Configuration Instructions

H2 Series

HS2/AS2 Series

HS3 Series

Table of Contents

1. Required Devices

- H2 series hybrid inverter
- HS2/AS2 or HS3 series all-in-one hybrid inverter, integrated with a battery control unit
- BC2 series battery control unit
- BU3 or BU2 series battery
- BC3 battery combiner box

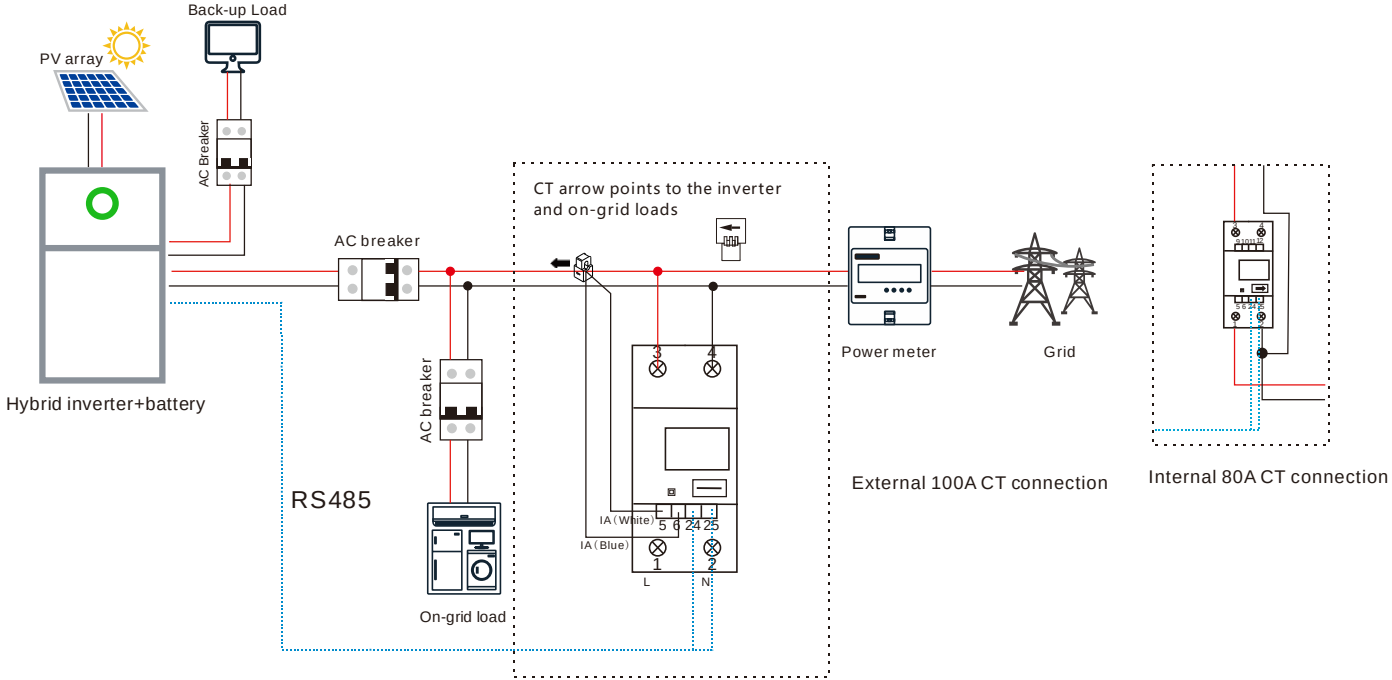
Equipment	One hybrid inverter	One hybrid inverter + Solar inverter (AC-coupling)	Multiple hybrid inverters (paralleling)	Multiple hybrid inverters + Solar inverter (paralleling + AC-coupling)
Inverter and batteries	● H2 + BC2 + BU2; ● HS2/AS2 + BU2; or ● HS3 + BU3 + BC3 (BC3 is required only in the battery cascading scenario)			
Solar inverter	/	Yes	/	Yes
Meter	1	2*	/	Depending on the phase current of the solar inverter: ● Current ≤ 63A: 0 ● Current > 63A: 1
EMS	/	/	1	1
External CT	● 1-phase: 1 ● 3-phase: 3	● 1-phase: 2 ● 3-phase: 6	● Current ≤ 63A: Not required ● Current > 63A: ➢ 1-phase: 1 ➢ 3-phase: 3	
	Note: Not required if you use an 80 A meter which has CT integrated.		/	**Note:** If you use a meter because the phase current of the solar inverter exceeds 63A, the CT quantity here will be doubled.

* If two meters are required, on the grid side, use Meter 1 (with preset address 1) in the brown package box; on the solar inverter side, use Meter 2 (with the preset address 2) in the white package box.

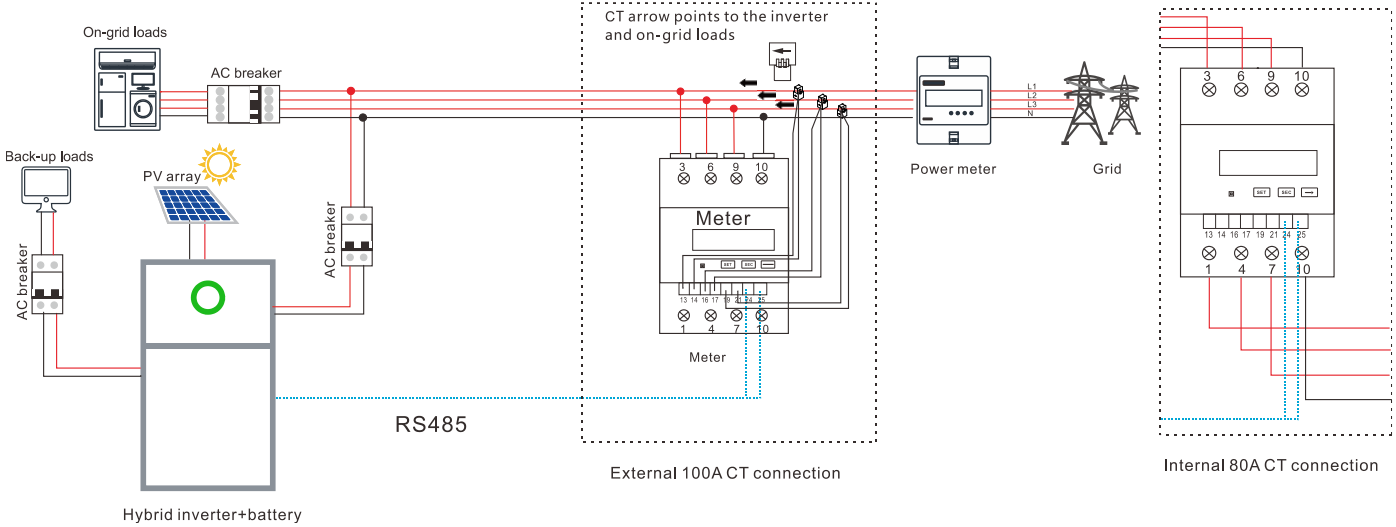
ATTENTION: Do NOT change the default addresses of the two meters.

2. System Connection: Single-phase hybrid inverter

2.1. One hybrid inverter, single-phase grid



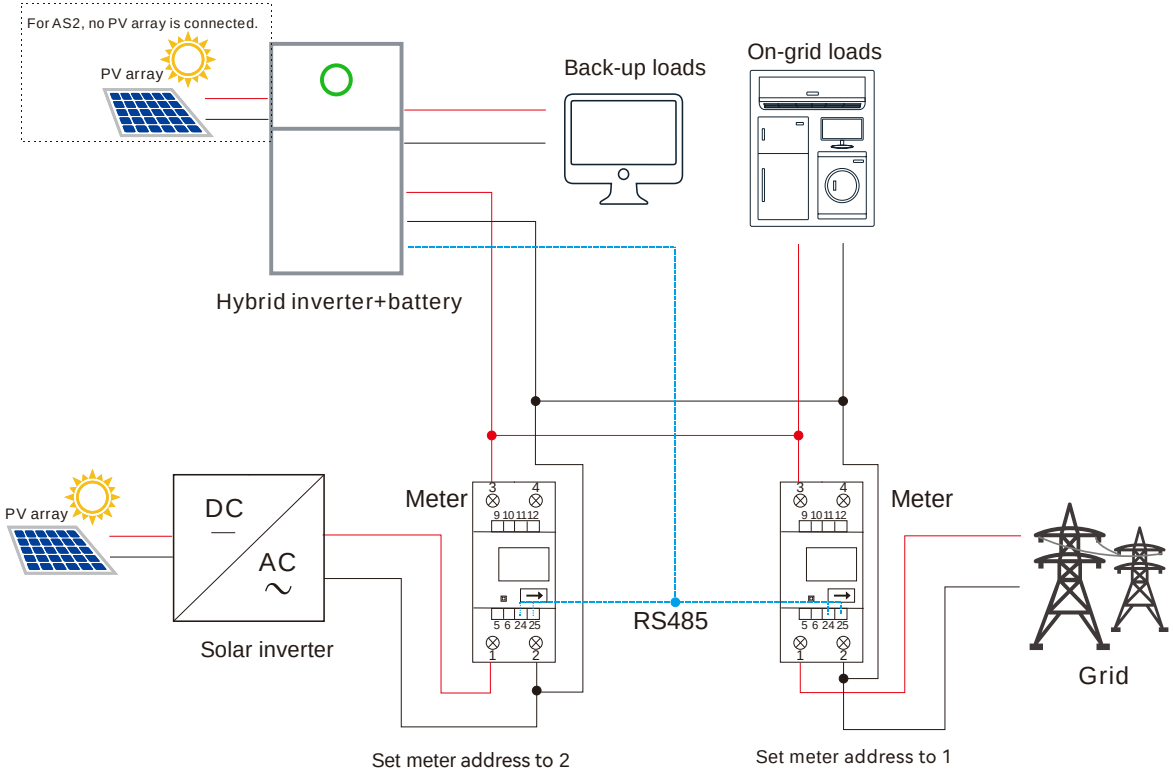
2.2. One hybrid inverter, three-phase grid



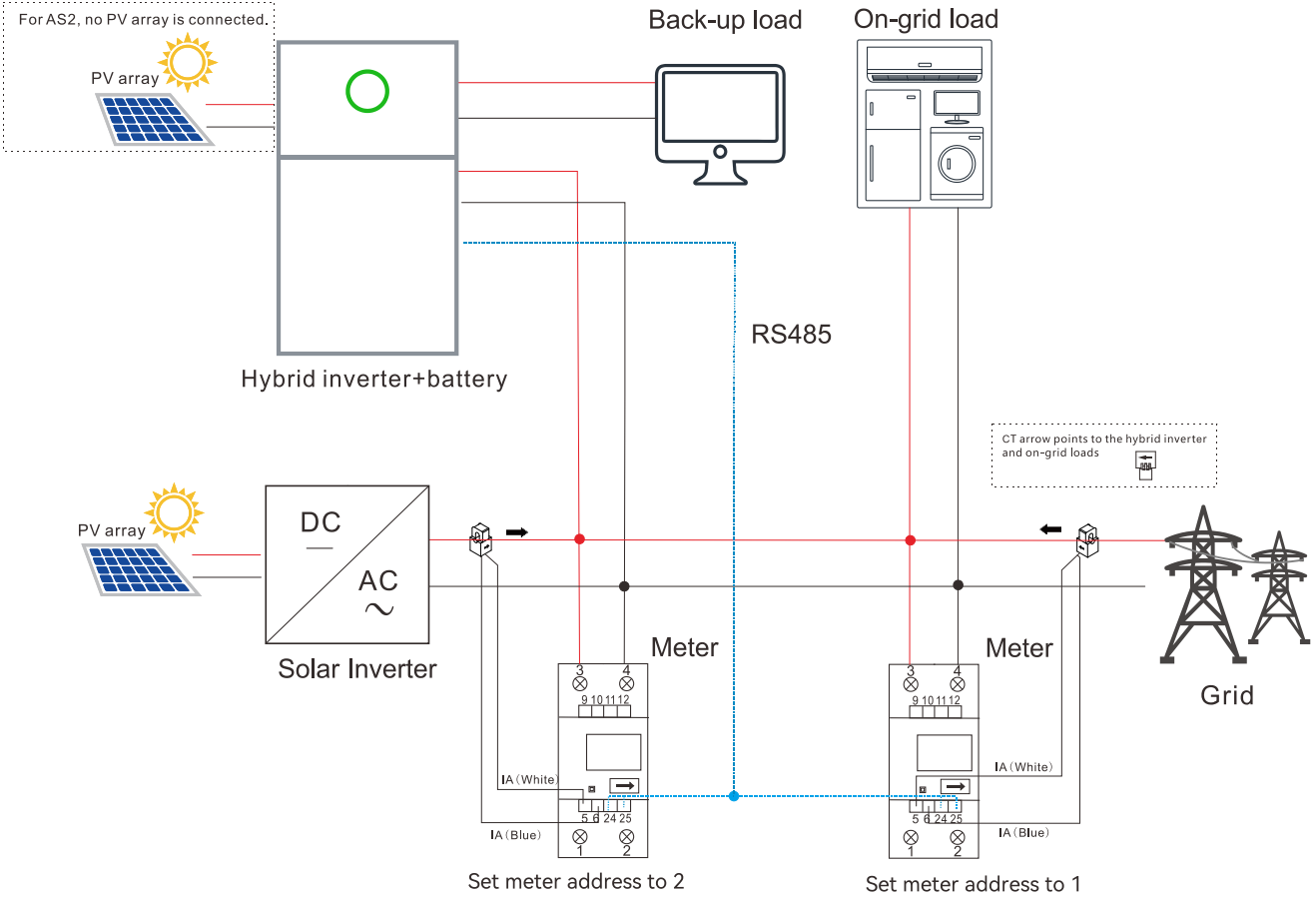
2.3. One hybrid inverter, solar inverter, single-phase grid (AC-coupling connection)

Before connection, contact SAJ technical support to confirm the detailed operations.

2.3.1. Internal 80 A CT connection (current ≤ 80 A)



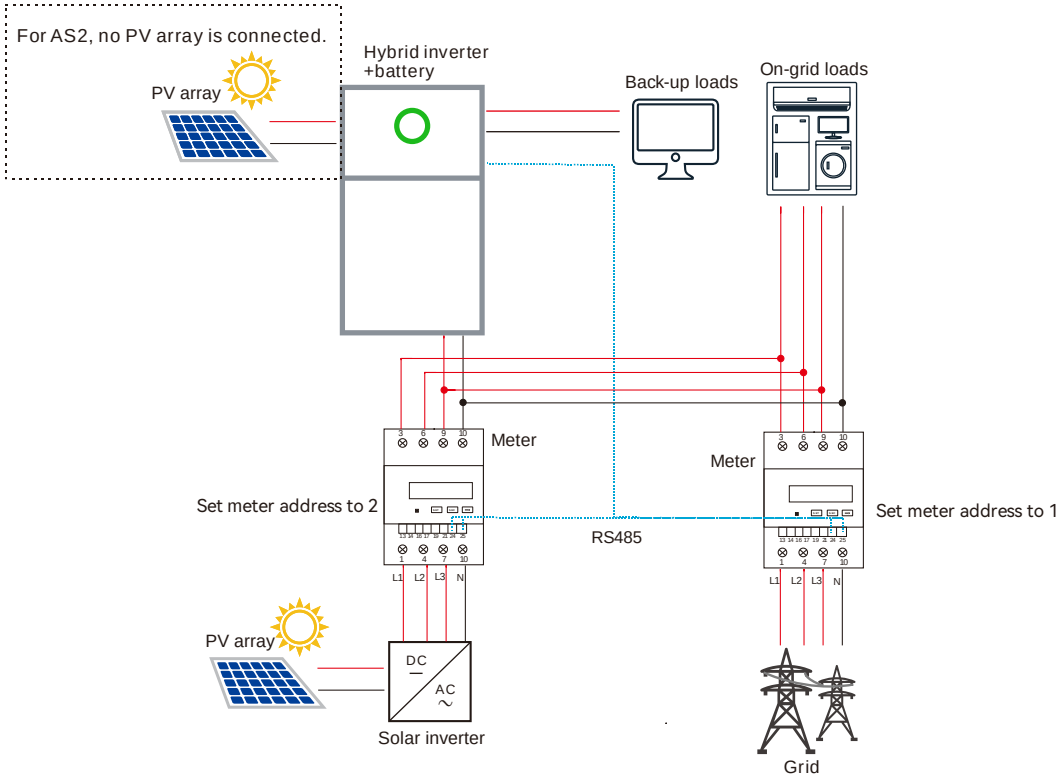
2.3.2. External 100 A CT connection (current ≤ 100 A)



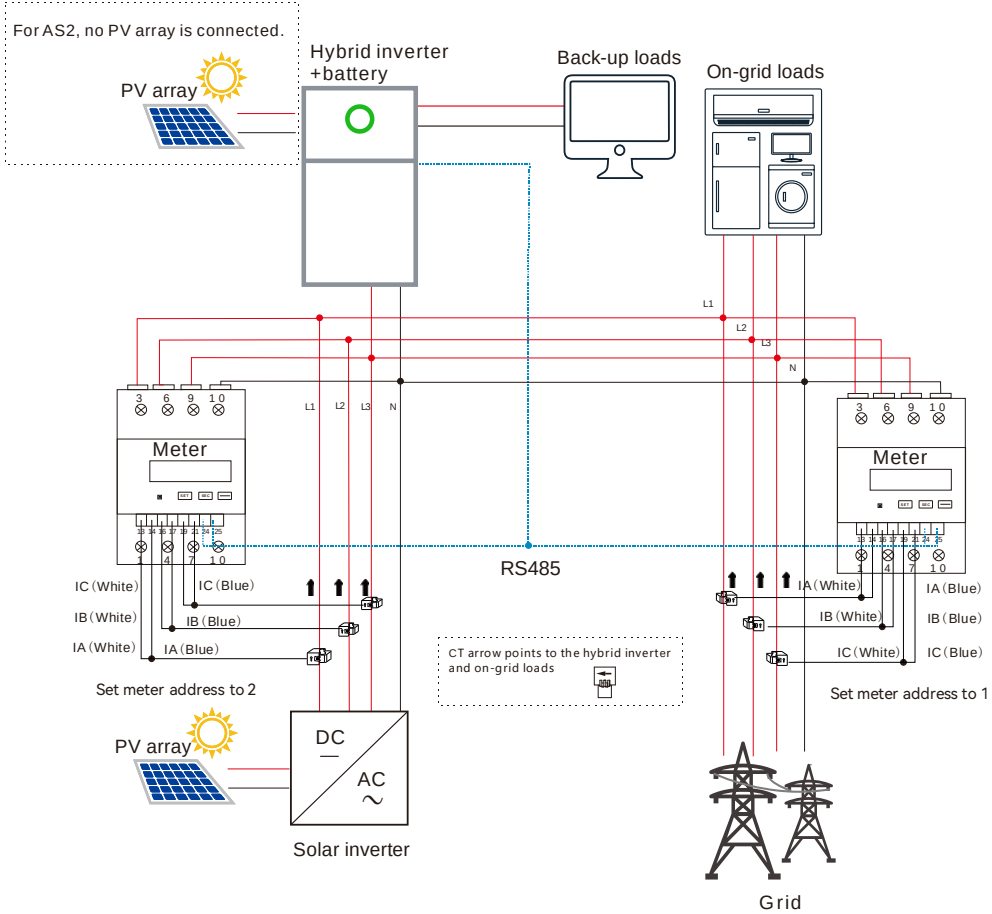
2.4. One hybrid inverter, solar inverter, three-phase grid (AC-coupling connection)

Before connection, contact SAJ technical support to confirm the detailed operations.

2.4.1. Internal 80A CT connection (current ≤ 80 A)



2.4.2. External 100A CT connection (current ≤ 100 A)



2.5. Multiple hybrid inverters, one EMS (paralleling connection)

Before connection, contact SAJ technical support to confirm the detailed operations.

2.5.1. RS485 connection (up to 6 inverters)

Supported inverter models:

- H2-(3K-6K)-S2
- HS2-(3K-6K)-S2

Connect the communication cables from the RS485 port on the inverter to the corresponding terminals on the eManager. If the RS485 port is not available on the inverter, use the EMS/Meter port.

From the RS485 or EMS/Meter port on the inverter	To the RS485 terminals on the eManager
Pin 7	RS485-A
Pin 8	RS485-B

Notes:

The eManager provides three pairs of RS485 terminal combinations.

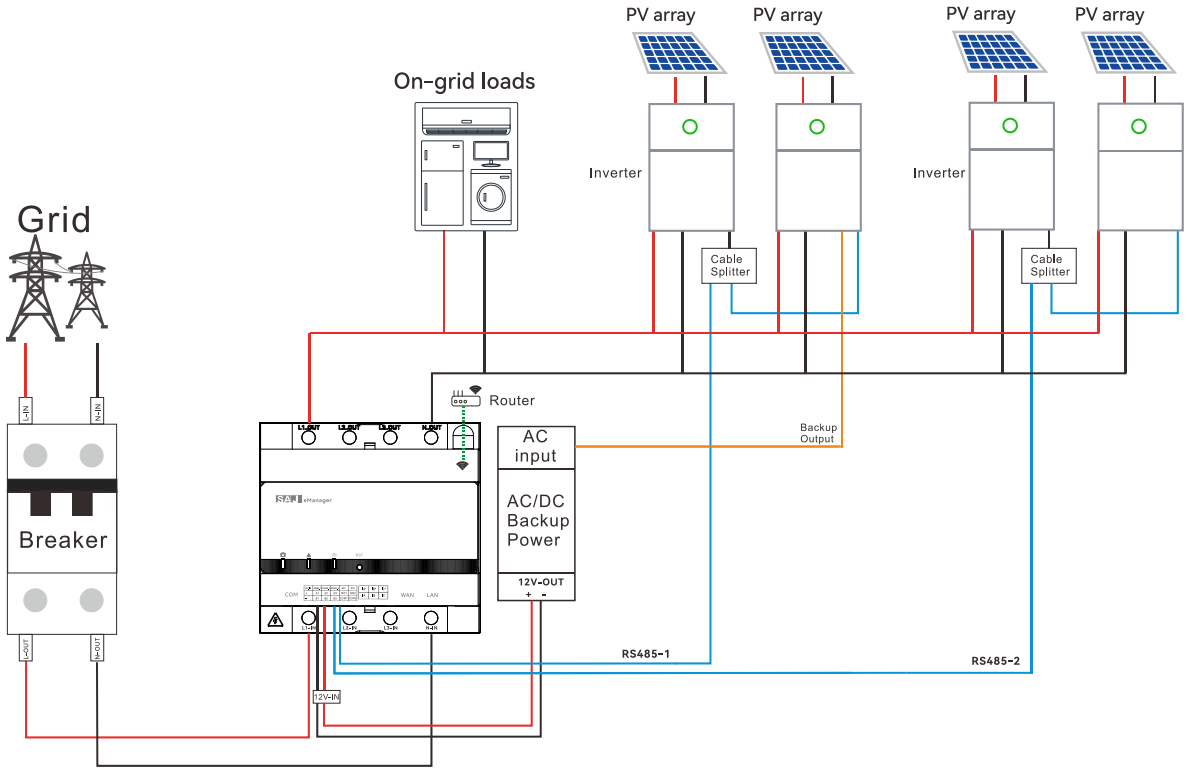
- RS485 A1 and RS485 B1
- RS485 A2 and RS485 B2
- RS485 A3 and RS485 B3

You can connect the inverter to any pair of the above combination. However, for one pair, make sure that:

- A maximum of two inverters are connected.
- The inverters must be of the same type. A hybrid inverter and a solar inverter cannot be connected to the same pair of RS485 terminal combination.

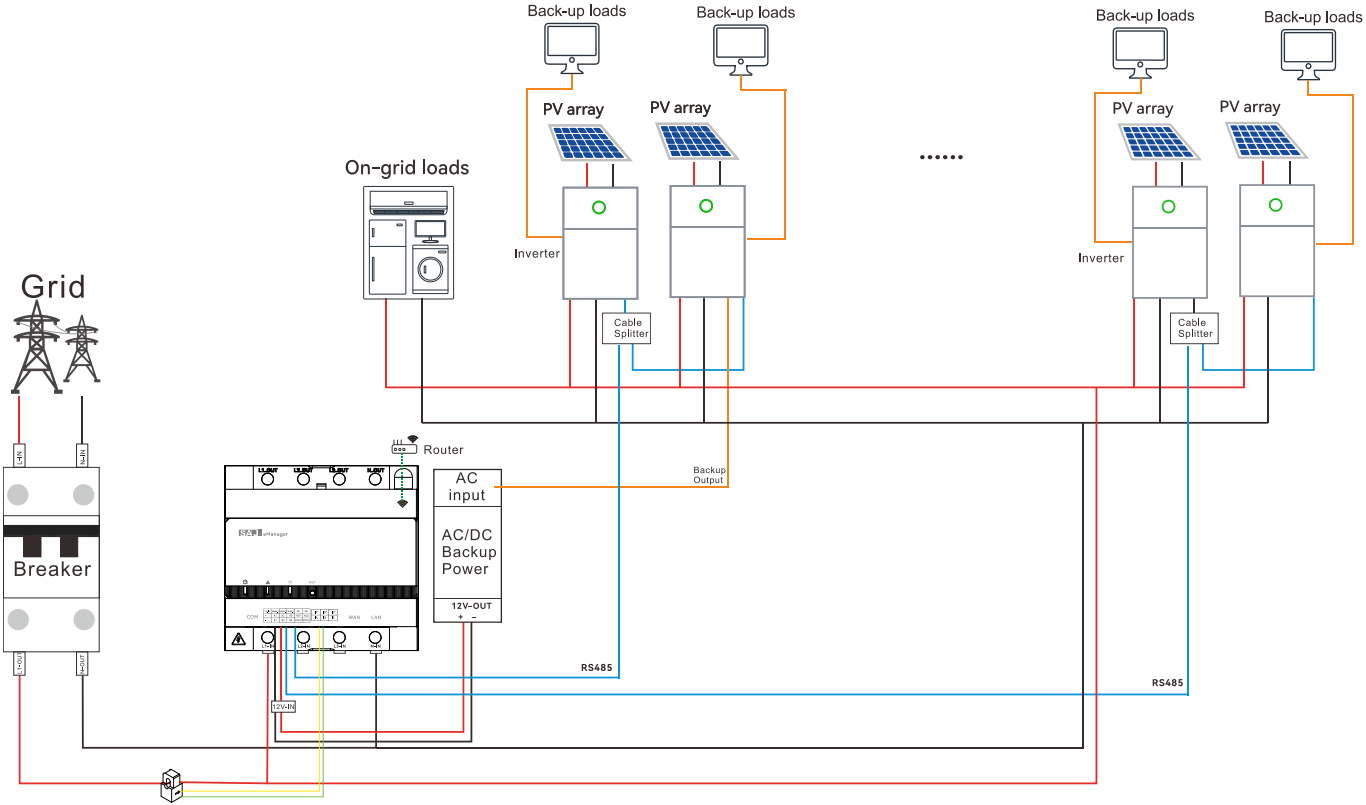
Internal CT connection (current ≤ 63 A) in the single-phase grid

If the current exceeds 63 A, use the external CT connection manner.



External CT connection (current > 63 A) in the single-phase grid

You can use 100A/50mA or 250A/50mA CTs, depending on the plant capacity. (Plant capacity = The greater value of the total inverter power or the total on-grid load power)



2.5.2. LAN connection (up to 10 inverters)

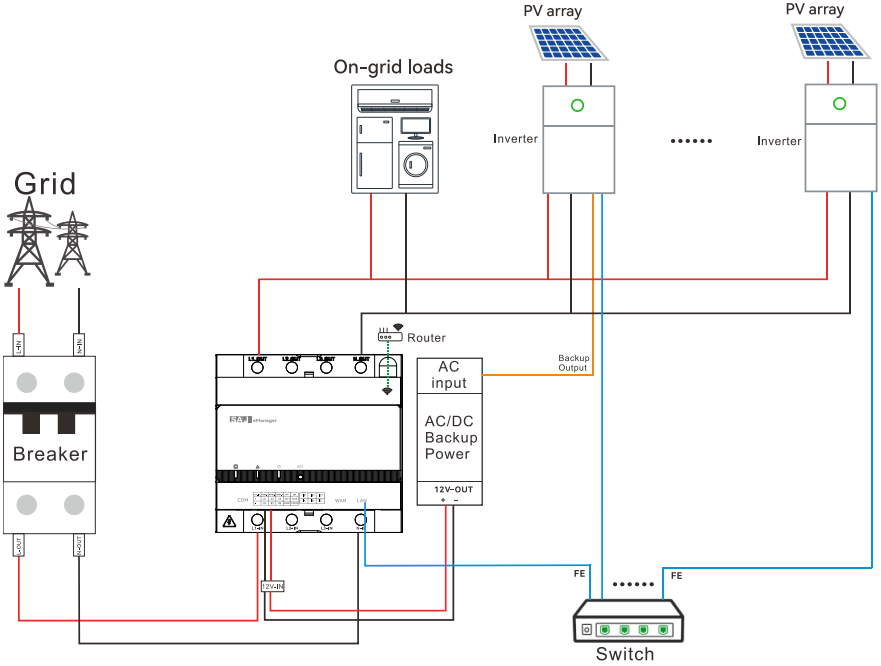
Supported inverter models:

- H2-(10K-30K)-(T2, T3)

- HS3-(5K-12K)-T2 (To construct the paralleling scenario for HS3 series, contact SAJ first.)
- HS3-(3K-6K)-S2 (To construct the paralleling scenario for HS3 series, contact SAJ first.)

Internal CT connection (current ≤ 63 A) in the single-phase grid

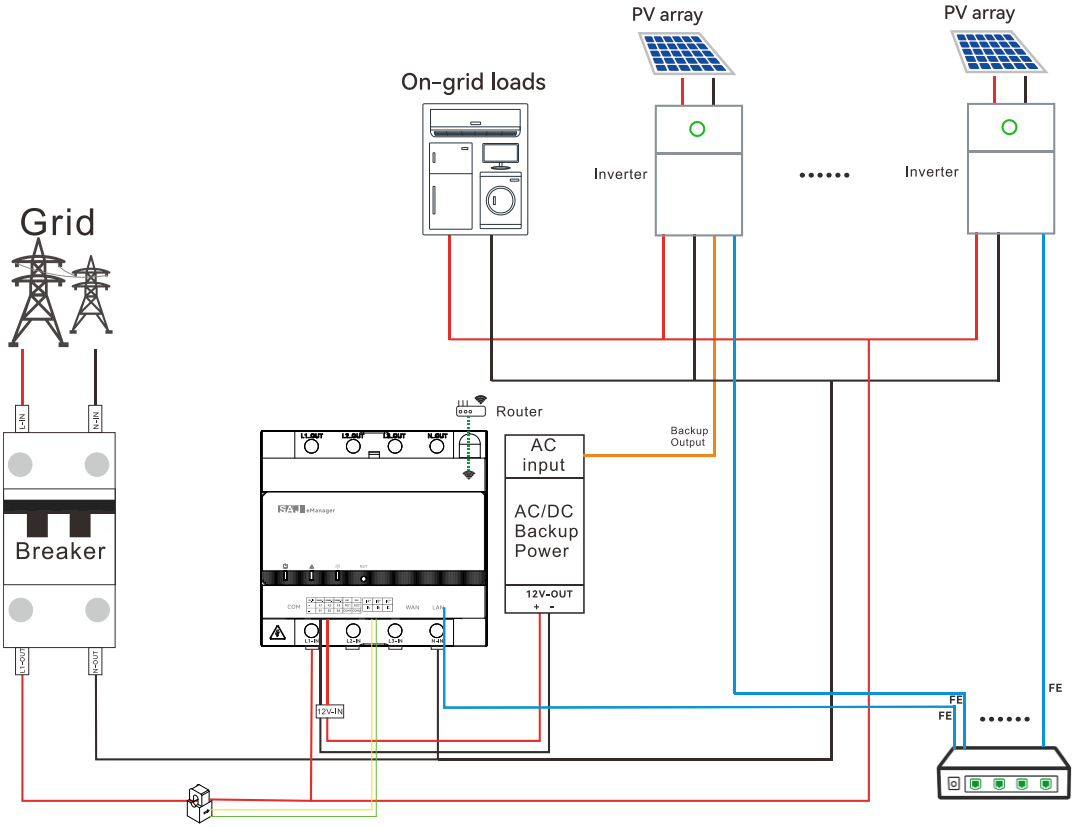
If the current exceeds 63 A, use the external CT connection manner.



External CT connection (current > 63 A) in the single-phase grid

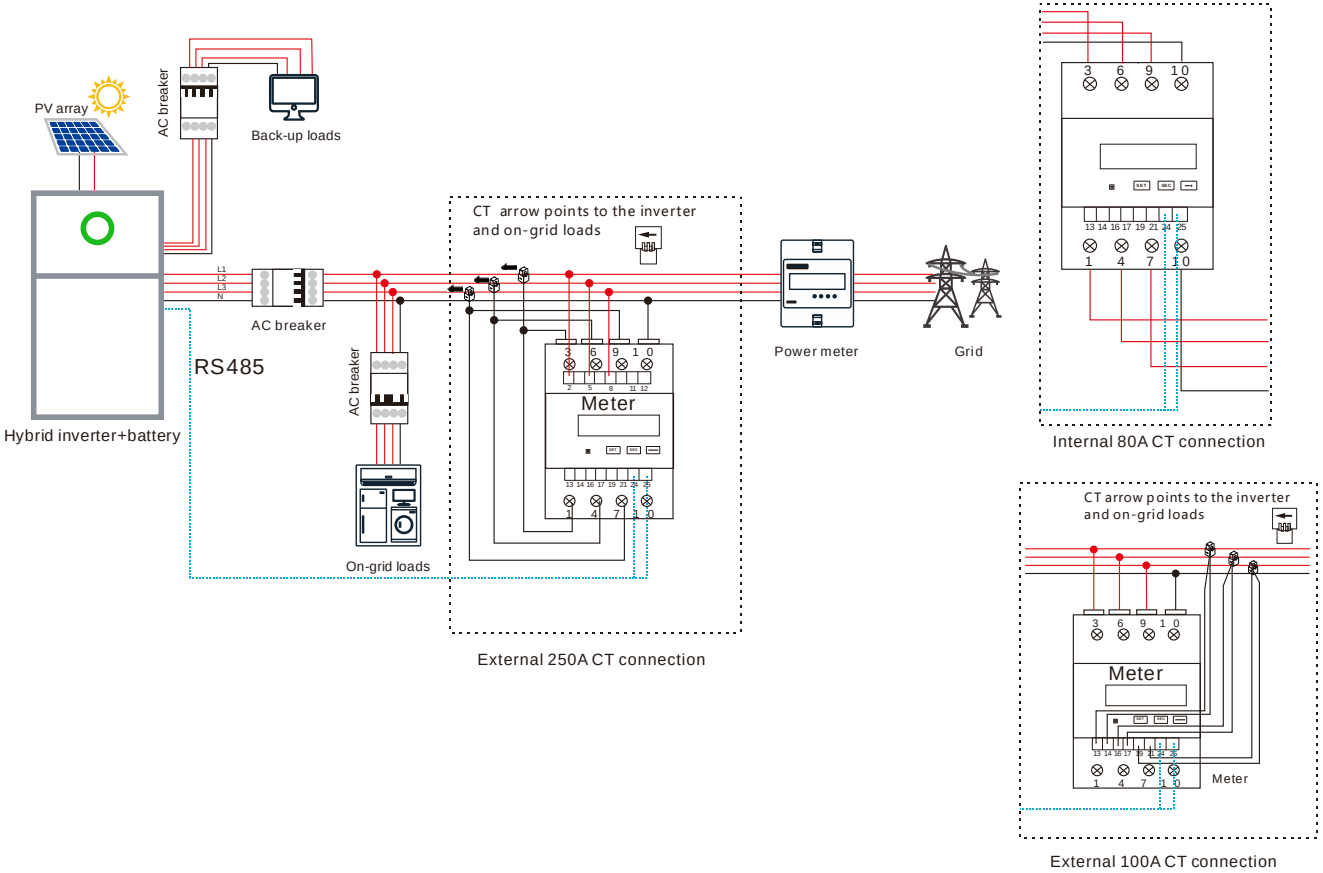
You can use 100A/50mA or 250A/50mA CTs, depending on the plant capacity. (Plant capacity = The greater value of the total inverter power or

the total on-grid load power)



3. System Connection: Three-phase hybrid inverter

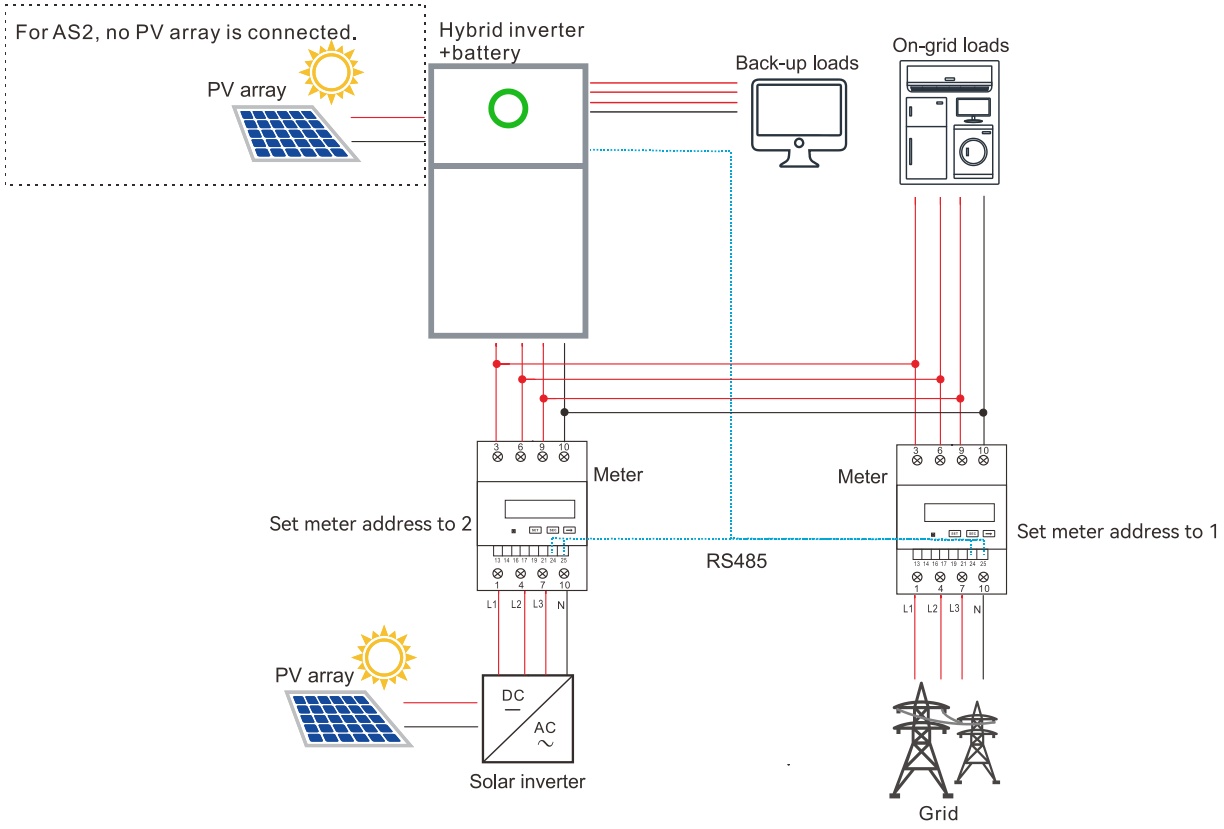
3.1. One hybrid inverter



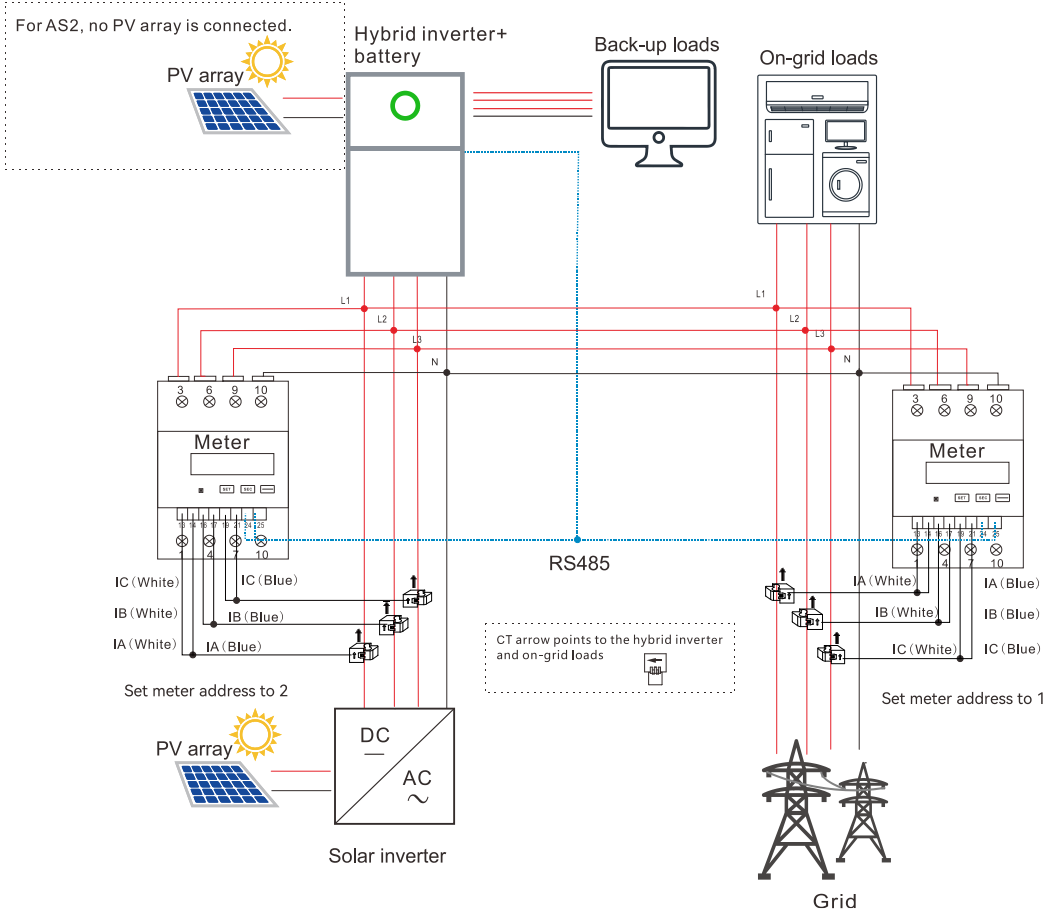
3.2. One hybrid inverter, one solar inverter (AC-coupling connection)

Before connection, contact SAJ technical support to confirm the detailed operations.

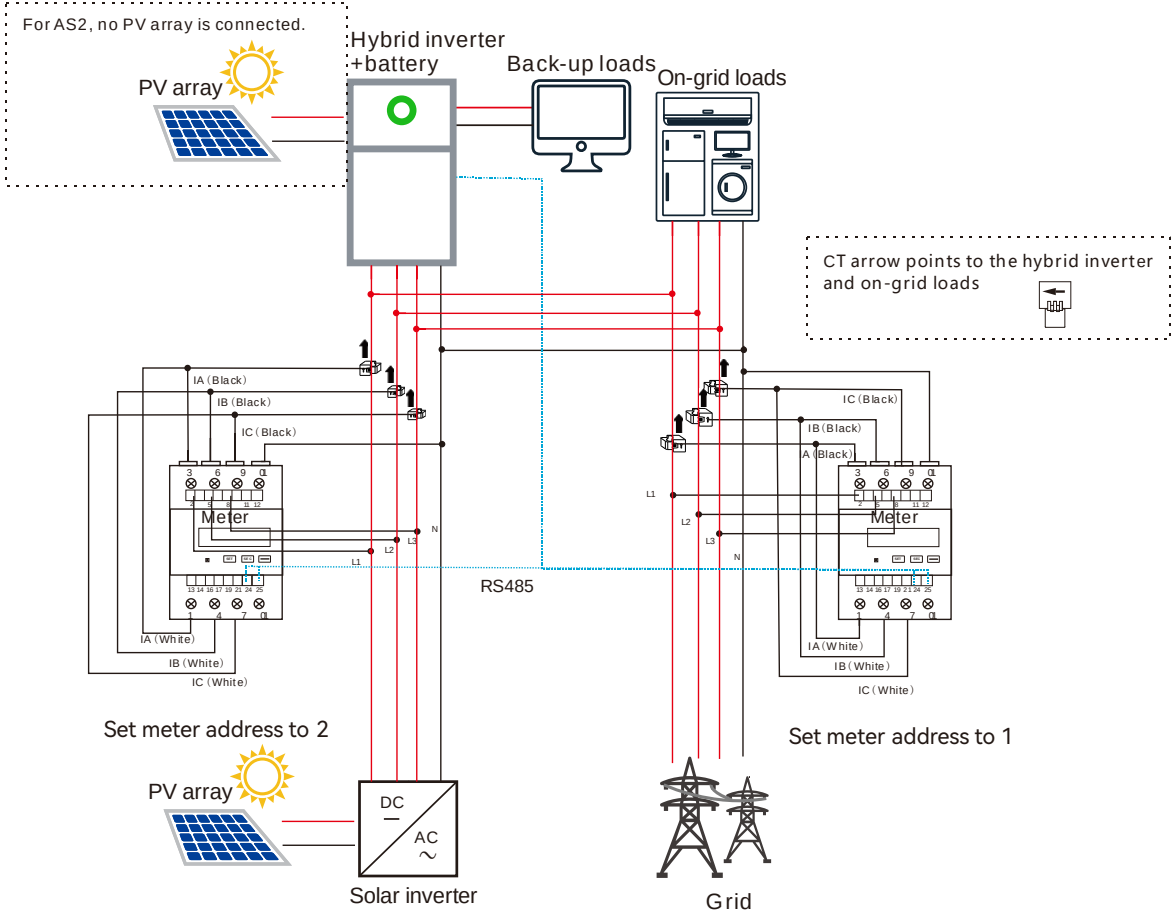
3.2.1. Internal 80A CT connection (current ≤ 80 A)



3.2.2. External 100A CT connection (current ≤ 100 A, CT prepared by users)



3.2.3. External 250A/500A CT connection (current > 100 A, CT prepared by users)



3.3. Multiple hybrid inverter, one EMS (paralleling connection)

Before connection, contact SAJ technical support to confirm the detailed operations.

3.3.1. RS485 connection (up to 6 inverters)

Supported inverter models:

- HS-(5K-10K)-T2
- HS2-(5K-10K)-T2

Connect the communication cables from the RS485 port on the inverter to the corresponding terminals on the eManager. If the RS485 port is not available on the inverter, use the EMS/Meter port.

From the RS485 or EMS/Meter port on the inverter	To the RS485 terminals on the eManager
Pin 7	RS485-A
Pin 8	RS485-B

Notes:

The eManager provides three pairs of RS485 terminal combinations.

- RS485 A1 and RS485 B1
- RS485 A2 and RS485 B2
- RS485 A3 and RS485 B3

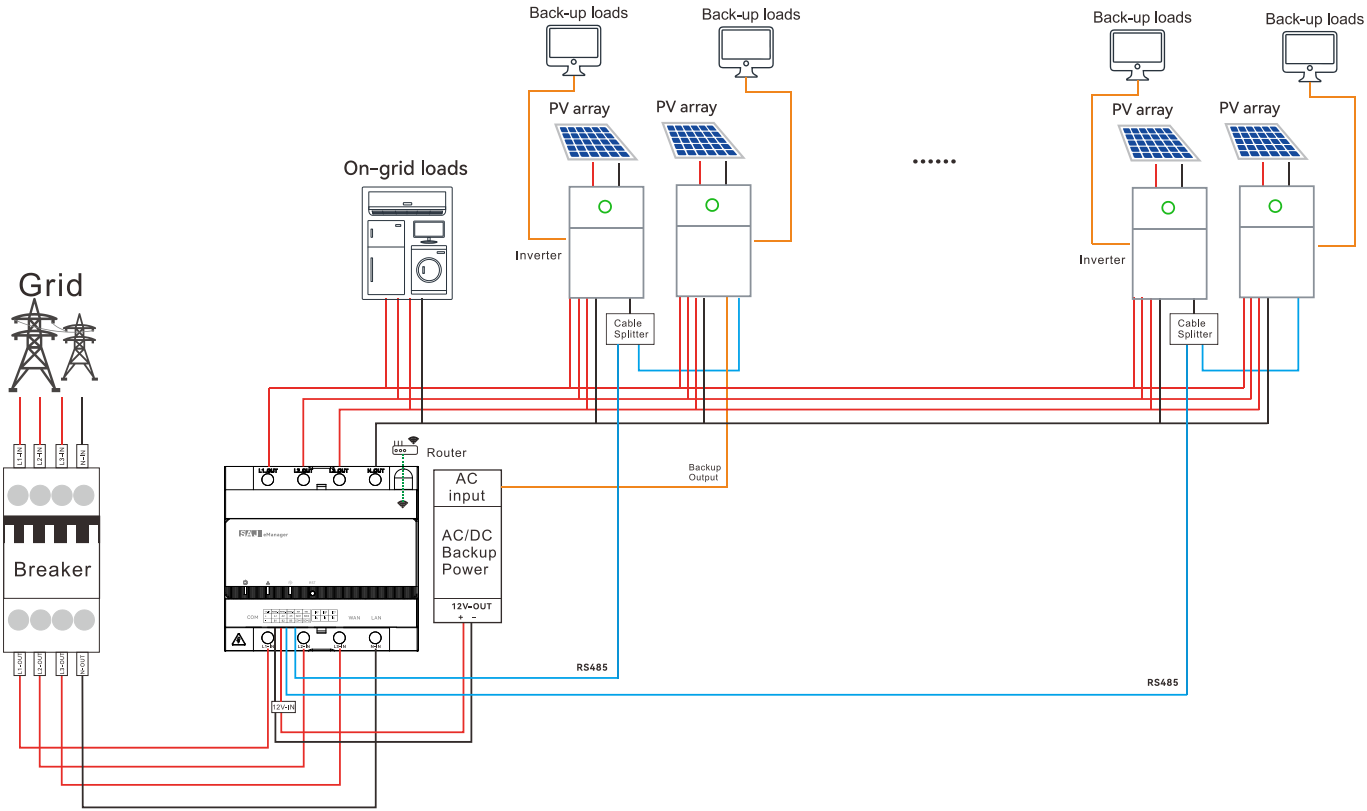
You can connect the inverter to any pair of the above combination. However, for one pair, make sure that:

- A maximum of two inverters are connected.

The inverters must be of the same type. A hybrid inverter and a solar inverter cannot be connected to the same pair of RS485 terminal combination.

Internal CT connection (current ≤ 63 A) in the three-phase grid

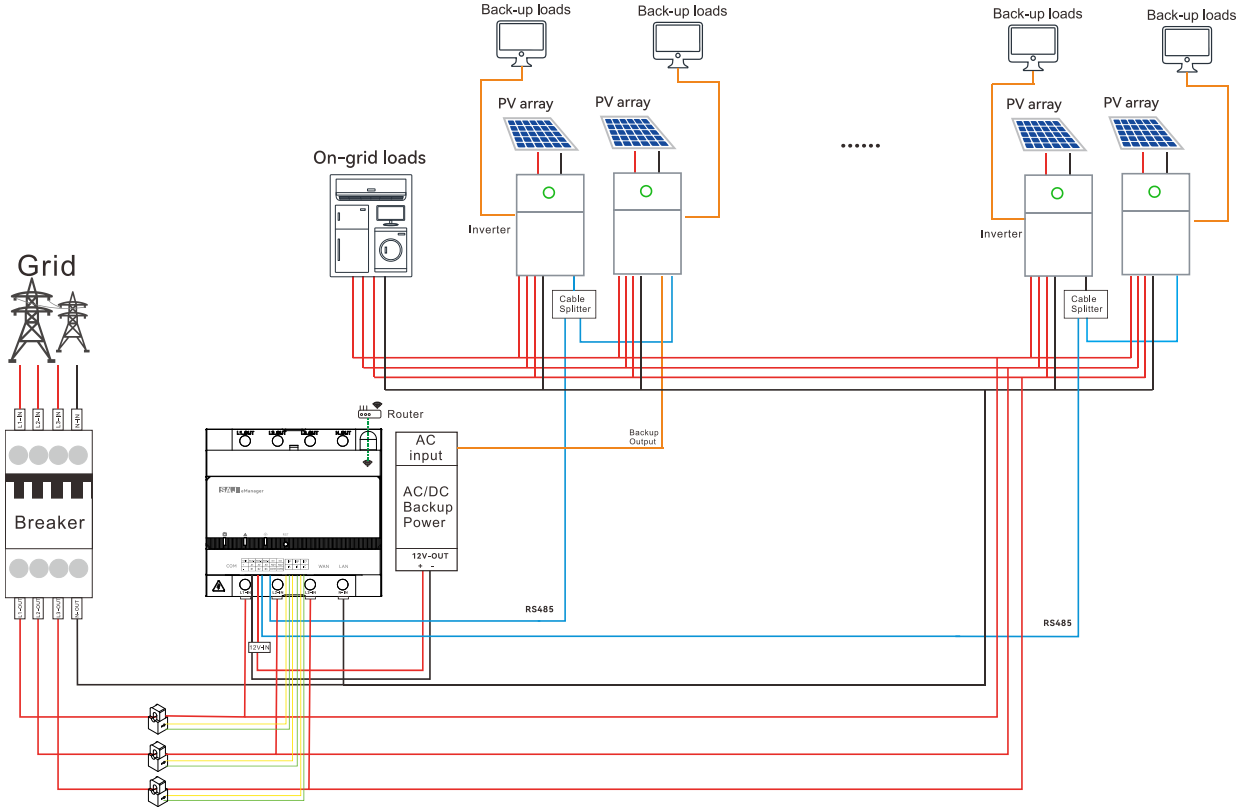
If the current exceeds 63 A, use the external CT connection manner.



External CT connection (current > 63 A) in the three-phase grid

You can use 100A/50mA or 250A/50mA CTs, depending on the plant capacity. (Plant capacity = The greater value of the total inverter power or

the total on-grid load power)



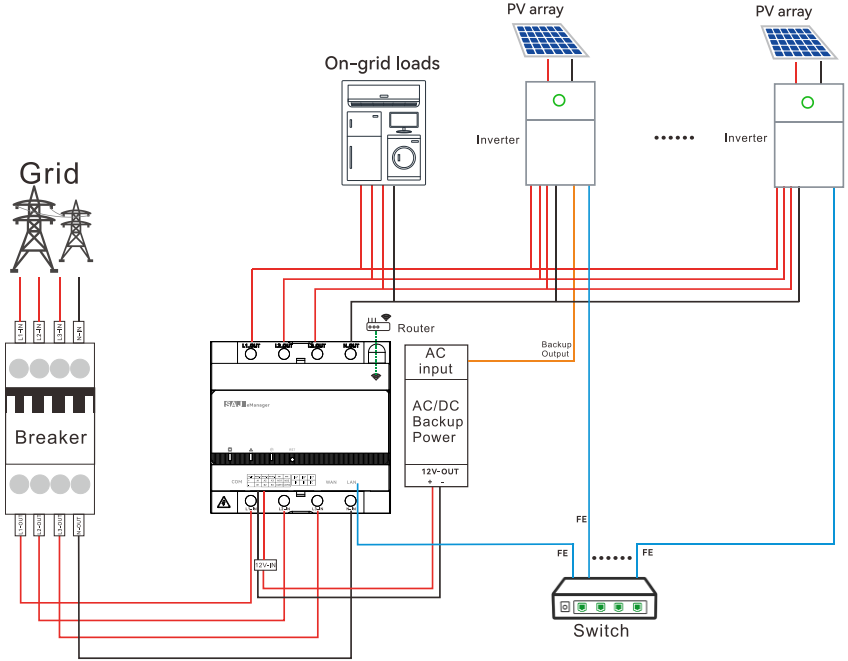
3.3.2. LAN connection (up to 10 inverters)

Supported inverter models:

- H2-(10K-30K)-(T2, T3)
- HS3-(5K-12K)-T2 (To construct the paralleling scenario for HS3 series, contact SAJ first.)
- HS3-(3K-6K)-S2 (To construct the paralleling scenario for HS3 series, contact SAJ first.)

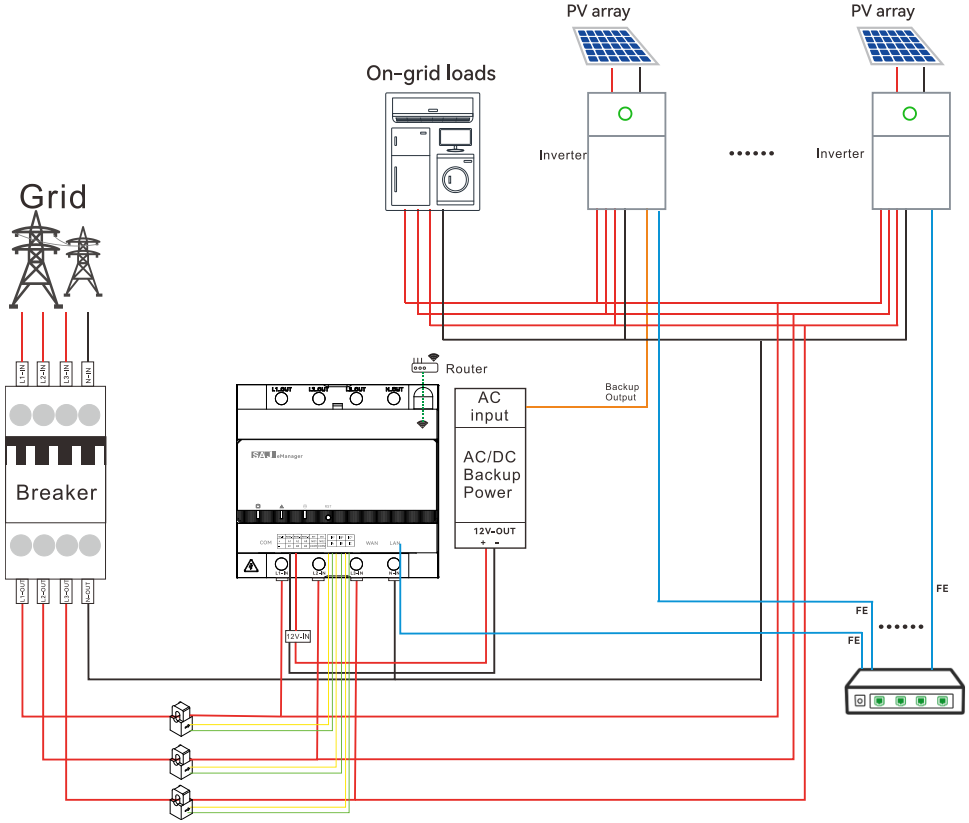
Internal CT connection (current ≤ 63 A) in the three-phase grid

If the current exceeds 63 A, use the external CT connection manner.



External CT connection (current > 63 A) in the three-phase grid

You can use 100A/50mA or 250A/50mA CTs, depending on the plant capacity. (Plant capacity = The greater value of the total inverter power or the total on-grid load power)



4. System Commissioning

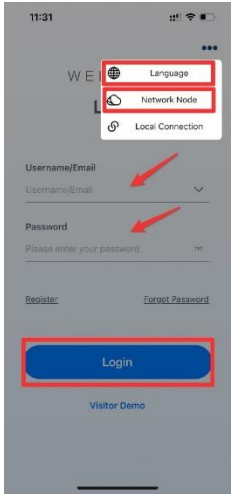
The Elekeeper (used to be called eSAJ Home) App can be used for both nearby and remote monitoring. It communicates with different devices through Bluetooth or Ethernet connection.

Note: The detailed operations on the App might vary, depending on the version you are using.

4.1. Installing the App

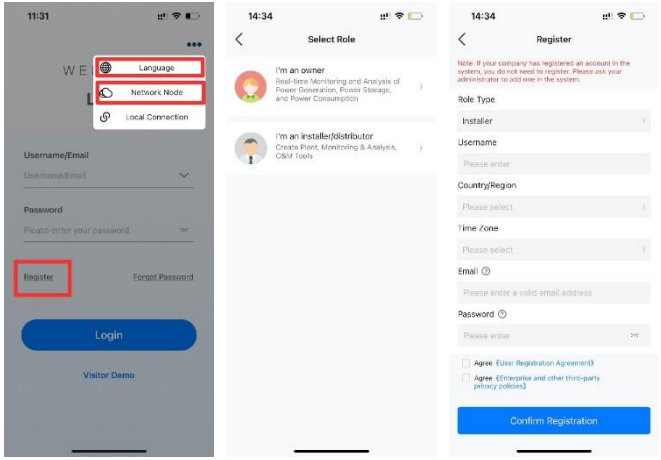
On your mobile phone, search for “Elekeeper” or “eSAJ Home” in the App store. Download and install the App.

4.2. Logging In to the App



Have an account? — Log in to the App.

1. Tap the three-dot icon ••• on the top right corner. Choose the language and network node based on your needs.
2. Use your account and password for login.



No account? — Apply for a new account for login.

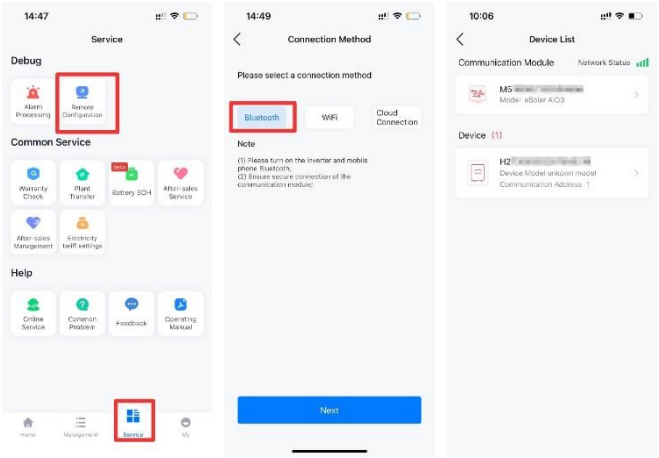
1. Tap the three-dot icon ••• on the top right corner. Choose the language and network node based on your needs.
2. Tap **Register.** Choose whether you are an owner, an installer, or a distributor.

   Note: For commissioning convenience, it is suggested that the owner account be applied by the installer.
3. Set your username, country/region, time zone, email, and password. Select the registration agreements and confirm the registration.
4. Use the applied account and the password for login.

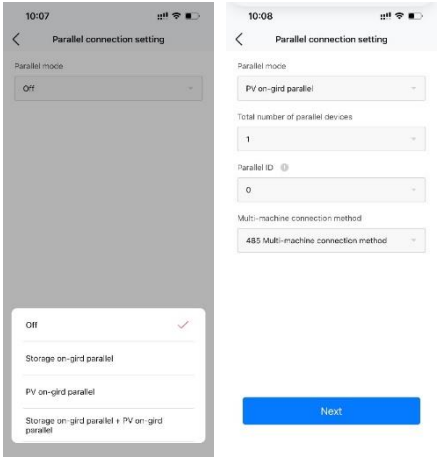
4.3. Performing the Initialization Settings

Before you start

Enable the Bluetooth function on your mobile phone.



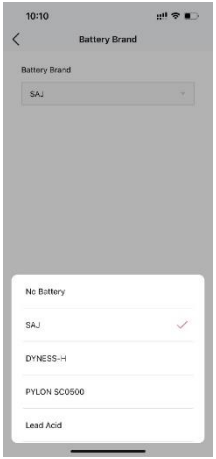
1. Start the initialization.
   a. On the **Service** interface, select **Remote Configuration**. Tap **Bluetooth** and tap **Next**. Tap your inverter according to the last five number of the inverter serial number (SN).
   b. Follow the instructions on the screen for the settings.



Parallel connection settings

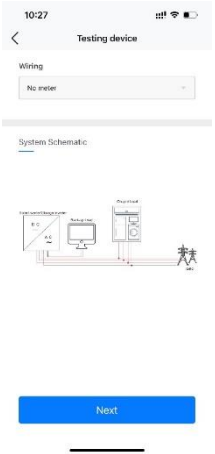
Set the values based on the actual conditions.

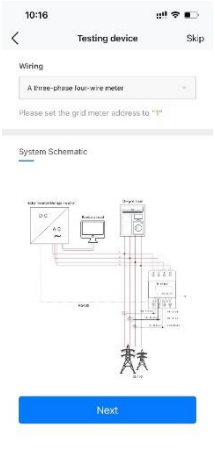
Configuration	Corresponding parallel mode
Multiple H2 + B2 (parallel)	Storage on-grid parallel
One H2 + B2 + solar inverter (AC couple)	PV on-grid parallel
Multiple H2 + B2 + solar inverter (parallel + AC couple)	Storage on-grid parallel+ PV on-grid parallel

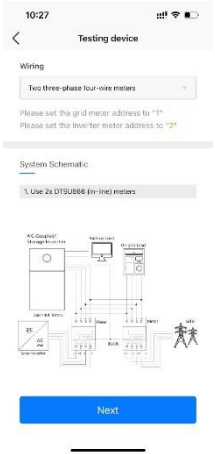


Battery brand and settings

Set the values per your needs.

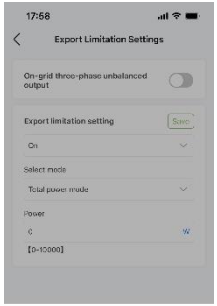






Meter and system schematic

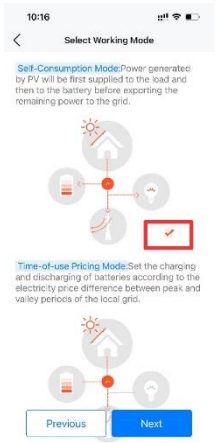
Examples of three system schematic settings



Export limit settings

Set the values per your needs.

- **Total power mode**: If this option is selected and the power value is set (for example, 1000 W), the maximum power exported from the whole system to the grid is 1000 W.
- **Current mode**: If this option is selected and the current value is set (for example, 20 A), the maximum current of each phase is 20 A.
- **Each phase power mode**: If this option is selected and the power value is set (for example, 1000 W), the maximum power exported from each phase to the grid is 1000 W.



Working mode

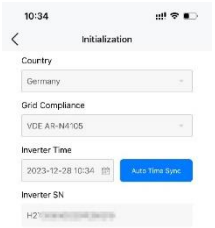
Here takes **Self-Consumption Mode** as an example.

- **Self-Consumption Mode**: The generated PV energy is provided to the devices in order: loads > batteries > grid
- **Time-of-use Pricing Mode**
  - In the battery charging or discharging period, the batteries can only be in charging or discharging. In other period, the battery will work in self-use mode.
  - The battery charging and discharging periods are adjustable.
- **Back-up Mode**
  - After initialization, you can change he default SOC value.
  - When the battery SOC is lower than the configured SOC value, the batteries can only be in charging without discharging.
  - When the battery SOC reaches the configured SOC value, the batteries will stop charging.
  - When the battery SOC is higher than the reserved SOC value, the batteries will work in self-use mode.

AFCI function

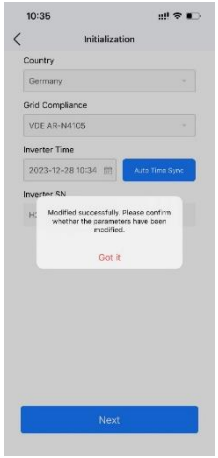
This page is displayed only if your inverter provides the AFCI function.

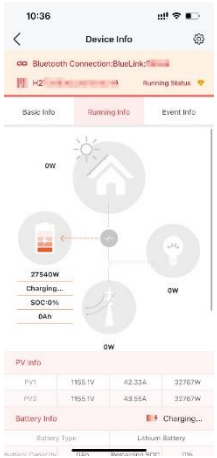
You can choose whether to enable this function and tap **Next**.



Country and grid compliance

Note: Make sure to tap **Auto Time Sync** to synchronize the time; otherwise, the inverter will be displayed as offline.



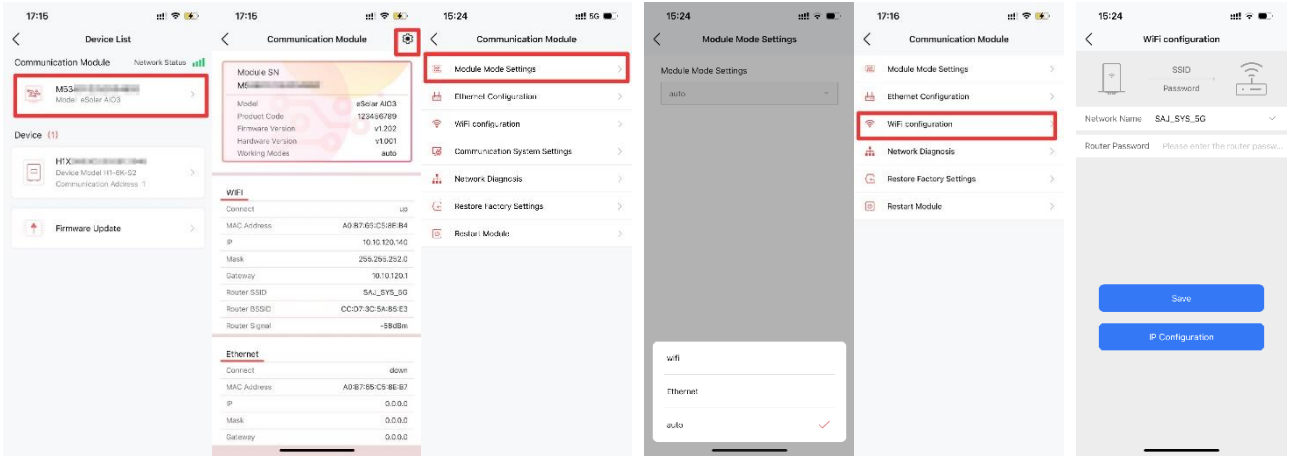


2. Complete the initialization and view the configured device information.

4.4. Configuring the Communication Module

About this task

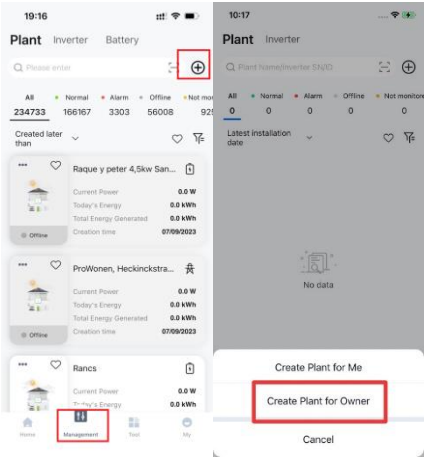
If you want to remotely monitor the energy storage system and view the device statistics (for example, when you are away from home), connect the communication module installed on the inverter to your home network.



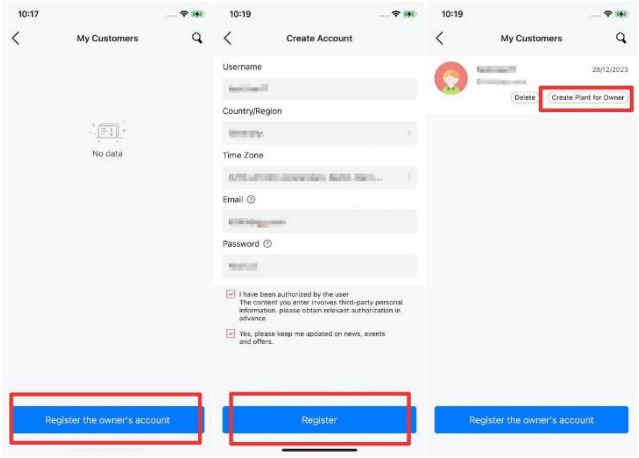
1. On the **Device List** page, select your communication module according to its SN.
2. Tap the settings icon  on the upper right corner.
3. If you want to change the default network connection mode **auto**, select **Module Mode Settings**, and set it to **wifi** or **Ethernet**.

   Note: In the **auto** mode, the communication module will either select Wi-Fi or Ethernet connection mode.
4. If **auto** or **wifi** is selected, select **WiFi Configuration**, and input the name and password of your home network.

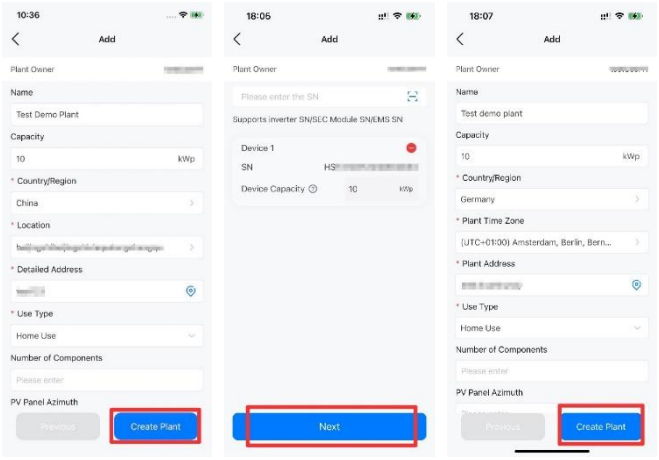
4.5. Creating a Plant



1. On the **Management** page, tap the ⊕ icon on the top right corner. Select **Create Plant for Owner**.



2. Apply for an account for the end user.



3. Configure the plant details based on your actual conditions.

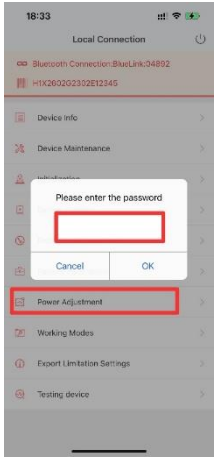
4.6. Viewing the Reactive Power Control Settings

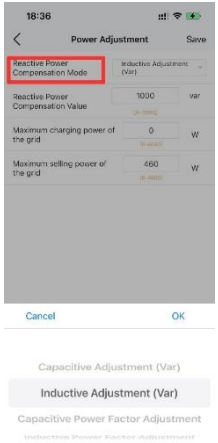
4.6.1. Viewing the Fixed Power Factor Mode and Fixed Reactive Power Mode

Once **Country** and **Grid Compliance** are selected during initialization, the parameters relating to the reactive power control settings are set automatically. In typical household scenarios, it is no need to change these default parameter values. If you really need to change them, before any modifications, contact SAJ for consultation and ensure that you have necessary electric knowledge and are fully aware of the impact of such modifications.

To view the settings, perform as follows:

1. Check the manufacturing date of the inverter according to the SN, such as an SN “1 502 0 G 11 01 CN 00000”, in which “11 01” indicates that the manufacturing date is the first week in 2011.
2. Depending on your inverter manufacturing date, view the parameter values as follows:

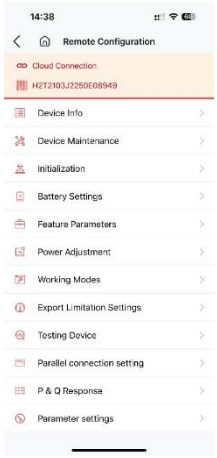




- For the equipment manufactured before August 2023: Tap **Power Adjustment** and enter the password. (Contact SAJ for the password.)

  For Reactive Power Compensation Mode:

  - Fixed power factor mode: **Capacitive Power Factor Adjustment** or **Inductive Power Factor Adjustment**. The power factor range is from 0.8 leading to 0.8 lagging.
  - Fixed reactive power mode: **Inductive Adjustment (Var)** or **Capacitive Adjustment (Var)**. The power ranges from -60% Pn to 60% Pn.

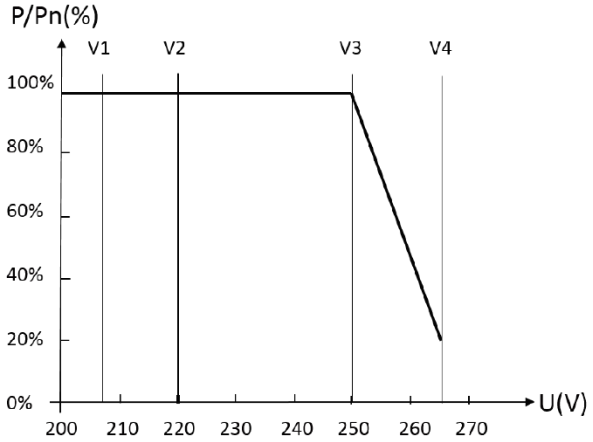


- For the equipment manufactured after August 2023: Tap **Parameter settings**.

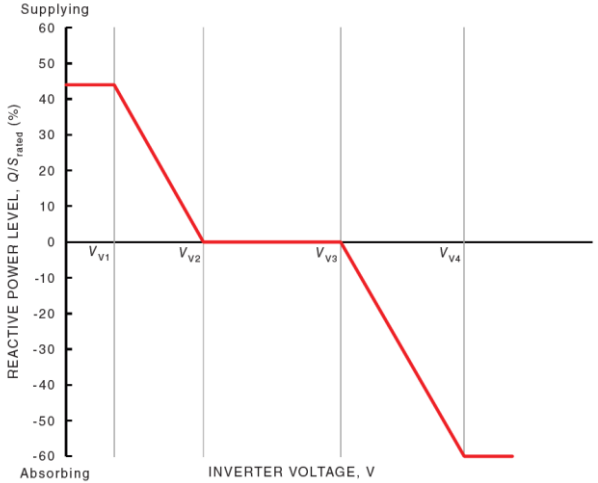
4.6.2. Viewing the V-Watt and Volt-Var Modes (For Australia and New Zealand)

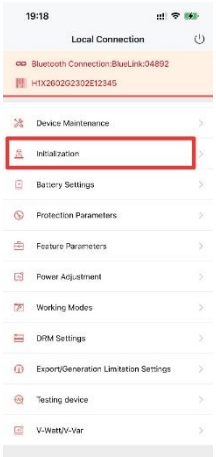
This inverter complies with AS/NZS 4777.2: 2020 for power quality response modes. It meets DNSPs' grid connection rules and requirements for the volt-watt and volt-var settings in different regions.

Curve for a Volt-Watt response mode (AS4777 Series)

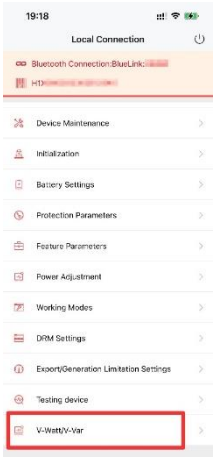


Curve for a Volt-Var control mode (AS4777 Series)



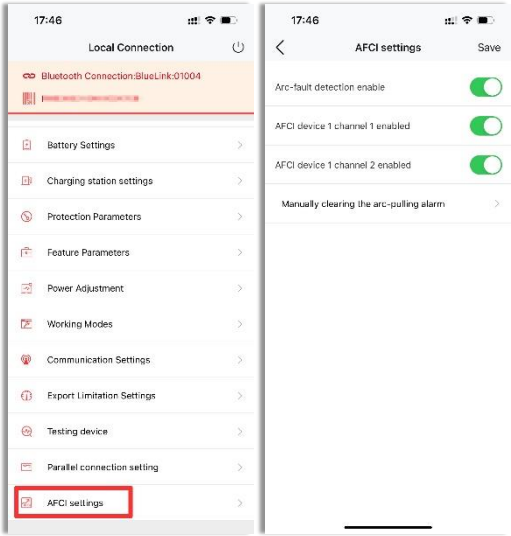


1. Tap **Initialization** and check whether the grid compliance is set properly. Change the settings if needed.



2. Tap **V-Watt/V-Var** to enter the settings page.

4.7. Enabling the AFCI (optional)



If you want to enable or disable the AFCI function, on the **Local Connection** page, tap **AFCI settings**. On the **AFCI settings** page, choose to enable or disable the detailed settings.

4.8. Running Self-test (For Italy)

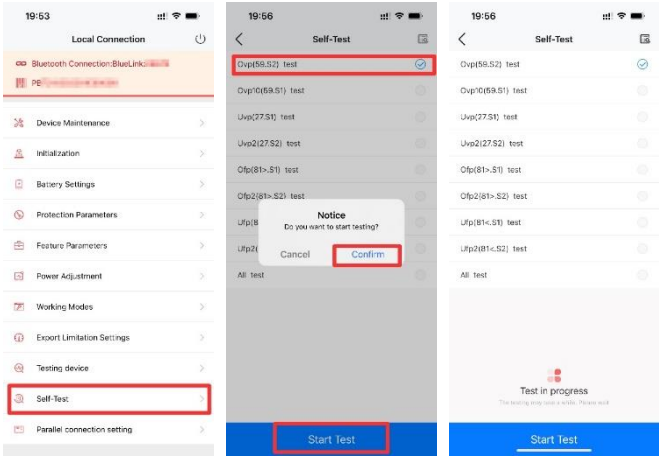
About this task

Italian Standard CEI0-21 requires a self-test function for all inverters connected to the utility grid. The self-test ensures that the inverter can be disconnected from the grid when required.

During the self-test, the inverter will check the reaction time for over-frequency, under-frequency, over-voltage, and under-voltage. If the self-test failed, the inverter stops providing the electricity to the grid.

Before you start

- Ensure that the communication module (Wi-Fi/Bluetooth/Ethernet) of the inverter is connected to the network. Refer to section 4.4 "Configuring the Communication Module".
- Ensure that **Country** is set to **Italy** and **Grid Compliance** is selected properly. To check the settings, choose **Initialization** on the **Local Connection** page.



1. On the **Local Connection** page, choose **Self-Test**. Set the self-test parameters if needed.
2. Select the required test and tap **Start**.
   One test will take around 5 minutes. If you have selected **All test**, all tests will take around 40 minutes.
3. (Optional) After the self-test is completed, save the test report.
   If the self-test failed, contact SAJ or your installer.

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