GOODWE PARALLEL STORAGE SOLUTION

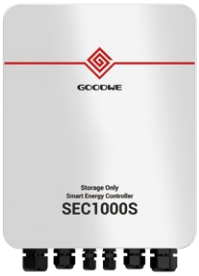
V01, updated on MAR. 15, 2021

General Introduction

Paralleling system of GoodWe three phase hybrid inverter is a solution for system capacity extension from 15kW up to 100kW. It is suitable for:

- *GoodWe ET series inverters (2~10 pieces in parallel)*
- *Self-use scenarios only*
- *Residential and minor commercial applications*

Required Devices

		
ET Inverter (2~10 pieces)	SEC1000S (1 Piece)	CT (3 pieces)

> ***Note:***
> *the CTs for the system should be carefully selected according to site requirements. GoodWe offers a range of appropriate CTs, please contact GoodWe sales for further information.*

System Wiring

Please notice that the paralleling is achieved ***only on grid*** side of ET inverters. The Backup output cannot be paralleled nor can one battery be connected to more than one inverter.

●***General Wiring System***

We take the system of three ET inverters in parallel as an example.

HYBRID SYSTEM WITH GRID-TIED INVERTER SOLUTION

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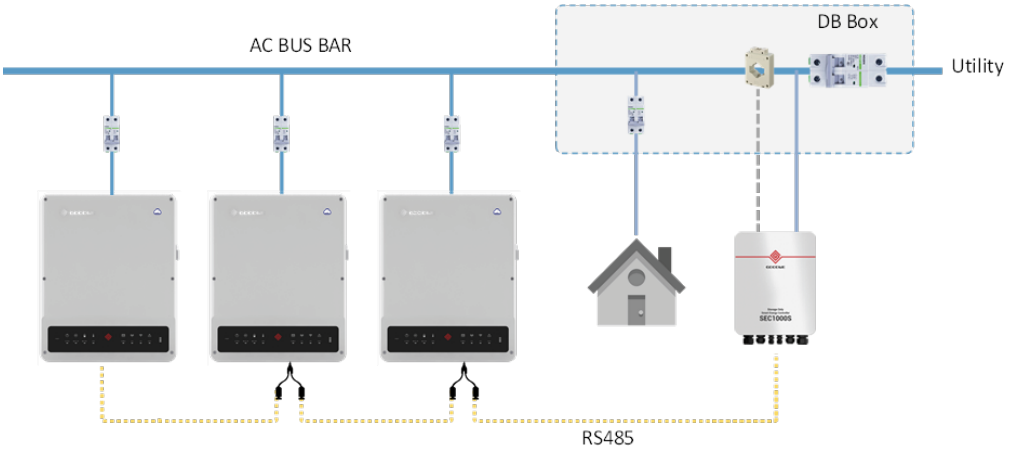
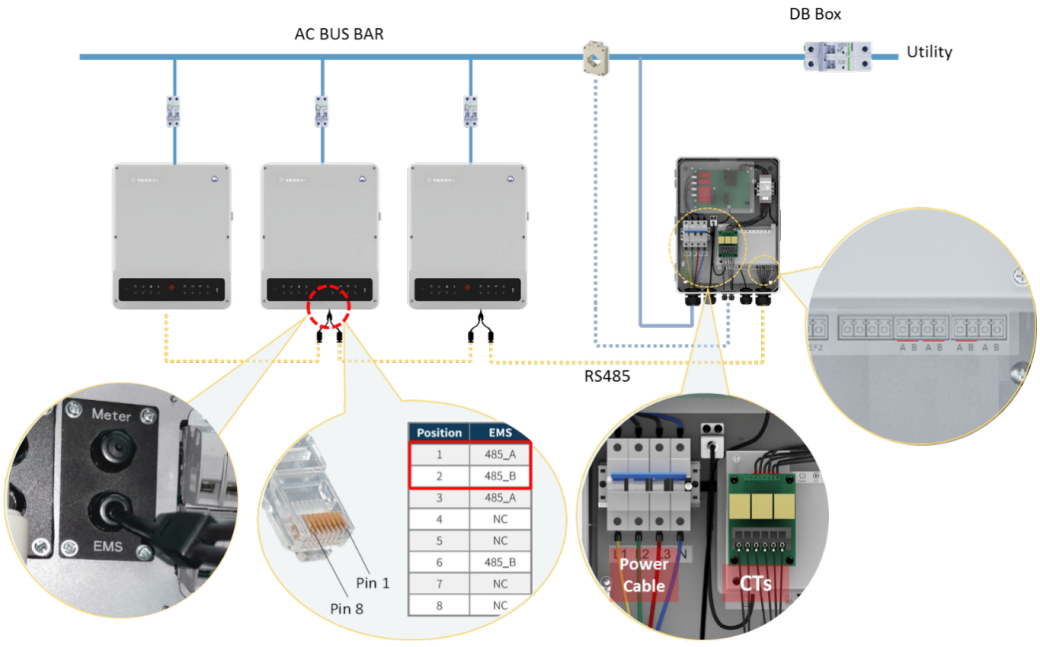


●*Communication Wiring System*

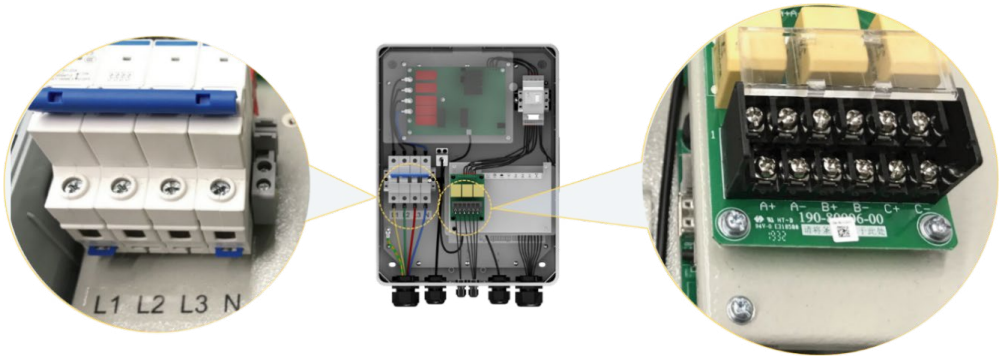
Communication cables should go through EMS ports and connect ET to the COM port of SEC1000S. Each COM port connect max. 4 pieces inverters, which must be daisy chained via Y-splitters. The maximum length of communication cable of each daisy-chain is 1000m.



●*CT and Power Cable on the SEC1000S*

The power cables on the SEC1000S are used to power up the SEC1000S and to detect grid voltage. Therefore, the power cables must be connected correspondingly with CTs:

- *CT_A (A+/A-) connects phase L1*
- *CT_B (B+/B-) connects phase L2*
- *CT_C (C+/C-) connects phase L3*



Note:

Please also ensure the CTs are facing the correct direction according to the installation instructions of the CTs.

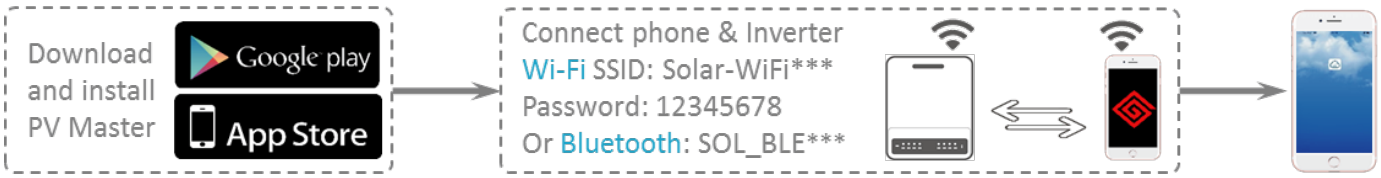
In ET parallel system, the Smart Meter (GM3000) supplied with inverter is not used. Therefore, the "To Meter" cable attached on inverter is not used either. If you cut the cable off, please make sure the gland is sealed for water-proof.

For details of system wiring, please refer to technical document "GW_ET_PARALLELING SYSTEM COMPOSITION INSTRUCTION-EN" on the official website.

System Commissioning

●***Commissioning of ET inverters***

Use GoodWe Solargo App to do the commission of each inverter separately via Wi-Fi or Bluetooth. The following figure shows how Solargo can be downloaded and connected to the inverter.



The commissioning of each inverter happens separately one by one. And please finish the commissioning of each inverter on Solargo including Basic Settings like selecting the safety code, battery type and work mode. Also it requires a unique communication address, which is executed on Advanced Setting

Note:

1. *Work Mode must be set as General Mode.*
2. *Please make sure the communication address for each inverter is unique from 1 to 10.*

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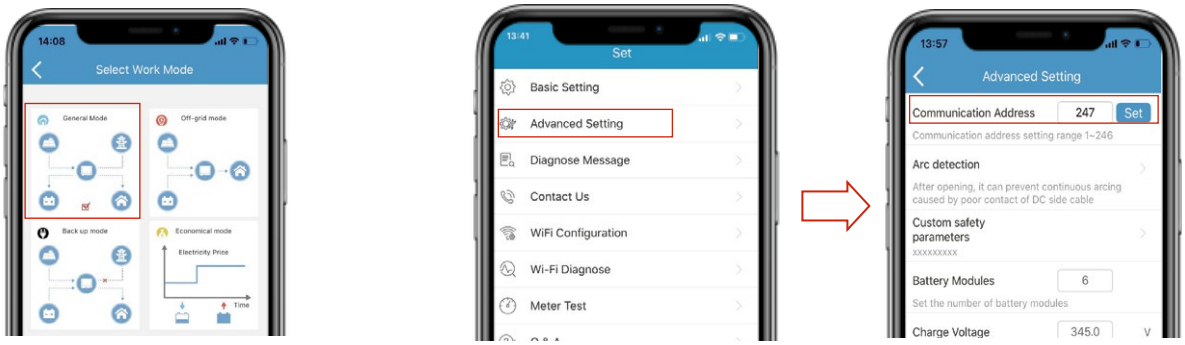
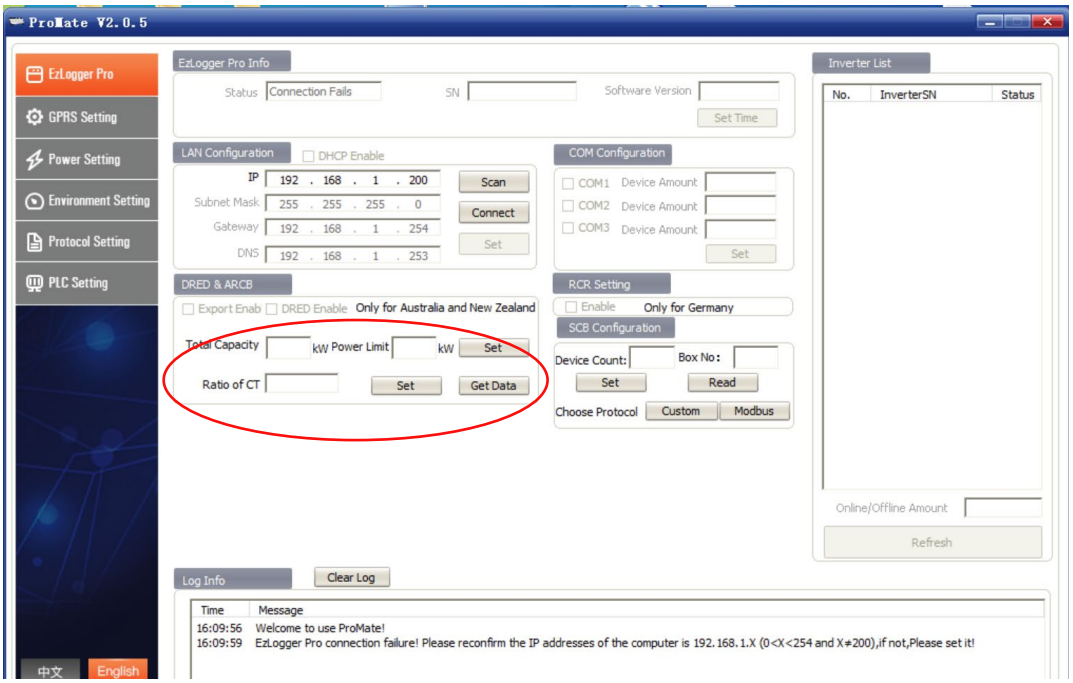


Please refer to technical document "GW_Solargo_User Manual-EN" on the official website for details of commissioning via Solargo.

- ***Commissioning of SEC1000S***

When laptop is connected to SEC1000S on NET port by a standard LAN cable, parameters such as CT ratio and system capacity can be set through ProMate.

> ***Note:***
>
> *1. Please make sure the "Total Capacity" and "Ratio of CT" are filled correctly. Otherwise the system may operate in an unexpected way.*
>
> *2. If export power limit function is required, then activate "Export Enable" and set "Power Limit Value" on ProMate interface and click "Set".*
>
> *3. For export power limit function, the system will require more than 5 seconds to limit the power. Therefore, please ensure the response time meets the requirements of your project.*



The complete commission process can be found in the technical documentation "GW_EzLogger Pro_User Manual-EN" on official website.

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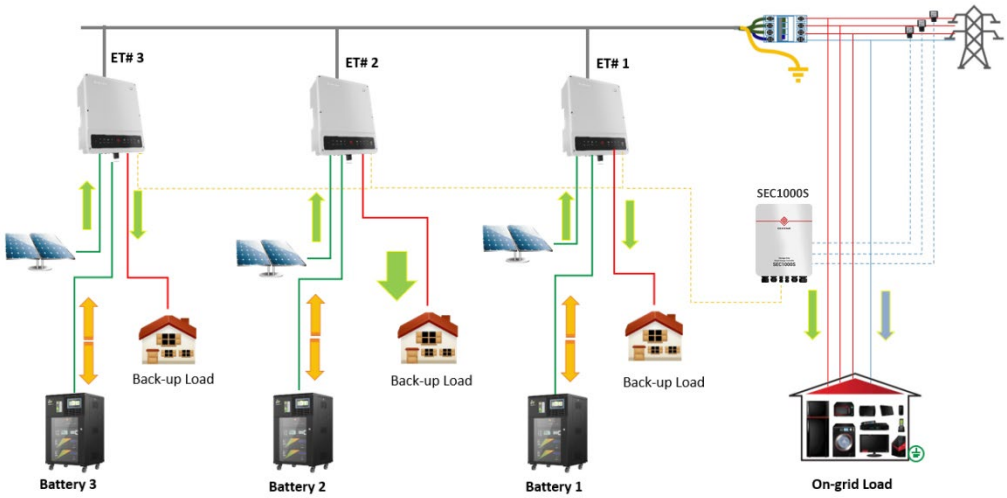
System Operation Logic

●*General Operation Logic*

In the paralleled system, loads connected to both on-grid and backup sides can be supported by solar energy generated from multiple ETs or supplied by the batteries in the system.



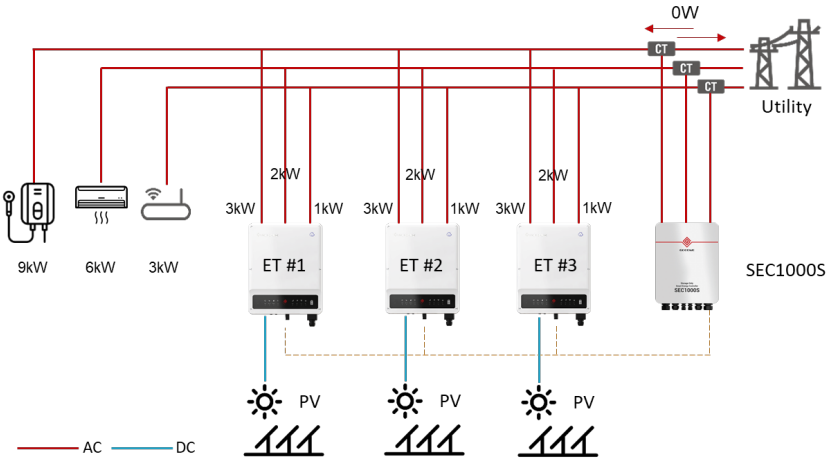
● *100% Unbalanced Output*

ET series not only have the ability of 100% unbalanced output, but also can be added in an existing three-phase on-grid system and supports 100% unbalanced charge to battery by the on-grid sub-system.

In paralleling system the 100% unbalanced output function can also be achieved when all of the following conditions are satisfied:

- *ARM firmware V16 or above*
- *DSP firmware V06 or above*
- *SEC1000S firmware V03 or above*

The figure below shows how parallel system of three ET inverters realizes this function:



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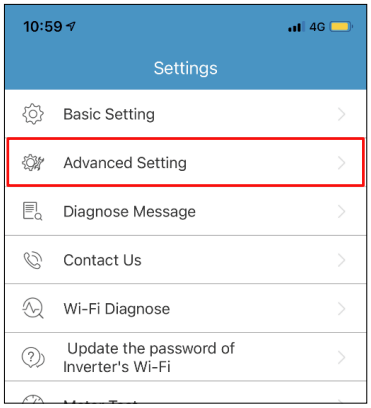
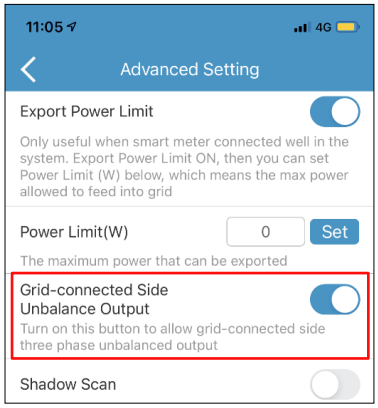
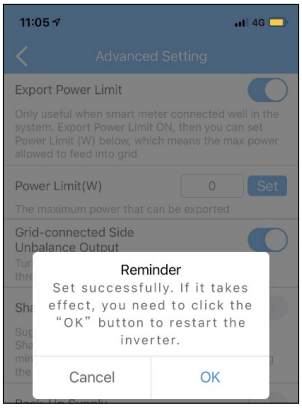
Note:

The "Grid-connected Side Unbalance Output" function of each ET must be turned on in Solargo to achieve 100% unbalanced output in parallel system.







System Monitoring

It is important to note that the SEC1000S does not provide the monitoring function. The Monitoring of the system relies on the Wi-Fi/LAN modules on each inverter. Therefore the Wi-Fi configuration should be completed on each inverter separately.

- ***Network Connection of SEC1000S***

If the firmware version of SEC1000S is 03 or above, SEC1000S can be connected to the network to obtain remote control functions. Network connection can be achieved through LAN: Insert one end of the network cable into the "NET" port of SEC1000S and the other end to route. Normally the network access is built up after LAN cable connection, allocating a dynamic IP address to the SEC1000S. But if it requires static IP address for network access, please refer to technical document "GW_EzLogger Pro_User Manual-EN".

After connecting to network, SEC1000S can be upgraded or change parameters of SEC1000S remotely, including CT ratio, installed capacity, export power and export power limit. But these remote control functions can only be implemented by GoodWe after-sales.

- ***SEMS Monitoring***

After successful Wi-Fi configuration for each ET inverter, the system data of inverters, batteries, grid data and loads will be accessible from the GoodWe SEMS Portal.

From the plant info page, the data is combined on monitoring pages as below:

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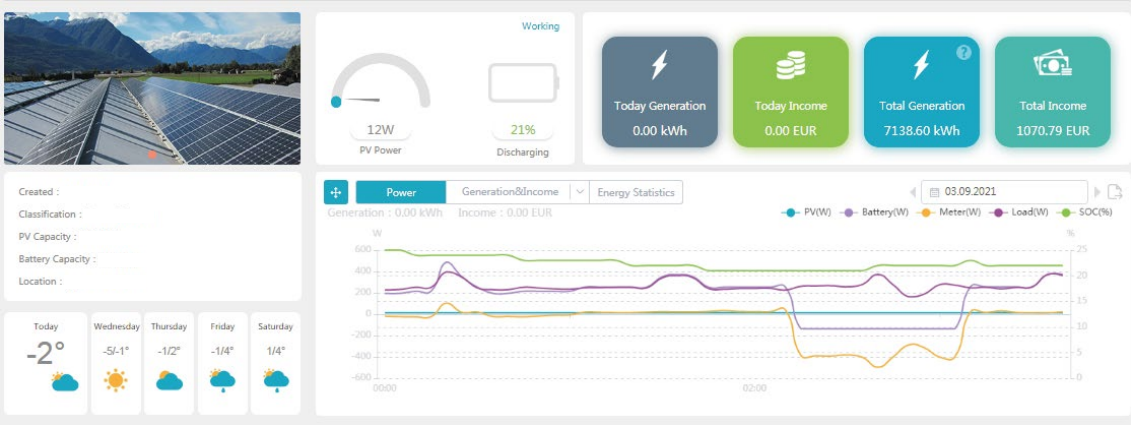
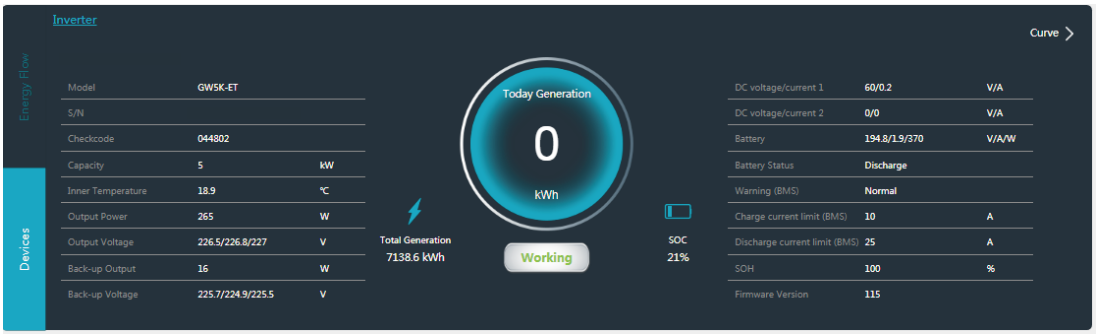


Or you can check the data of each inverter as well:



Note:

Each monitoring station registers max one piece of SEC1000S.

Important Check List

Items	Proper Settings
CTs	The secondary side shall be 5A
Inverters connected on each of the COM ports	Max 4 pieces
Inverters are daisy chained via EMS ports	Yes
CTs and power cables to SEC1000S are connected accordingly	Yes
CTs are installed in the correct direction	Yes
Communication address of each inverter are set differently on Solargo	Yes
On ProMate, the system capacity and CT ratio are set correctly	Yes
Work mode of each inverter set on Solargo	“General Mode”

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