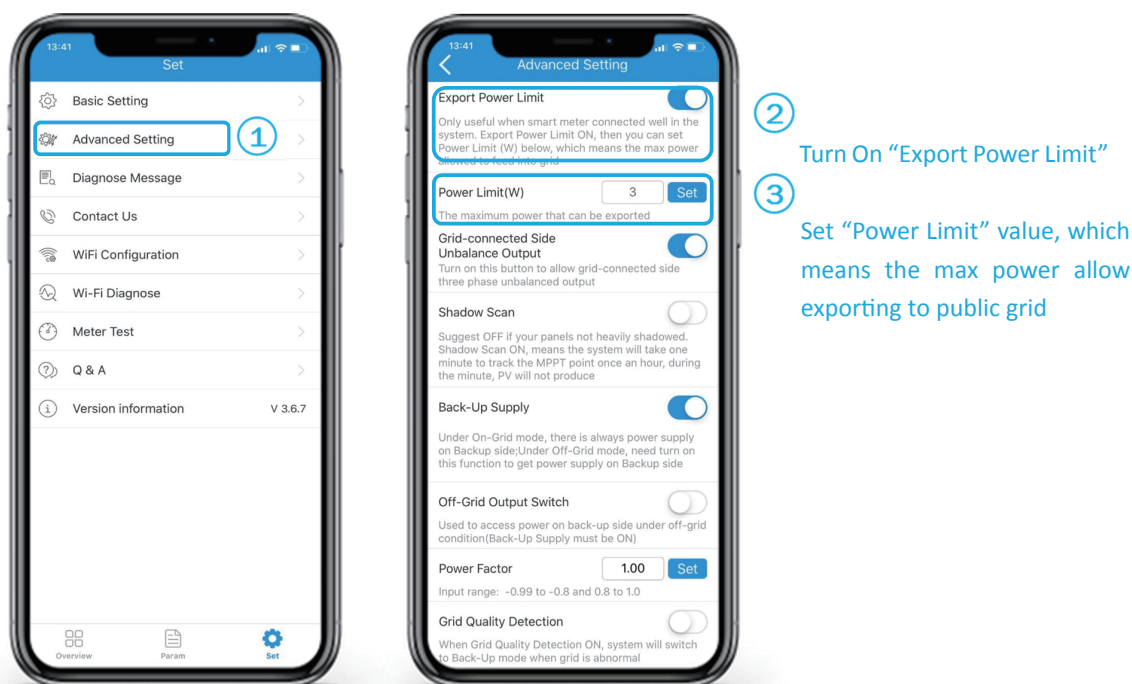
Exit and go for basic settings

**NOTE:** "Battery Function Activation" option shows up only if PV master is connected locally with an EHR series inverter (EH series without battery function)

## ● Export Power Limit

The function to limit the max power exporting to grid. Normally it is only used if there is requirement of export power limit, where solar power will be limited after supplying to loads and charge battery. This function keeps "OFF" as default, you will be able to setup the maximum power allowed to inject to public grid as turn on this function and preset a power value allowed exporting.

*Steps: Connect "Solar-Wi-Fi" or Blue Tooth → Open App → Choose the inverter you want configure → Click "Set" → "Advanced Setting" → Turn on "Export Power Limit" → Set the Power Value limited to → Success Notice → Exit*



**NOTE:** Export Power Limit function is able to be realized only if GoodWe Smart Meter is correctly wired in the electrical system and functions well.

## ● ET Paralleling Commissioning

Commissioning of ET paralleling system includes that on PV Master and ProMate programs, here we give details of PV Master commissioning only.

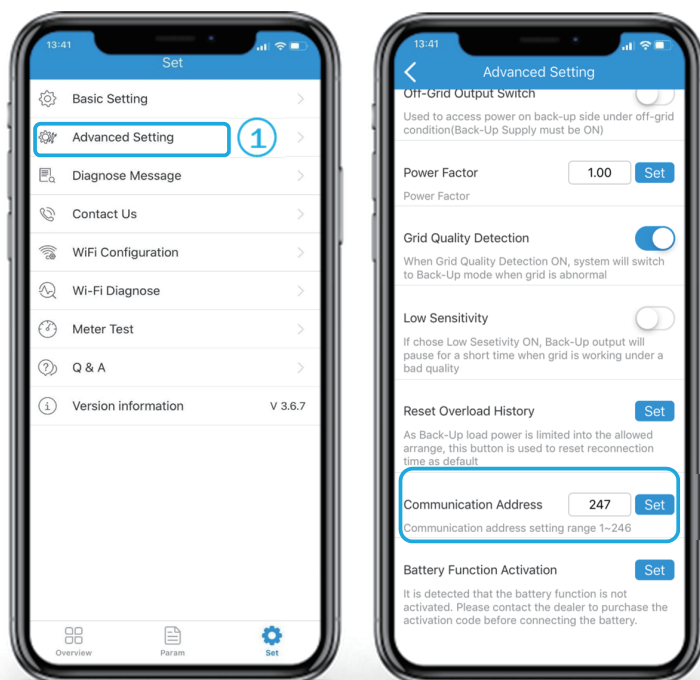
The whole system building procedure as below:



For setting Communication address of ET on PV Master:

*Steps: Connect "Solar-Wi-Fi" or Blue Tooth → Open App → Choose the inverter you want configure → Click "Set" → choose "Advanced Setting" → Find and set "Communication Address" → click "Set" → Repeat the steps on other ETs → Exit*

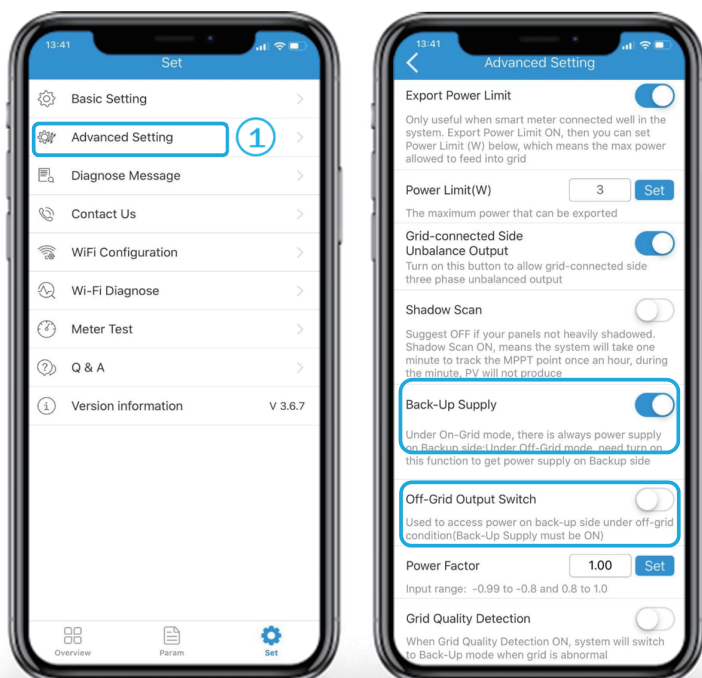




→Address must be set up on each inverter separately  
 →Address for each ET inverter must be different  
 →Address better from 1,2,3..... to make sure of faster communication

## ● Back-Up Supply

Back-up supply means there is power supply on inverter back-up side whether there is grid or not. If grid fails, it also needs to turn on “Off-Grid Output Switch” to have access to back-up supply power.



→As default, Back-Up Supply function stays ON.  
 →If you want have power supply on Back-Up side (on-grid or off-grid), this function should always be ON

→As default, Back-Up Supply function stays OFF.  
 →Should also turn this ON if need power supply during utility outage  
 →This function works only if “Back-Up Supply” function is ON

**NOTE:** Off-Grid Output Switch will stay activated after first time being turned ON, unless the inverter is rebooted

#### 4. TROUBLESHOOTING ASSISTANCE

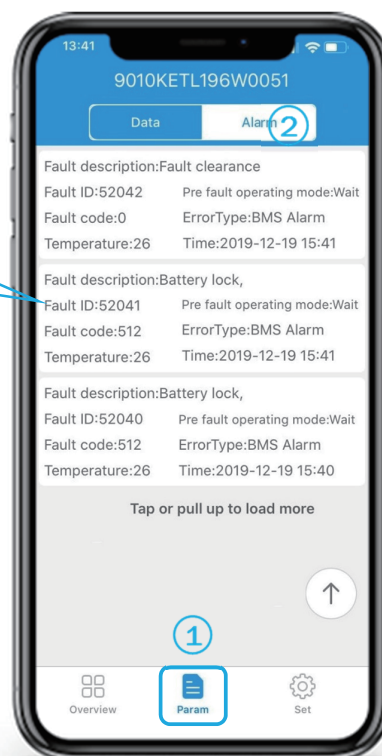
Another function of PV Master is that it integrates troubleshooting assistance information and functions like Q&A, CT test, Wi-Fi diagnosing etc. to help users or installers to find out and fix the problems, as well as system diagnose information which is a deeper information to GoodWe technical service engineers for further analysis.

##### ● Alarm

In Alarm there will be the system fault and operation warning status list up, including both real-time and historical records. This is basic information to know if there is a fault happened in the system.

*Steps: Connect to inverter → Open App → Choose inverter you want configure → Click "Param" → Click "Alarm"*

Alarm list keeps max more than 100 piece of historical alarm or warning information. Can tap or pull the page up to see earlier records.

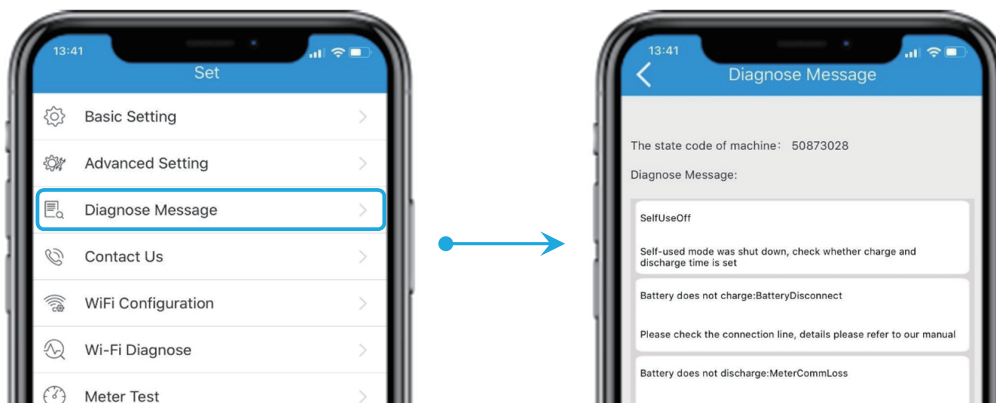


##### ● Diagnose

Diagnose information is only for real-time status of the system. It gives detailed reason why the system is working on a specific status.

So, to get the right diagnose information, must make sure the App is communicating to the inverter successfully

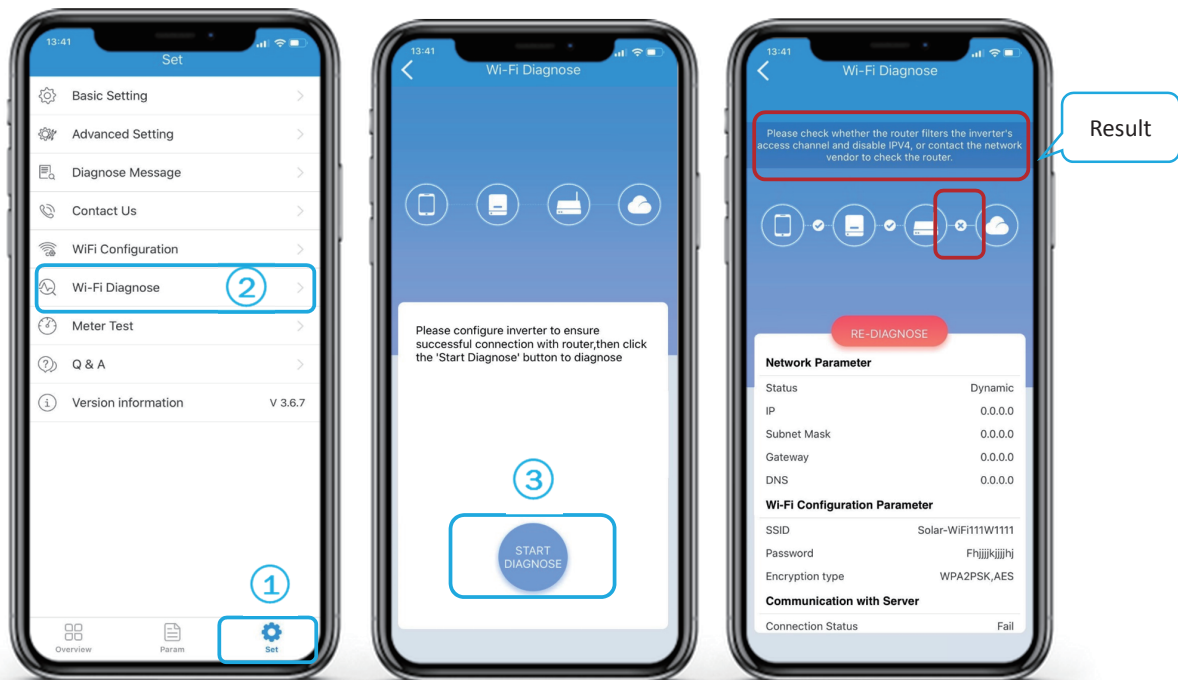
*Steps: Connect to Inverter → Open App → Choose inverter for check → Click "Set" → Click "Diagnose Message"*



## ● Wi-Fi Diagnose

Wi-Fi Diagnose helps to find out the problem in W-Fi communication route. It diagnose result will be possible reason and troubleshooting suggestions.

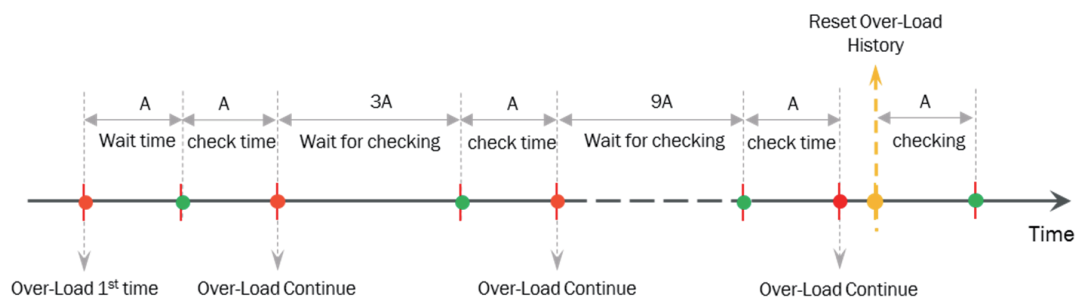
*Steps: Connect to Solar-WiFi signal → Open App → Click "Set" → Click "Wi-Fi Diagnose" → Click "Start Diagnosis"*



**NOTE:** Wi-Fi Diagnose is only available if PV Master is connecting to inverter Solar-WiFi signal directly.

## ● Reset Overload History

This function is used to clean up backup overload to reset the waiting time for backup self-checking, as the waiting time will increase triply every time if overload condition continues:



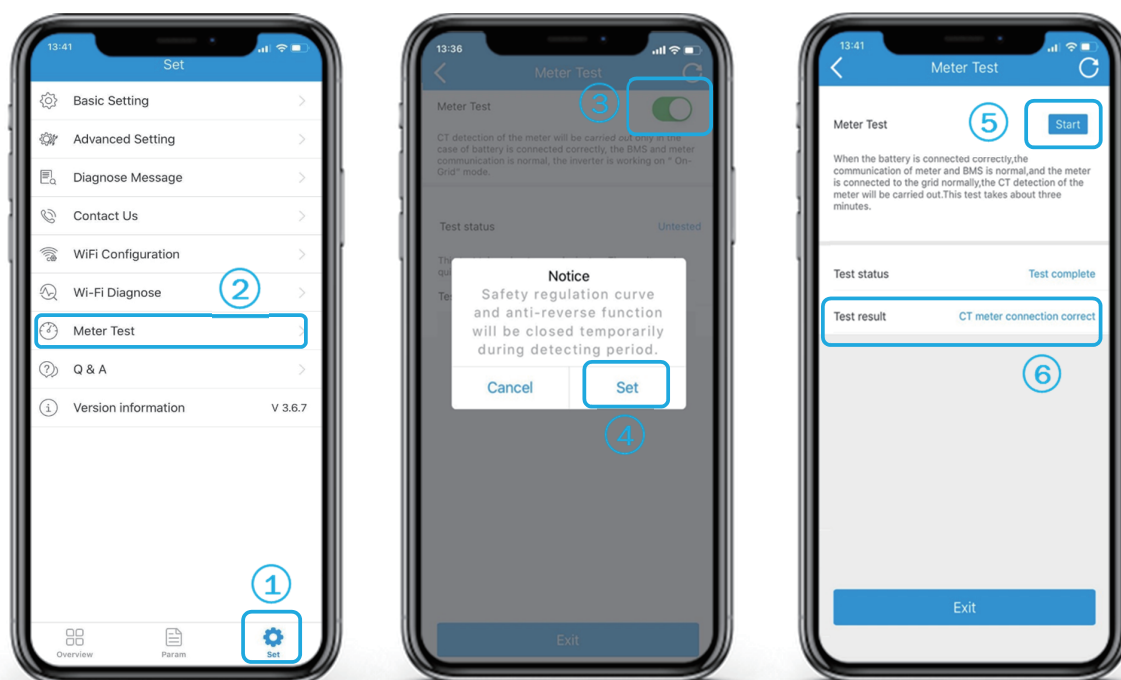
**NOTE:** Length of time A is different depends on the requirement of different safety code

*Steps: Connect to Inverter → Open App → Click "Set" → "Advanced Setting" → Click "Reset Overload History"*

## ● Meter Detection

Meter Detection is used to auto check if Smart Meter and CT is connected in the right way or not in GoodWe energy storage system

*Steps: Connect to Inverter → Open App → Click "Set" → Click "Meter Test" → Turn On "Test" → Test Result*



### NOTE:

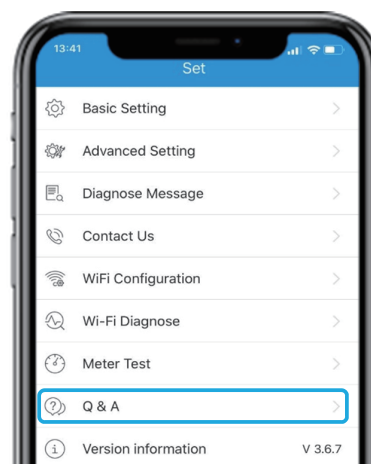
- ➔ There is another port for Meter Test -- the last step of Basic Setting
- ➔ Meter Test functions only if battery is connected and BMS communication is all right.

## ● Q&A Instruction

*In PV Master, we have prepared a Q&A list for users and installers to look for a solution for some commonly happening problems and confusions.*

*Steps: Connect to Inverter → Open App → Click "Set" → "Q&A"  
→ Choose Inverter Model → Q&A List*

*NOTE: Part of Q&A information here is based on the experience of GoodWe technical engineers. And it is not updated frequently, so if there is any confusion on Q&A list, or have conflict against your knowledge, please confirm with GoodWe technical support first.*



## 5. LOCAL MONITORING

### ● Overview Information

Overview information tells the basic system operation status and a general operation data and settings. Data refreshes automatically



Click load icon to see details of loads consumption

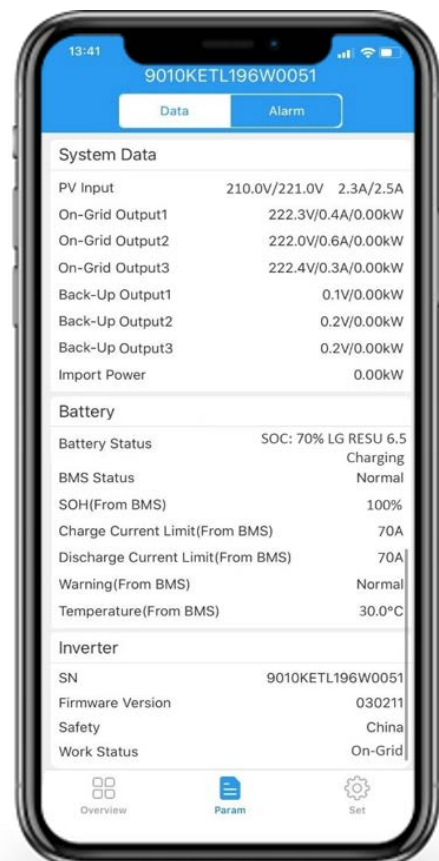
Param		
PLoad(BackUp)	0.00	kW
PLoad(OnGrid)	0.00	kW

### ● System Parameters

System parameters are very important for GoodWe technicians if you need turn to GoodWe service engineers for help.

Steps: Connect to Inverter → Open App → Click "Param"

**NOTE:** With lithium battery, all battery data is transferred directly from battery BMS system, and honestly reflected on APP without any calculation or processing.



## 6. OTHER FUNCTIONS

### ● Unbalance Output Function

Unbalance output function is only for three-phase energy storage inverters. As default this function is OFF, can switch on depends on requirement.

Steps: Connect to Inverter → Open App → Click “Set” → “Advanced Setting” → Turn On “Grid-Connected Side Unbalance Output” → Exit

#### NOTE:

- ➔ Unbalance output works only if the 3-phase smart meter is connected and communicate with inverter well.
- ➔ This functions is only for inverter on-grid side output, for backup side of the inverter, unbalance output is a default preset logic.



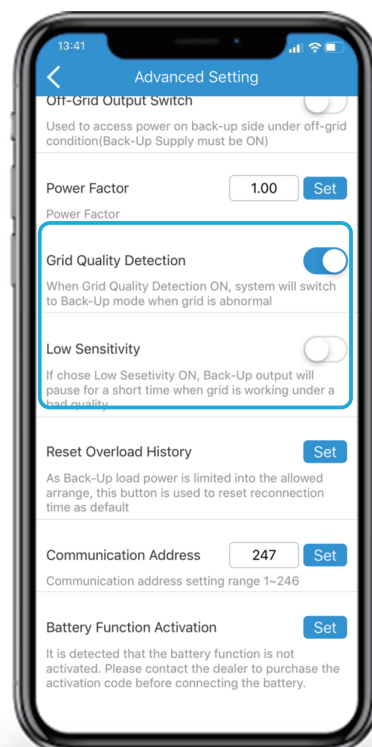
### ● Grid Quality Detection and Low Sensitivity

#### Grid Quality Detection:

Allow the system switch to off-grid operation mode if grid quality is not good (voltage not stable, electric wave is bad etc.) If turn this function OFF, then system turn to off-grid mode only if grid shutdown or grid voltage goes out of the requirement range of the chosen safety country

#### Low sensitivity:

Obtund the sensitivity of grid quality detection if system turn to off-grid mode so frequently because of grid quality issue etc. This function is editable only if “Grid Quality Detection” is turned ON





#### Appendix 1.

Information needed to GoodWe technical engineers for technical support if there is no monitoring established

Serial	Information	Reason	Route
1	Inverter SN	Param information contains the s basic operation data and operation statues of inverer battery, PV and grid, which tells whether everything is logical	Param
2	Inverter firmware Version		
3	Operation Parameters		
4	Alarm Info	Tells the detailed error information or warning code that means a lot to GoodWe technical support team	Param → Alarm
5	Diagnose Message ( Real-time	tells the detailed reason of the present operation statues. It could be difficult to understand but means a lot to GoodWe technical support team	"Set" → "Diagnose"
6	Overview Page	Overview page contains the key operation data and key functions activation	