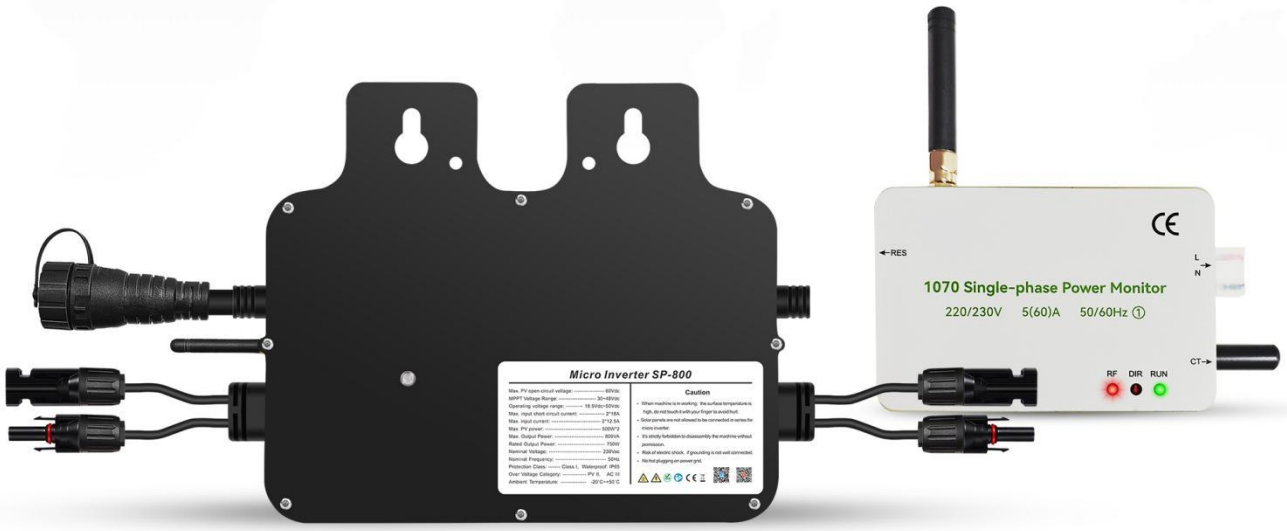
800W Zero Export Microinverter System User's Manual

V 2.0



Foreword

Before using this product, read this document carefully to understand and use it correctly.

Keep this document in a safe place for future reference.

Improper operation may cause injury or damage.

By using this product, you agree to the terms and conditions in this document.

The Company is not liable for damages due to improper use.

The Company has the final interpretation of this document and related documents.

Check the official website for updates to this document.

Catalogue

1. Important notes

1.1. Product Scope

This manual describes installation and operation of zero export microinverter system (micro inverter and energy meter).

1.2. Important safety instructions

① Before installing, using or servicing this product, please read all documentation carefully, which may have changed due to product updates or other reasons.

② All operations, including transportation, installation, startup and maintenance, must be performed by trained and qualified personnel.

③ Before installation, check the packaging and appearance of the unit to ensure that it has not been damaged during transportation.

④ Before connecting, make sure all cables and plugs are intact and dry to avoid electric shock.

⑤ Before the end of the installation, you should make sure that the solar PV panels, microinverter is disconnected from the home power supply.

⑥ Personal protective equipment such as gloves and goggles must be used during installation.

⑦ Do not install or operate the equipment under extreme weather conditions, such as lightning, snow, heavy rain, strong winds.

⑧ The warning signs on the equipment must not be damaged, painted or torn off.

⑨ After installation, remove any remnants of the installation, such as cut cable ties, torn insulation, etc.

⑩ Do not attempt to repair the microinverter, if a malfunction occurs, contact our customer support department and initiate the replacement process. Private repair or opening the microinverter will void the warranty policy.

⑪ Understand the components and functions of the grid-connected PV system and make sure that all electrical connections, as well as the voltage and frequency of the equipment, comply with local electrical standards.

⑫ Use extreme caution whenever disconnecting the inverter from the utility grid, as certain components may retain enough electrical charge to create an electrical shock hazard.Danger of electric shock.

⑬ Make sure that the microinverter is securely mounted to prevent accidents or damage to the product from falling.

⑭ For safety reasons, the device should use original or authorized cables, we are not responsible for damage to the device caused by the use of third-party accessories.

1.3. Environmental requirements

① Make sure the equipment is installed, operated or stored in a well-ventilated area; inadequate ventilation can cause permanent damage to the equipment.

② Do not install or place the equipment in a strong electrical and magnetic field environment to avoid radio interference.

③ Do not install the equipment in flammable, explosive, corrosive, extremely hot, cold and humid environments.

④ Do not install the device where children and pets can touch it.

2. Overview

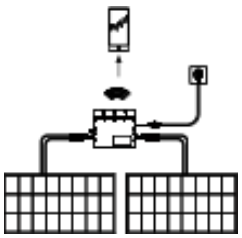
2.1. Overview of zero export microinverter system

This system consists of a PV module, a microinverter, a energy meter and a power grid. The microinverter converts the DC power from the PV module into AC power that meets the requirements of the grid, then it's connected to the grid through home outlet, meanwhile the energy meter which is installed close to power distribute box to check income power, and send message to microinverter for power generation.

PV module

Microinverter

Grids

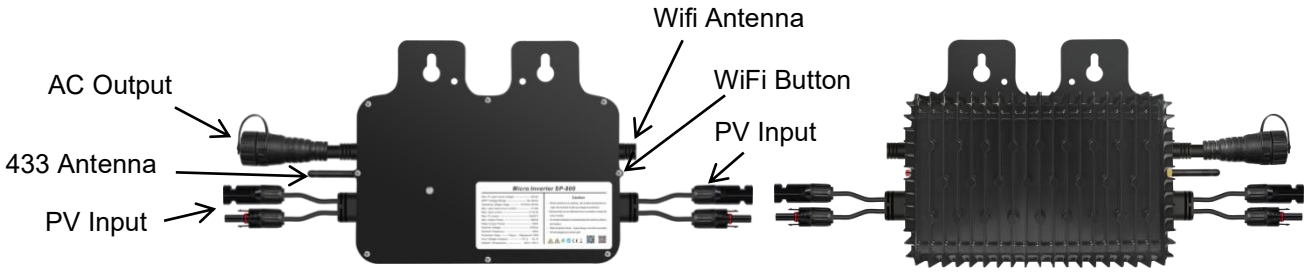


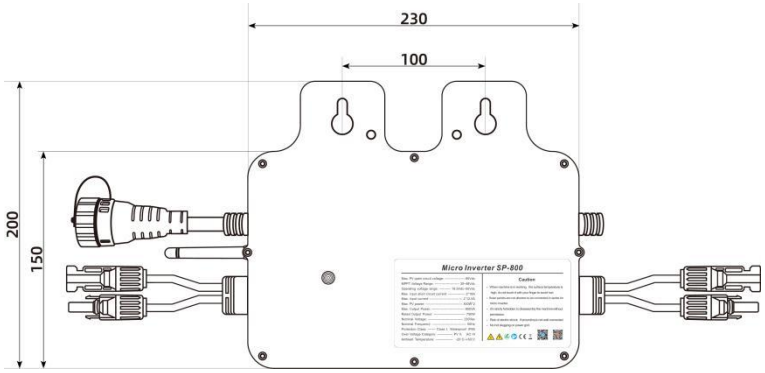
Single Microinverter Connection Diagram

2.2. Microinverter Overview

The microinverter tracks the maximum power point of the PV module. When one PV module fails or is shaded, the other modules are not affected. Microinverters monitor current, voltage and power for module-level data monitoring. Microinverters are low voltage DC, avoiding the safety risks associated with high voltage DC. Microinverters can be installed according to the number of PV modules，easy installation. The microinverter housing is IP65 rated and designed for outdoor installation.

2.3. Functionality





2.4. Power Derating

During operation the Micro Inverter will create some heat which shall be dissipated via the housing as a heat sink. The heat generated is directly proportional to the AC output, i.e. during times of high power input from the PV modules and high ambient temperatures the Micro Inverter might reach temperatures which might become harmful for the longevity of the Micro Inverter.

The Micro Inverter is equipped with a mechanism which continuously monitors the temperature of the device and reduces the AC output power to a level which prevents the device from overheating. The Micro Inverter automatically switches back to a full AC power output as soon as the temperature of the device is within the given limits.

2.5. Microinverter Technical Data

Model	SP-800	
Input (DC)		
Recommended Max. PV (STC)	500W*2	
Number of input ports	MC4*2	
Max. PV open circuit voltage	60Vdc	
MPPT voltage Range	30Vdc-48Vdc	
Operating voltage range	18.5Vdc-50Vdc	
Start-up voltage	20.5Vdc	
Maximum input current	2*12.5A	
Maximum input short circuit current	2*18A	
Output(AC)		
Rated output power	750W	
Maximum output power	800VA	
Nominal output voltage	120Vac/230Vac, automatic adjustment	
Nominal output frequency	60Hz/50Hz, automatic fit grid	
Output voltage range	90Vac-160Vac	190Vac-270Vac
Output frequency range	58.9-61.9Hz	47.5-51.5Hz
Rated AC current (at 120V)	6.6A	
Rated AC current (at 230V)	3.5A	
THD	<5% (input 30Vdc~48Vdc)	
Power factor	>0.98 (input 30Vdc~48Vdc)	
Maximum units per branch	3 at 120Vac, 5 at 230Vac	
Efficiency		
Peak conversion efficiency	93%	
CEC efficiency	92%	
MPPT efficiency	99.5%	
Night losses	<0.3W	
Protection		
Anti-islanding protection	Yes	
Output Over/under voltage protection	Yes	
Over temperature protection	Yes, derating	
Mechanical		
Enclosure rating	IP65	
Size(WxHxD)	230x200x48mm	
Weight	1.7kg (one AC output version)	
Feature		
Indication lights	Working status LED	
Communication	WiFi/2.4G, 433M	
Monitoring	Smart life (Tuya smart)	
Type of isolation	Isolated HF transformer	
Environment		
Ambient temperature range	-20℃ ~ +50℃	
Storage temperature	-40℃ ~ +85℃	
Humidity	≤95%	
Altitude	≤2000m	
Over voltage category	PV: II AC: III	
Location	Indoor, outdoor（Shelter from rain）	
Cooling method	Natural cooling (no fan)	
Warranty	5 years	
Compliance		
Safety standard	EN62109-1/-2, UL1741,IEC62477,IEEE 1547	
EMC	EN61000-3-2/-3, EN61000-6-1/-2/-3/-4, EN301489-3/-17	

Grid connection	VDE4105, VDE0124, VDE0126, EN50549-1/-2,CEI021,OVE E8001
Restricted substance	RoHS2.0

2.6. System Monitoring

After installing the Micro Inverter and providing an internet connection through a broadband router or a modem, the Micro Inverter can report performance parameters to the “Smart Life” App and thus allows the user to monitor the system status by using the respective Smartphone-App.

3. Planning for Installation

The Micro Inverter supports PV modules with 60 or 72 Cells and installs quickly and easily. The microinverter housing is designed for outdoor installation and complies with the IP65 environmental enclosure rating standard

3.1. Grounding Considerations

Independent from your local regulation on establishing a protective grounding for your PV system we recommend sufficient grounding.

3.2. Parts and Tools Required

Below recommended tools and auxiliary tools may be used on site

- 6mm Allen key
- Cable ties
- Tools and fixtures needed to mount the Micro Inverter on the dedicated support (e.g. PV modules, …)
- Personal protective equipment

4. Installation

4.1. Installation requirements

Installing the Micro Inverter involves below steps. Each step listed here is detailed in the following pages. Before starting with the installation you shall check the correct and complete shipment of your Micro Inverter, prepare the installation as such and have all additional required parts and tools available.

4.2. The installation steps are as follows:

Step 1: Mount the Micro Inverter

Step 2: AC Cable Connection

Step 3: Connect PV Modules

Step 4: Energy meter installation

Step 5: Energize the System

4.3. Package list

The packaging includes the following items:

- Micro inverter
- AC output cable
- Screw kit
- User's manual
- Energy meter
- Power supply wire
- CT (current transformer)

You might require additional material and components for installation, Please contact your local vendor for details.

4.4. Preparation

- Before installation, please check the package for any kind of damages during transportation and if any of the components as listed in 4.3 are missing. Please contact your vendor immediately, any such claims cannot be considered if raised at a later point.
- Before installation, please read the Manual carefully.
- Depending on your requirements you might need to prepare a suitable length of the AC cable and connect it to a suitable and approved connector. You shall make sure that this is done by a sufficiently qualified person.

4.5. Position and Space Requirement

- The Micro Inverter must be installed at a dry location according to its IP65 rating and ensure to avoid any exposure to rainfall.
- As the Micro Inverter generates heat during operation and the casing acts as a heat sink with natural convection, position the Micro Inverter at a place without any direct exposure to sunlight.
- Allow a minimum of 2 cm of free space on either front- and backside of the Micro Inverter and hereby ensure free convection.

- The Micro Inverter is sufficiently protected against dust, weather, etc. and doesn't require any additional protection via an additional casing or housing which will in return limit the cooling through natural convection.

4.6. Step 1: Mount the Micro Inverter

We recommend to use a rail system for installing your PV system which ensures the correct installation of your PV Modules, provides a common access for grounding protection and also acts as a fixture for your Micro Inverter.
Please contact your vendor for suitable installation material for your PV system.

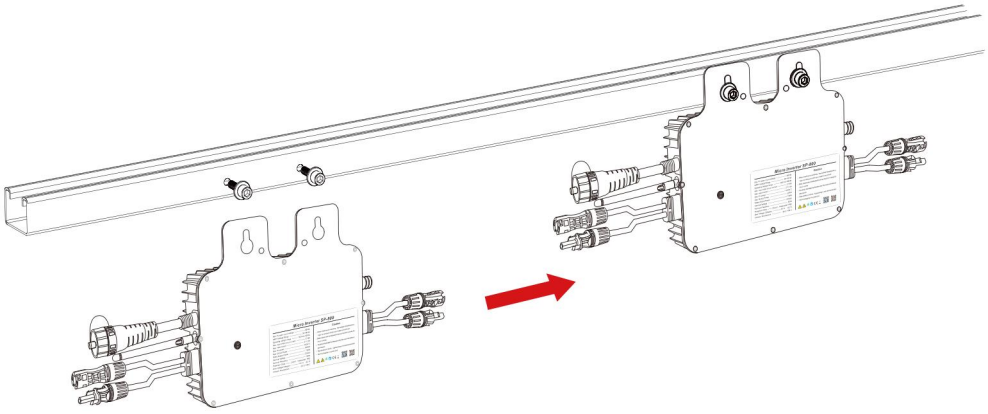
Mount the Micro Inverter on the rail as shown below:

① Determine the position of the Micro Inverter on the rail

② Fasten the screws loosely to the rail

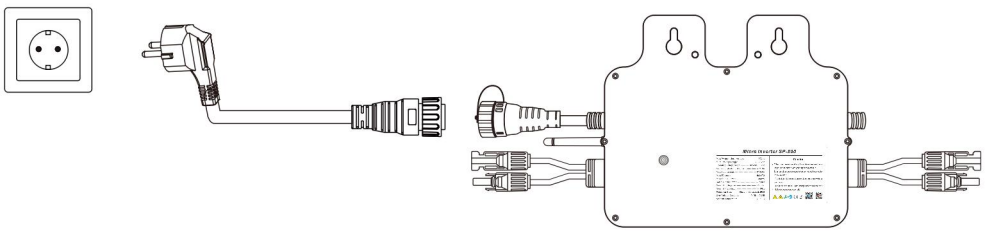
③ Hang the Micro Inverter onto the screw and make sure that there's still a sufficient distance in between the Micro Inverter and the Solar Module. Also make sure that you can see the working status LED.

④ Tighten the screws



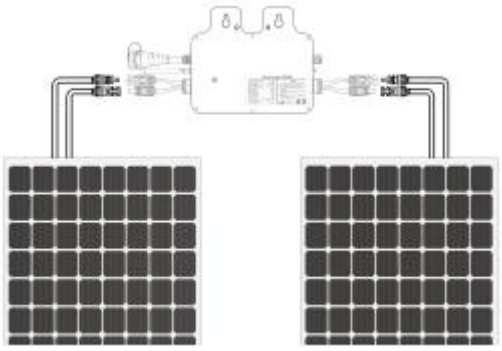
4.7. Step 2: AC Cable Connection

Connect the AC output cable to micro inverter, (this cable can plug into the socket in your home for grid connection as shown below, but do not plug in at this step).



4.8. Step 3: Connect PV Modules

Before connecting the PV Modules to the Micro Inverter you must ensure a robust assembly of the PV Modules according to the installation manual of your PV Modules.



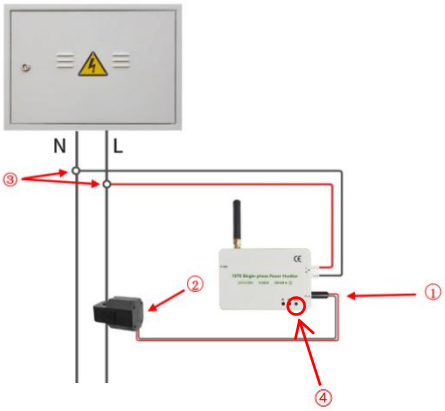
4.9. Step 4: Energy meter installation

① Keep the connector of the CT plugged in (left photo point 1), then connect the CT to the power wire L (point 2), the arrow on CT should be downwards.

② Connect two power wires to Grid (point 3), then RUN indicator keeps on (point 4).

If DIR indicator is constantly on, maybe L and N is not correct, so change CT to other wire.

DIR indicator light remains off when current flows in.



4.10. Step 5: Energize the System

Connect your Micro Inverter with the AC grid by plug AC output cable into the socket, after about 30 sec your Micro Inverter will begin to start working and provide electricity to the grid, provided a DC input from your PV Modules.

4.11. Status Lights

the Micro Inverter also provides information on its current working mode via the status light for reference

Colour	Meaning
Red flashing	Micro Inverter is in the startup mode and the two MPPTs are searching on the DC input for power provided by the PV Modules
Red constant	Failure in the machine
Blue flashing	Micro Inverter re-initiated the MPPT searching mode because of changes on the DC input power
Blue constant	MPPT is locked at the maximum power
Blue slow flashing	Increasing fine-tuning of the MPPTs
Red slow flashing	Decreasing fine-tuning of the MPPTs
Blue and Red slow flashing	Output power adjustment (see also paragraph 3.5)

5. RXY-1070 Single Phase AC Energy Meter

The RXY-1070 single-phase AC power energy meter is a highly integrated measurement and digital communication technology product that can complete electrical energy measurement, acquisition, and transmission of electrical parameters. It can accurately measure AC voltage, current, power, electricity, and other electrical parameters. It is completely isolated from circuits, has a small size, simple interface, and can be easily installed in various devices that need to measure power consumption. It can be used for remote monitoring of equipment usage.

5.1. Functional Features

① Collect AC electrical parameters, including voltage, current, power, power factor, and electrical energy.

② Using dedicated measurement chips, effective value measurement method, high measurement accuracy.

③ 433M communication method.

④ Different specifications of current transformers can be optionally selected.

5.2. Energy Meter Technical Data

Item		Parameter
AC input	Voltage range	176-264V AC
	Current range	0~50A
	Overload capacity	1.2 times the range is sustainable; Instantaneous (<20mS) current 5 times, voltage 1.2 times the range without damage
	Input impedance	Voltage channel>1 k Ω/V
Communication	type	433M communication
	distance	No less than 50 meters in open area

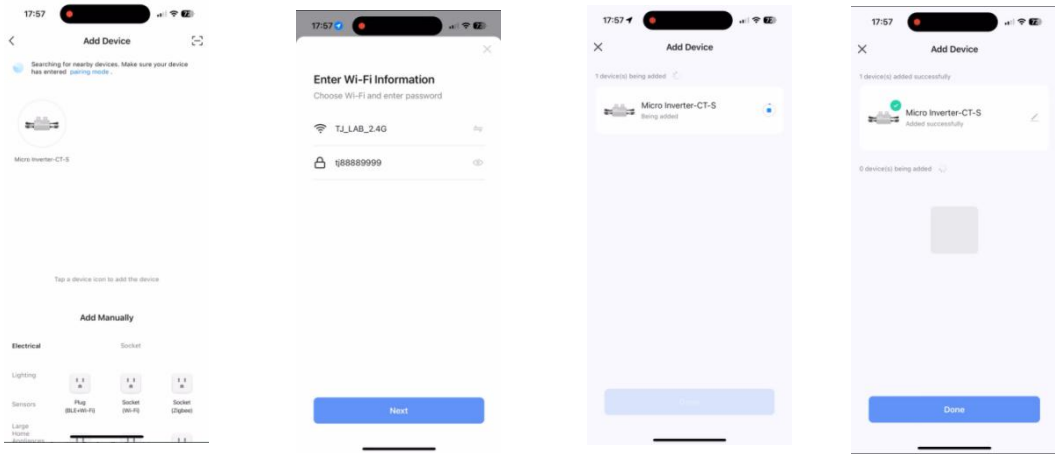
Measure output data		AC Voltage, Current, Power, Power factor,
Measurement Accuracy		Voltage, Current, Power: less than ± 1.0%; Electricity level 1
Power Supply		AC176~264V input, current<15mA at 220V
Work Environment	Working temperature	-30~+75 ℃, Storage temperature: -40 to+85 ℃
	Relative humidity	5-95%, no condensation (at 40 ℃)
	Altitude	≤3000 meters
	Environment	A place without explosive, corrosive gases, conductive dust, significant shaking, vibration, and impact.
Installation Method		Adhesive installation
Shell size		89 * 60 * 32mm
Weight		100g

6. Instructions for Monitoring Platform

6.1. Monitoring Platform Download

Search "Smart Life" in major app shops or scan the QR code below to download "Smart Life".

6.2. Add micro inverter from Smart Home App



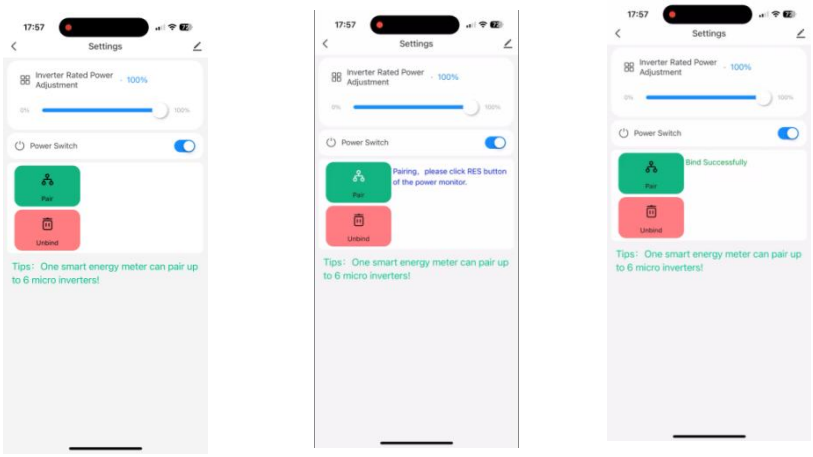
Connect PV cable to micro inverter, then press RESET (WiFi button) and hold for 3 to 5 seconds, click **Add Device** from up-right of the Smart Home App, you will see device(s) listed, click one of the devices, and enter your Wi-Fi password, **make sure the frequency of WiFi is 2.4GHz**. Then click **Next** to add device, after it's done, click Done to enter the device control panel.

If the adding device procedure is timeout, check your password or the quality of your WiFi signal, and do not put metal object around WiFi antenna or leave your device far from your router, then try again.

6.3. Pair energy meter to micro inverter

① Long press the RES button on meter can unpair with all micro-inverters. In production checking, the energy meter may be paired with other micro inverters, so suggest to long press the RES button to clean up the old pairing before you start a new pairing if need.

② Single-click the RES button on energy meter, the meter's RF indicator light flashes rapidly to indicate it is in pairing mode, at this moment, single-click the pair button in the APP, and the right side will show the pairing result as text.



③ If the pairing is not completed within 30 seconds, the APP interface will prompt that the pairing has failed, and it will automatically exit the pairing mode. The meter will also exit the pairing mode.

④ If you want to stop the network configuration during pairing progress, you just need to click the pair button again or single-click the RES on meter to exit the network configuration mode.

⑤ Click unbind in the APP can disable the binding between the APP and the meter, after that the micro-inverter will no longer obtain the power data from the meter.

⑥ The meter can bind to a maximum of 6 micro-inverters, with 6 IDs binding in rotation. When the number of bound micro-inverters exceeds 6, the 7th bound device will replace the 1st device and so on. To ensure the normal operation of multiple micro-inverters, it is recommended to first long-press the RES button meter to unpair all micro-inverters.

Note:

Anti-Reflow function is on by default, if you need to turn off this function, just click Anti-Reflow button once. When the anti-reflow function is on, the micro inverter will adjust the output power according to the energy meter.

The RUN indicator light remains on when powering up. The RF indicator light blinks when pairing to a micro inverter, otherwise, it keeps on.

7. Troubleshooting

In case of difficulties with the Zero Export Micro Inverter we recommend to follow firstly the following steps for troubleshooting:

If microinverter is not working properly, check as below

① Confirm that the grid voltage is within the range as provided in the Technical Data

② Confirm the grid connection of the Micro Inverter and in case of a plug make sure that the plug is securely fitted.

③ Ensure that all respective AC safety breakers and RCDs are working properly and switched on.

④ Check the DC connections between the PV modules and the Micro Inverter.

⑤ Verify that the DC voltage provided by the PV modules is within the allowable range as provided in the Technical Data

⑥ Ensure that the Micro Inverter didn't get switched off through the Smartphone App accidentally.

If energy meter is not working properly, check as below

① Anti-backflow function is enabled, after a period of operation, the indicator light of the micro-inverter goes out which is seems stop working, then disconnect and reconnect the PV cable.

② DIR indicator light flashes sometimes during the anti-reflow controlling, no worry, this is normal, this is micro inverter adjusts the output power, sometimes the output power is a little bigger than the load requirement, so the current flows to the grid, cause the DIR indicator light turns on.

③ Anti-reflow function is on, but the Meter Online Flag is 0, this is caused by far distance between meter and microinverter, or many obstacles between them, result in microinverter can not get the power value from meter, so please install the meter according to recommendation.

If the problem still persists, please contact the Technical Support via your local vendor.