

S6 Hybrid Series – Parallel Function Setup Guide



Introduction

Introducing the Solis S6 Hybrid inverter series with an innovative parallel function, allowing users to connect up to six devices for optimized energy production. **It's crucial to use the same size inverters and batteries for parallel connections**, ensuring seamless integration. Solis is compatible with various battery manufacturers, but users must review datasheets for compatibility.

NOTE: Currently supporting up to six devices in parallel and unbalanced loads on grid side are not yet supported. Stay tuned for updates as we work on resolving this limitation, promising a more efficient and versatile solar energy experience with Solis S6 Hybrid inverters.

Additionally, please note that inverters produced **before January 2023** do not comply with the requirements for parallel operation and, therefore, cannot be used.

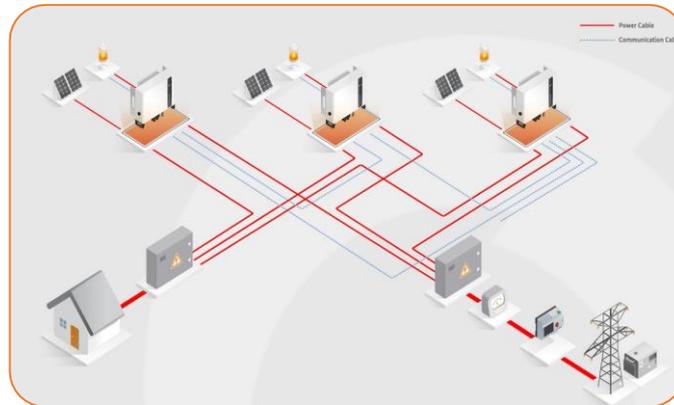


Table of content

- [Prerequisites](#)
- [Connecting the Inverters and Batteries](#)
- [Setup of Inverters via App](#)
- [Monitoring](#)
- [Troubleshooting](#)



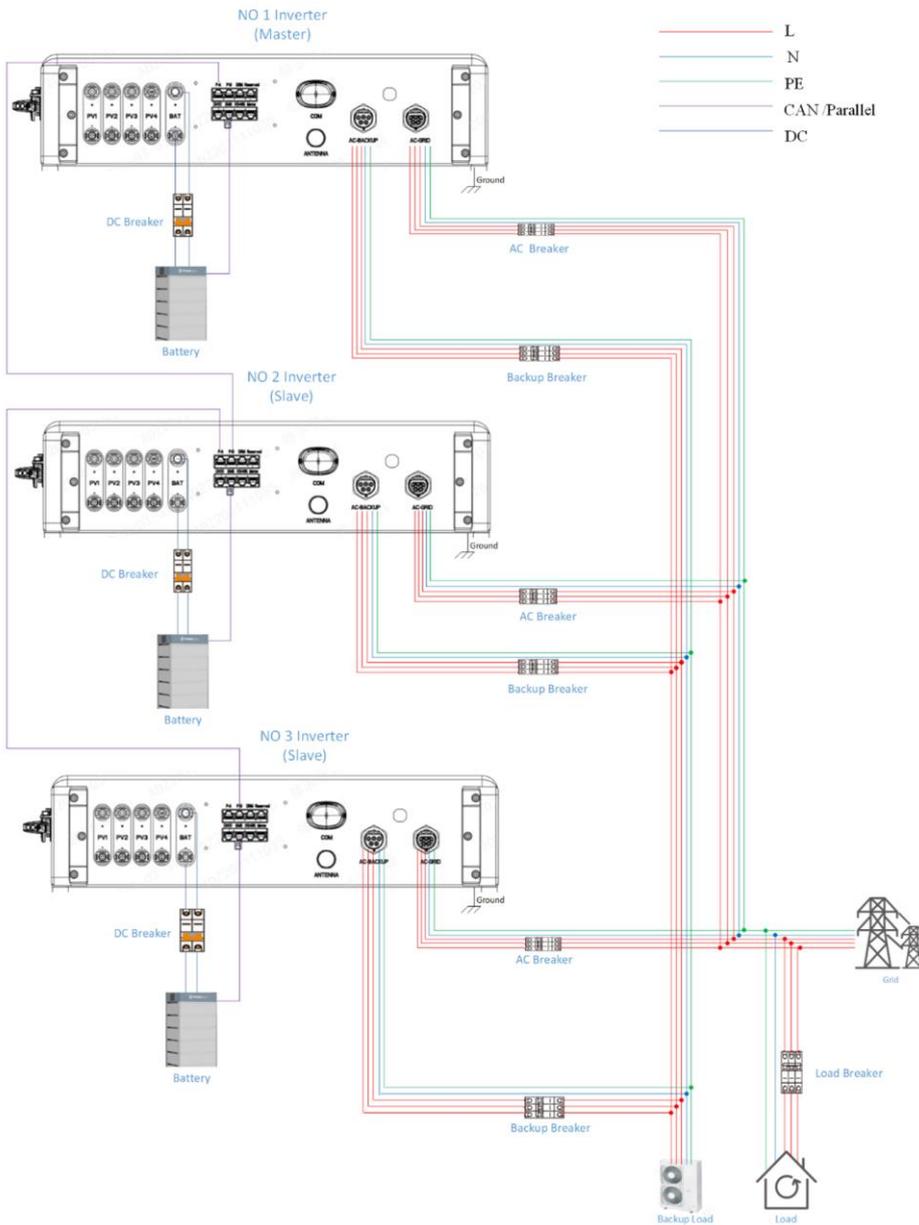
Prerequisites

Please make sure that you have the following:

- To enable paralleling, it is essential to have a specific firmware version installed on your inverter. Additionally, it is necessary for all inverters to have the same firmware version installed. Please contact the Solis Support Line for further details and assistance.
- Standard CAT5/6 ethernet cable
- Mobile phone with Solis Cloud App installed (if possible, have several phones at hand. This way it will be easier to set up all inverters)
- Only 1 Datalogger (S2 and S4 model) for monitoring (optional)

Connecting the Inverters and Batteries

Three Phase Parallel System Wiring Diagram



Inverter Connection:

Before setting up the parallel configuration, it is essential to verify the normal functioning of each individual inverter. This helps prevent anomalies in parallel inverters caused by the original parameter settings of a single inverter. Set up each inverter one by one, ensuring they operate correctly without any alarms, before connecting the parallel cable.

It is crucial to ensure the proper setup of all inverters initially. Each inverter should be configured with the correct time, work mode, country code, and appropriate battery selection. **Only the Master inverter should be connected to a meter, and the correct meter should be selected during the setup process.** Ensure that all Slave inverters have the 'No Meter' Mode correctly configured.

Refer to the Quick Setup guide in the following article for detailed instructions: <https://solis-service.solisinverters.com/a/solutions/articles/44002504766?lang=en#Quick>

Step 1

The meter and data logger only need to be connected to the master. Ensure that the 'No Meter' mode has been set on all slave inverters.

Step 2

All inverters should be connected to the same ground point to eliminate the possibility of a voltage potential existing between inverter grounds.

Step 3

Power grid output and backup output from the inverter should be connected in parallel as per the diagram above.

Step 4

Ensure that each inverter with a battery has its CAN communication cable connected to the BMS of the battery. Please refer to the battery manufacturer's manual for specifications on how to connect the CAN cable.

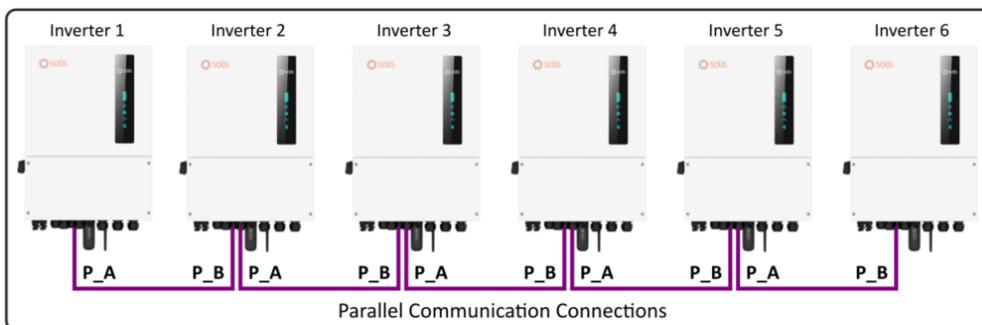


Step 5

There are two RJ45 ports on the inverter (Parallel A, the left one, and Parallel B, the right one – see image below) designed for communication between multiple Solis S6 hybrids. We use the CAN protocol as the communication protocol, and these ports cannot be used for any other purpose besides daisy-chaining Solis S6 hybrids together.



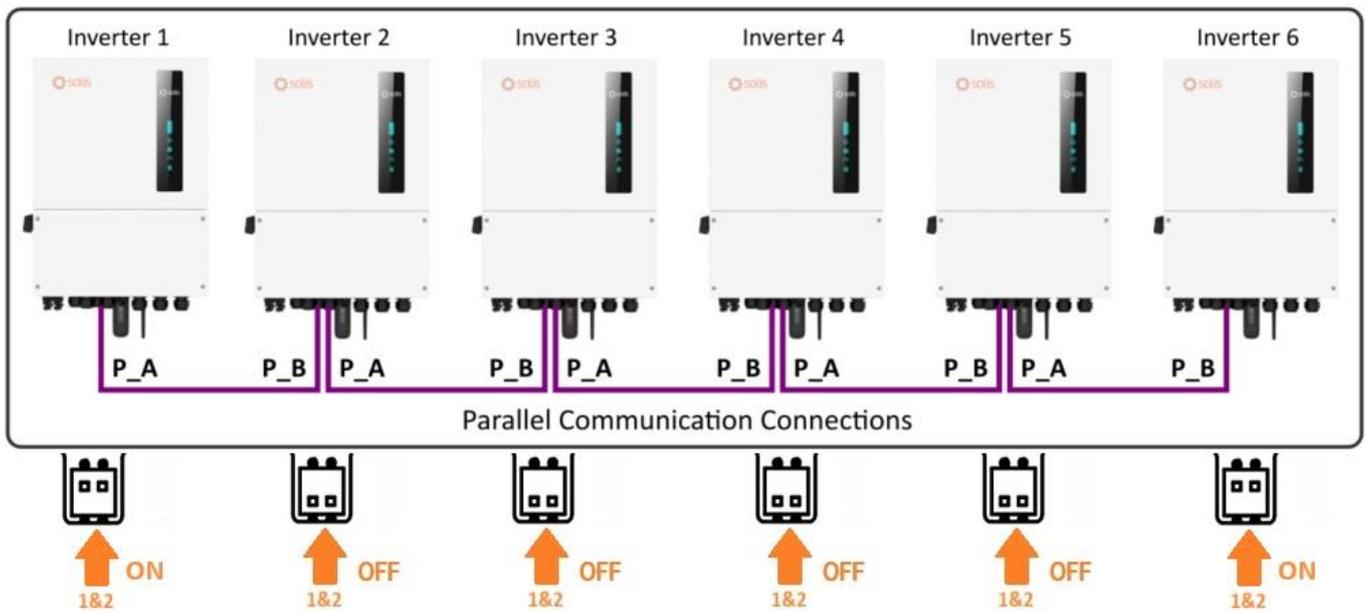
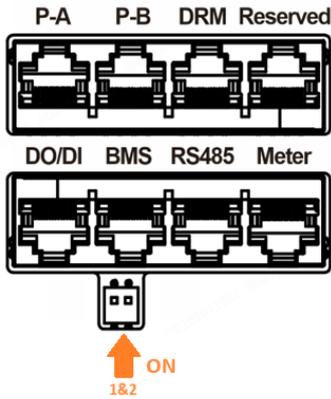
Connect the cables to the parallel system. The P-A and P-B communication cables are provided with the inverter. You can connect up to 6 inverter units in parallel. Ensure that the P-A and P-B terminals of the inverters are connected in a daisy chain configuration, as illustrated in the diagram below (The master machine's Parallel A port should connect to the slave machine's Parallel B port. Then, connect the slave's Parallel A port to the next slave's Parallel B port, with subsequent machines connecting in the same manner.).



E.g. Inverters Master P-A >> Slave 1 P-B || Slave 1 P-A >> Slave 2 P-B

Step 6

Adjust the inverter dip switches on the communication interface of the inverter (Note: The dip switch upward means ON and downward means OFF)



Before starting and running a parallel system ensure that both parallel dip switches 1 & 2 are both set to the "ON" position ONLY on the FIRST and LAST inverter.



Battery Connection:

Note: Currently connecting 2 batteries in parallel with only the Master inverter communicating with the BMS is not supported. You do need to connect 2 separate batteries and each battery BMS should be connected with the individual Master/Slave inverter.

Once this function will be supported, we will update this article, so please check at a later time or contact the Support line, if you need further information.



Setup of Inverters

To establish a connection to your inverter, ensure that you have the 'SolisCloud' app installed on your phone. If you do not already have the app, please use the following codes to install it.

SolisCloud Monitoring APP (Android)



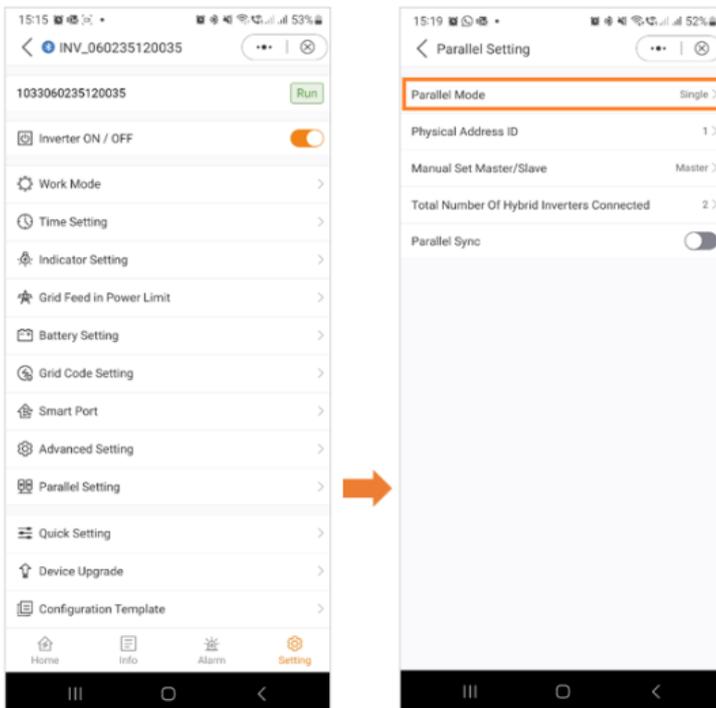
SolisCloud Monitoring APP (IOS)



Note: If you are using the 'Self Use' Mode and you wish to set up Time Charging, be advised to configure time charging after completing the entire paralleling setup. The reason is that once the system is fully set up, the master will send all information/settings to the slave inverter. This may save you some time.

When you are ready to configure the paralleling options, it is essential to note that the SLAVE should be set up first using the app. Only after all Slave inverters have been properly configured should the MASTER be set up.

Follow the instructions below to configure your inverters.
Log onto the inverter via Bluetooth.
Once connected, navigate to 'Settings' and then select 'Parallel Settings'.



STEP 1:

Set up the **SLAVE** inverters as follows:

Parallel Mode Setting:

Parallel Setting	
Parallel Mode	Parallel >
Address ID	2 >
Manual Set Master/Slave	Slave >
Total number of hybrid inverters connected	2 >
Parallel Sync	<input type="checkbox"/>

Set all inverters to parallel mode

Set Address:

Parallel Setting	
Parallel Mode	Parallel >
Address ID	2 >
Manual Set Master/Slave	Slave >
Total number of hybrid inverters connected	2 >
Parallel Sync	<input type="checkbox"/>

Give each inverter an individual ID address ranging from 2 up to 6. Only the master should have address 1. (**Note:** The address cannot be set to 0)

Set Slave:

Parallel Setting	
Parallel Mode	Parallel >
Address ID	2 >
Manual Set Master/Slave	Slave >
Total number of hybrid inverters connected	2 >
Parallel Sync	<input type="checkbox"/>

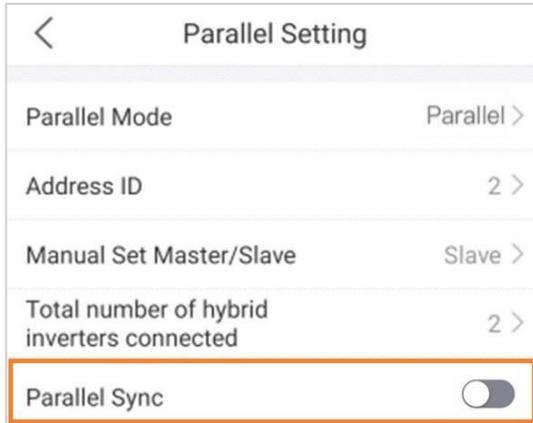
All inverters must be set to the slave, and ONLY the last inverters to the master. If the Settings are incorrect, a multi-host fault is reported.

Number of Inverters:

Parallel Setting	
Parallel Mode	Parallel >
Address ID	2 >
Manual Set Master/Slave	Slave >
Total number of hybrid inverters connected	2 >
Parallel Sync	<input type="checkbox"/>

The correct number of inverters should appear automatically (range 2~6)

Parallel Sync switch:



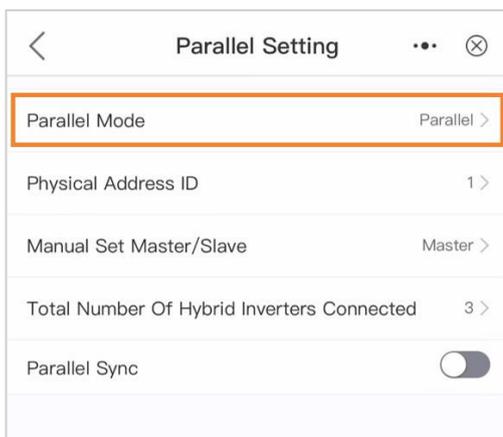
If Parallel Sync is switched on, working modes and other Settings can be synchronously set through the Master, rather than set separately for each slave machine. **IMPORTANT:** Do not switch on the "Parallel Synch" function yet. This will be done at a later stage.



STEP 2:

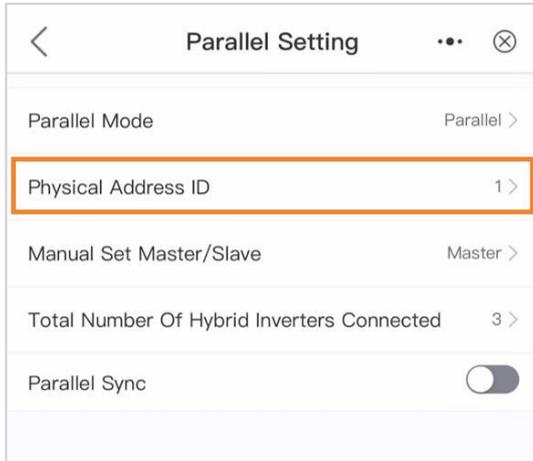
Set up the **MASTER** inverter as follows:

Parallel Mode Setting:



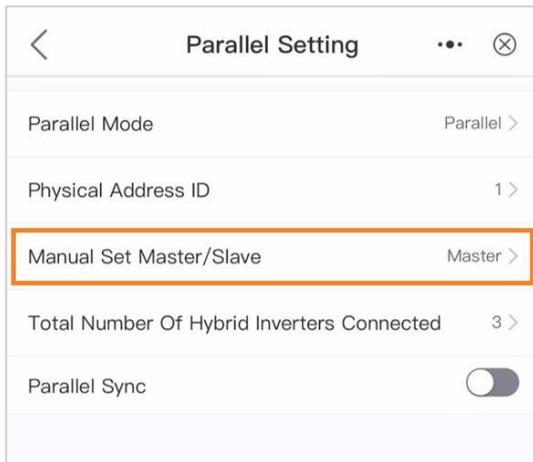
Set the Master inverter to parallel mode

Set Address:



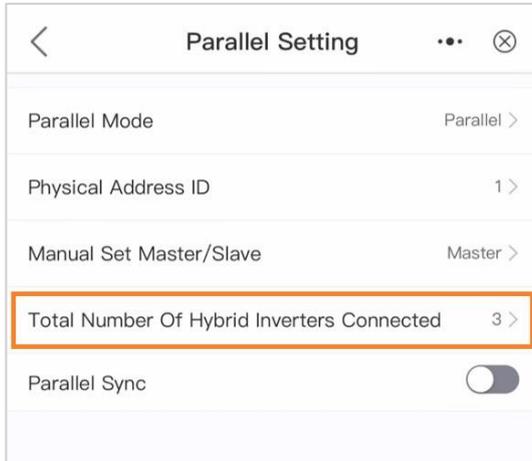
The physical address of the master **must be 1**. (**Note:** The address cannot be set to 0)

Set Master:



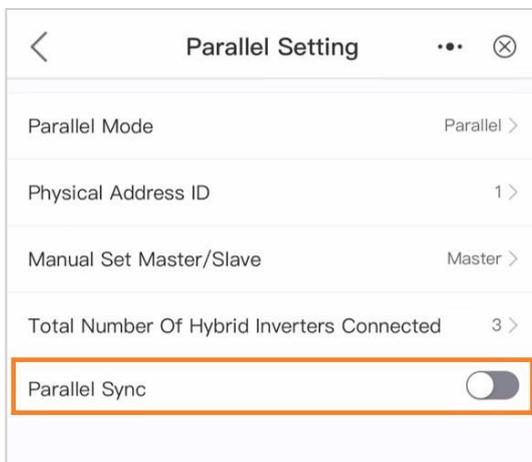
Set to "Master".

Number of Inverters:



The correct number of inverters should appear automatically (range 2~6)

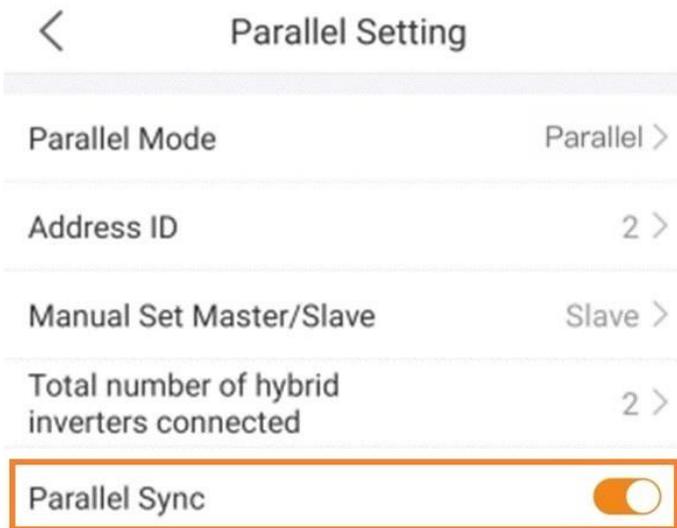
Parallel Sync switch:



Do not activate "Parallel Sync" option on the Master yet.

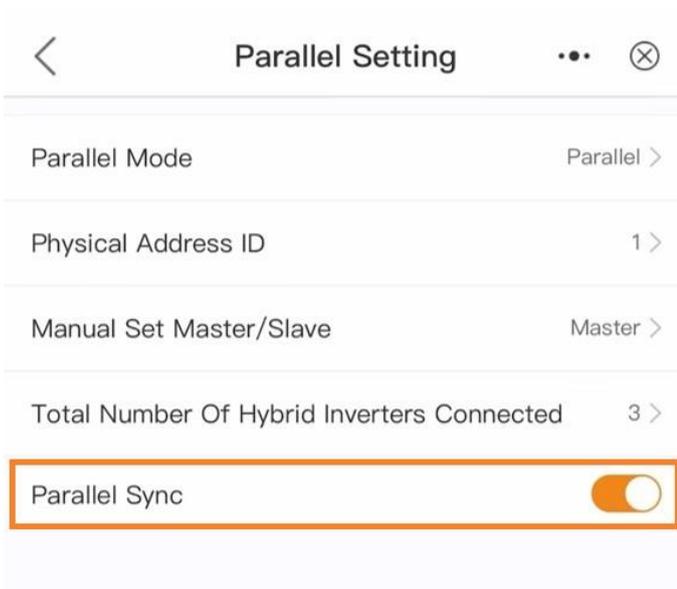
STEP 3:

Activate "Parallel Synch" on the **SLAVE** inverters



STEP 4:

Activate "Parallel Synch" on the **MASTER** inverter



Note: Once Parallel Sync has been enabled, you won't be able to change any settings on the slave inverters anymore. All settings will be controlled by the Master inverter only. Therefore, ensure that all settings, such as enabling the 'No Meter' Mode, are completed on the slave inverters beforehand.

STEP 4:

Power up the System in the following order

- A. Start up DC side (otherwise you will get an UN-BUS Alarm)
- B. Connect the AC side
- C. Power up the batteries



Monitoring

Since we do not yet support firmware updates through the Master inverter, we suggest that each inverter has its own Datalogger. This will provide the support team with the ability to update each inverter if needed. Ensure that you have a compatible logger, either from the S2 or S4 Series. Connect the logger to the Master/Slaves Inverters. For monitoring purposes, please create one plant on Soliscloud and **only add the Master Logger** to this plant. You will be able to see everything, from PV production to battery behaviour, through the master inverter.

Compatible Loggers

S2-WL-ST



S4-WiFi-ST

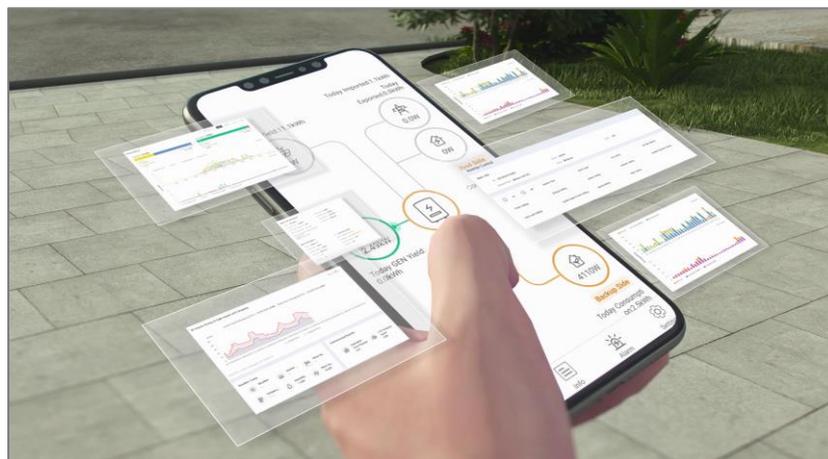
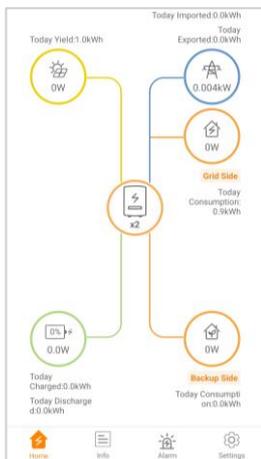


To set up your plant, please follow the instructions outlined in the following article: <https://solis-service.solisinverters.com/a/solutions/articles/44002374987?lang=en>

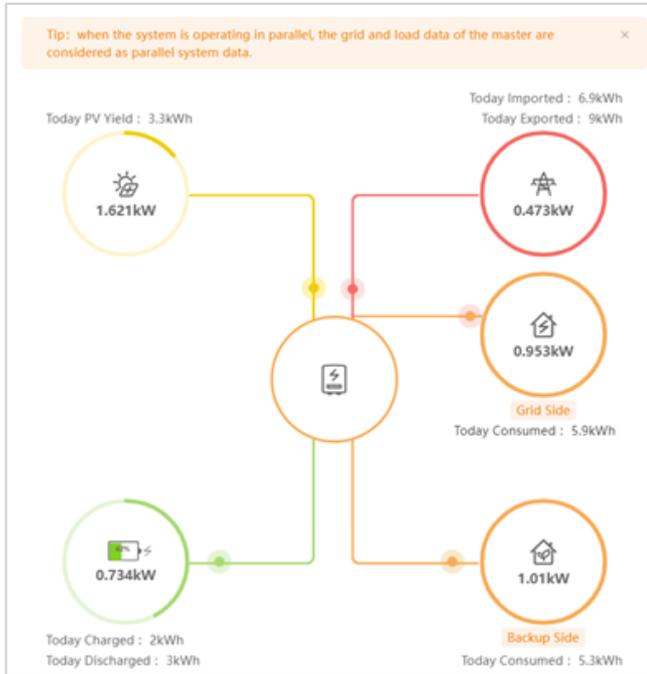
Once connected, you will be able to view all your plant details, including PV production, battery, and load consumption. You will see your **complete** plant details all via the MASTER inverter.

Note: Additionally, all alarm messages are transmitted from the slave inverters to the Master inverter. Therefore, you only need to check the Alarm Log on the Master Inverter, saving you time.

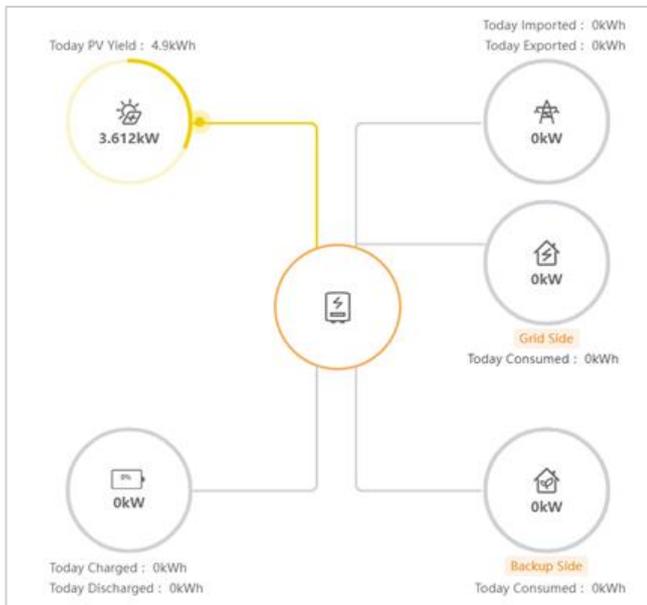
Master Inverter energy flow interface – App view:



Master Inverter energy flow interface – PC view:



Slave Inverter energy flow interface – PC view:



If you choose not to add your plant to Soliscloud via the Datalogger, you also have the option to connect directly to the inverter via Bluetooth and monitor your plant in this manner. However, it is important to note that Solis strongly recommends connecting your plant to Soliscloud to facilitate maintenance, troubleshooting, and firmware updates when needed.

Troubleshooting

If you encounter any issues, refer to the troubleshooting guide provided. If the problem persists or you are unable to resolve it, feel free to contact your local Solis Support without hesitation.

Please ensure that before checking the Alarm Messages, the DIP switches are in the correct position. This is crucial for the proper functioning of the plant.

Fault Name	Code	Possible Solution
The slave synchronization signal is lost abnormally	SlaveLoseErr(1060)	<ol style="list-style-type: none"> 1. Check whether the parallel line is loose, resulting in no communication; 2. Whether the parallel line in the product accessories is not used; 3. Check whether it is an 8-core wire, the communication is disconnected due to the lack of core; 4. Check whether the wire has a shielding layer; 5. Restart the inverter. If the fault persists, contact customer service.
The synchronization signal of the master computer is lost abnormally	MasterLoseErr(1061)	<ol style="list-style-type: none"> 1. Check whether the parallel line is loose, resulting in no communication; 2. Whether the parallel line in the product accessories is not used; 3. Check whether it is an 8-core wire, the communication is disconnected due to the lack of core; 4. Check whether the wire has a shielding layer; 5. Restart the inverter. If the fault persists, contact customer service.
The synchronization signal period of the slave is abnormal	SlavePrd-Err(1062)	<ol style="list-style-type: none"> 1. Check the quality of the local grid, poor grid quality may lead to the problem; 2. Check whether the parallel signal circuit is abnormal; 3. Restart the inverter. If the fault persists, contact customer service.
The synchronization signal period of the	MasterPrd-Err(1063)	<ol style="list-style-type: none"> 1. Check the quality of the local power grid, poor power grid quality may lead to the problem;

master computer is abnormal		<ol style="list-style-type: none"> 2. Check whether the parallel signal circuit is abnormal; 3. Check whether the parallel signal lines are connected correctly; 4. Restart the inverter. If the fault persists, contact customer service.
Physical address conflict	Addr-Conflict(1064)	<ol style="list-style-type: none"> 1. Check whether two or more machines in the parallel system have the same address 2. If the fault still cannot be cleared, restart the inverter. If the fault persists, contact customer service.
Heartbeat packet loss	HeartbeatLose(1065)	<ol style="list-style-type: none"> 1. Check whether the host address in the parallel system is set to 0, and the address must start from 1; 2. Check whether the parallel signal circuit is abnormal; 3. Check whether the parallel signal lines are connected correctly; 4. Restart the inverter. If the fault persists, contact customer service.
The DCAN register is abnormal	DCanErr(1066)	<ol style="list-style-type: none"> 1. Check whether the parallel line is loose, loose may lead to no communication; 2. Whether the parallel line in the product accessories is not used; 3. Check whether the 8-core wire is not used, and the communication is disconnected due to the lack of core; 4. Check whether the wire without shielding layer; 5. Check the hardware problems (can communication device damage, power supply or serious interference, etc.); 6. Restart the inverter. If the fault persists, contact customer service.
Multiple master errors	MulMasterErr(1067)	<ol style="list-style-type: none"> 1. Check whether there are 2 or more masters in the parallel system; 2. Check whether the host address in the parallel system is set to 0, and the address must start from 1; 3. If the fault still cannot be cleared, restart the inverter. If the fault persists, contact customer service.
The master & saver on-grid and off-grid modes are not synchronized	ModeConflict(1068)	<ol style="list-style-type: none"> 1. Check whether the parallel line is loose, resulting in no communication; 2. Whether the parallel line in the product accessories is not used; 3. Check whether it is an 8-core wire, the communication is disconnected due to the lack of core; 4. Check whether the wire has a shielding layer;

		5. Restart the inverter. If the fault persists, contact customer service.
When the master is offline, the voltage is not synchronized with the master when the saver is connected	S-PlugVoltErr(1069)	1. Check whether the phase sequence of the AC side of the slave is consistent with that of the master; 2. Restart the inverter. If the fault persists, contact customer service.
Other inverters are faulty	Others'Fault(106A)	1. Check the failure of the master, so as to troubleshoot; 2. Restart the inverter. If the fault persists, contact customer service.
The CAN bus is lost	CAN BUS LOSE (106B)	1. Check whether the parallel line is loose, loose may lead to no communication; 2. Whether the parallel line in the product accessories is not used; 3. Check whether the 8-core wire is not used, and the communication is disconnected due to the lack of core; 4. Check whether the wire without shielding layer; 5. Check the hardware problems (can communication device damage, power supply or serious interference, etc.); 6. Restart the inverter. If the fault persists, contact customer service.



Connect with Solis

