



User Manual

TSOL-MG3-MP

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Product information is subject to change without notice. User documentation is frequently updated; please check www.tsun-ess.com for the latest information. To ensure optimal reliability and meet warranty requirements, TSUN products must be installed according to the instructions in this manual. For warranty text refer to www.tsun-ess.com.

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Audience

This manual is intended for use by professional installation and maintenance personnel.

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Read This First

Dear customer, thank you for choosing TSUN products. We hope you will find our products meet your needs for renewable energy. Meantime, we appreciate your feedback regarding our products.




Data Transfer Unit (DTU) is a communication device for the TSUN RS485 microinverter system. This manual contains important instructions for TSOL-MG3-MP DTU and must be read in its entirety before installing or commissioning the equipment. For safety, only qualified technicians, who have received training or have demonstrated skills can install and maintain this DTU under the guide of this document.

Important Safety Information

During installation, testing, and inspection, adherence to all the handling and safety instructions is mandatory. Failure to do so may result in injury or loss of life and damage to the equipment.

Product Label

The symbols on the products are listed below and illustrated in detail.

Symbol	Description
	This device fulfills the requirements of the Radio Equipment Directive.
RoHS	This device complies with the RoHS Directive.
	Please read the installation manual first before installation, operation, and maintenance.
	This device SHALL NOT be disposed of in residential waste.

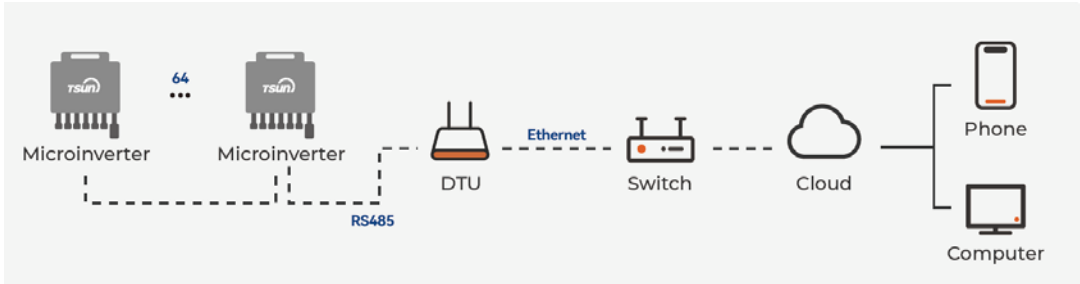
System Introduction

The TSOL-MG3-MP DTU is used in grid-tied applications which is comprised of three key elements:

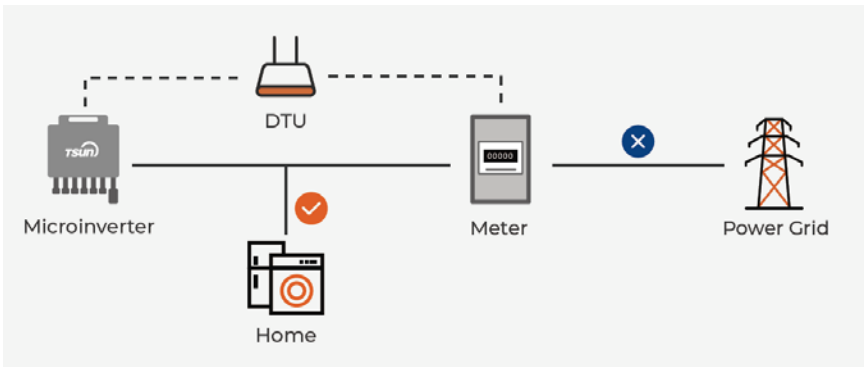
- TSUN RS485 Microinverter.
- TSOL-MG3-MP DTU.
- Monitoring System: TSUN Portal Website and TSUN Smart APP .

The microinverter converts the DC electricity generated by solar panels into AC electricity which is in accordance with the requirements of the public grid and sends the AC into the grid, reducing the load pressure of the grid.

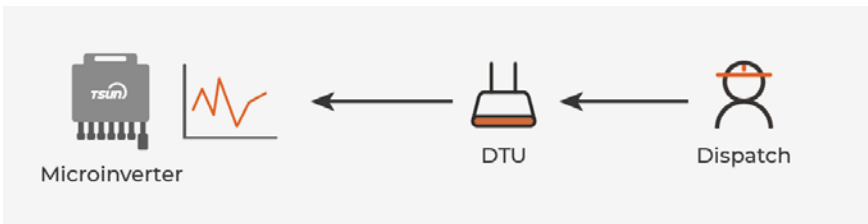
DTU and microinverters are all connected by RS485 cables. DTU can collect the operating data of microinverters and send control command to each microinverter. DTU has an Ethernet port and an integrated WiFi module. DTU can communicate with the network switch or router by Ethernet cable or WiFi. Users can monitor the power generation of the system by TSUN Smart App and TSUN Portal Website.



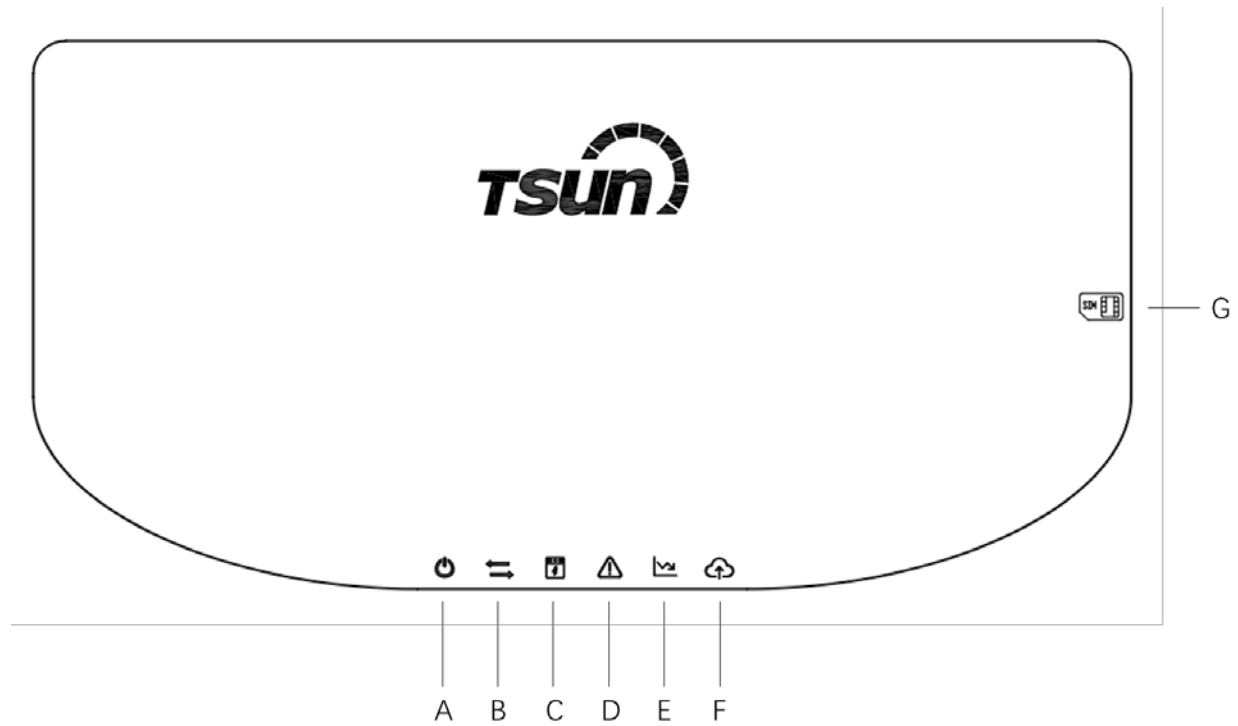
DTU can also connect to electricity meter devices, collect power grid information, and control the output power of the photovoltaic system to achieve zero-export function.



DTU also has an external communication interface, which can receive external dispatch commands and regulate output power of the system.

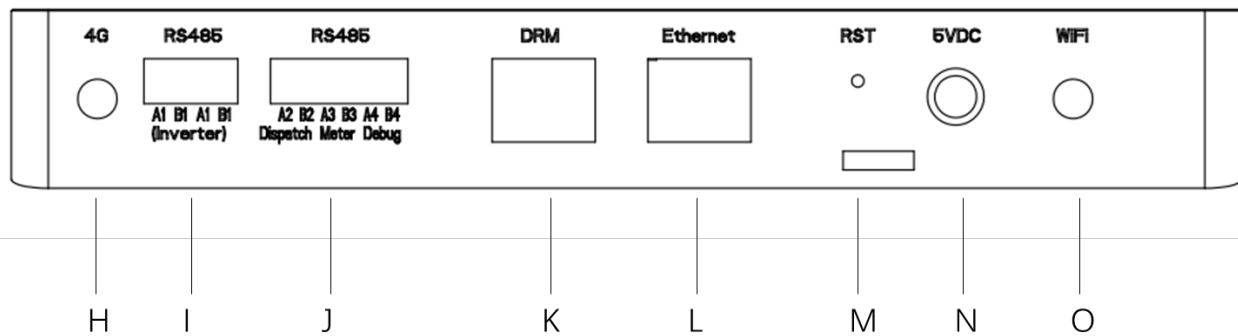


Product Description



Object	Description	Object	Description
A	Power LED	E	Communication LED (Dispatch)
B	Communication LED (Inverter)	F	Communication LED (Router)
C	Communication LED (Meter)	G*	SIM Card Slot (Reserve)
D	Alarm LED		

* These ports are reserved. Pls contact TSUN for more details if you need.



Object	Description	Object	Description
H*	4G Antenna (Reserve)	L	Ethernet Port
I	RS485 Port (Inverter)	M	Reset Hole
J	RS485 Port (Dispatch/Meter/Debug)	N	Power Port
K*	DRM Port (Reserve)	O	WiFi Antenna

* These ports are reserved. Pls contact TSUN for more details if you need.

Datasheet

Model	TSOL-MG3-MP
Communication to Microinverter (RS485)	
Communication port	RS485
Maximum Distance	500m
Baud Rate	9600 bps
Connection Limit	64 Microinverters
Communication to Meter (RS485)	
Communication port	RS485
Maximum Distance	100m
Grid Type	Single phase / Three phase
Baud Rate	9600 bps (4800 to 19200 optional)
Communication to Server (WiFi or Ethernet)	
Communication port	WiFi / Ethernet
WiFi Signal	WIFI (802.11 b/g/n)
WiFi Frequency	2.4GHz
Maximum Distance (WiFi) (Open Space)	100m
Ethernet Port	RJ45 (802.3)
Ethernet Speed	10/100M Base-T
Maximum Distance (Ethernet)	500m
Sample Rate	Per 5 minutes
Communication to App	
Signal	Bluetooth 5.0
BLE Frequency	2.4GHz
Maximum Distance to mobile phone (Open Space)	50m
Power Supply	
Type	External adapter
Input Voltage/Frequency	100 to 240V AC / 50 or 60Hz
Power Consumption	2.5W(typical), 5W(maximum)
Mechanical Data	
Ambient Temperature	-20 ~ +55 °C
Mounting System	Wall mounted
Indicator Light	6*LED
Communication Port	5*RS485, 2*RJ45(DRM,Enthernet)
Dimension	200 * 100 * 29 mm
Weight	232g
Protection	IP20

TSUNESS Co., Ltd declares that the radio equipment (DTU) is in complies with Directive 2014/53/EU.

OPERATING FREQUENCY (the maximum transmitted power)



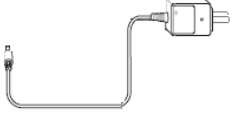
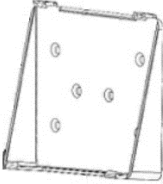
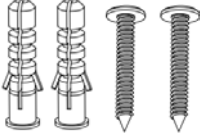

2412MHz—2472MHz(EIRP <20dBm)

2402MHz—2480MHz(EIRP <10dBm)

Installation

Pre-installation Check

Check the Package

		
DTU * 1	Antenna * 1	Adaptor * 1
		
Bracket * 1	Expansion Screw * 4	User Manual * 1

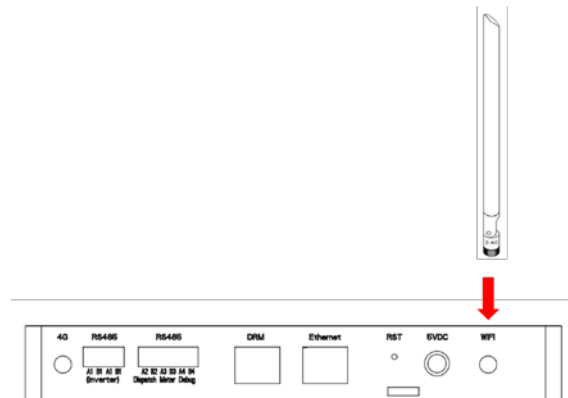
Check the Installation Environment and Position

When choosing the position of installation, comply with the following conditions:

- ◆ Avoid electromagnetic interference that can compromise the correct operation of electronic equipment.
- ◆ An AC power source is needed while doing the installation.

Installation Steps

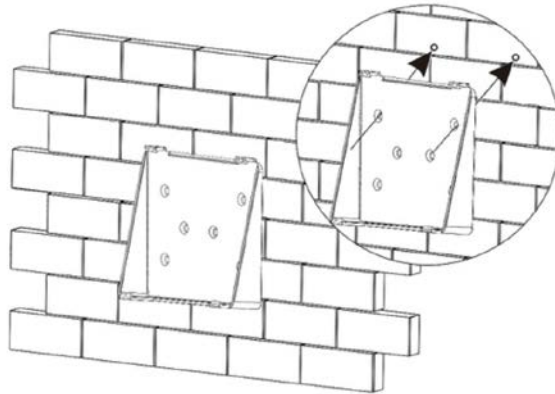
Step 1. (Optional) Install the WiFi Antenna.



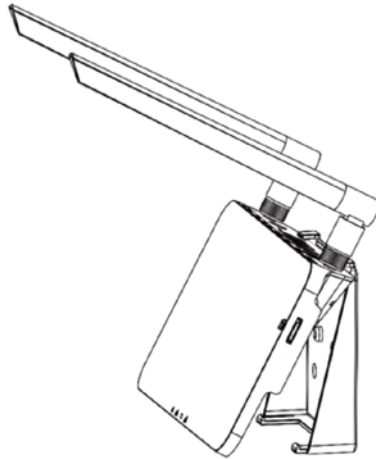
Take the antenna out from the box, screw the antenna into the Wi-Fi port.

Step 2. Install the bracket and fix the DTU

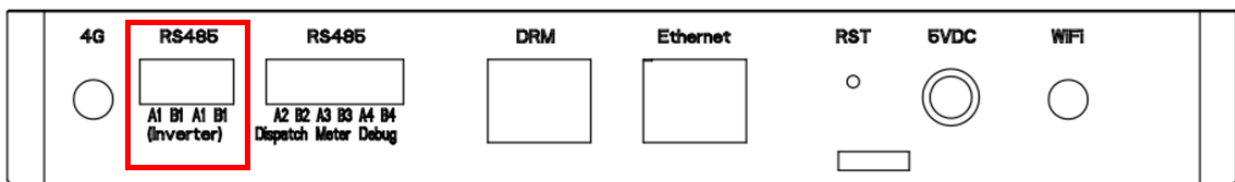
Use at least two screw holes (one from each side) to fix the bracket (the M4 screws need to be prepared by installer).



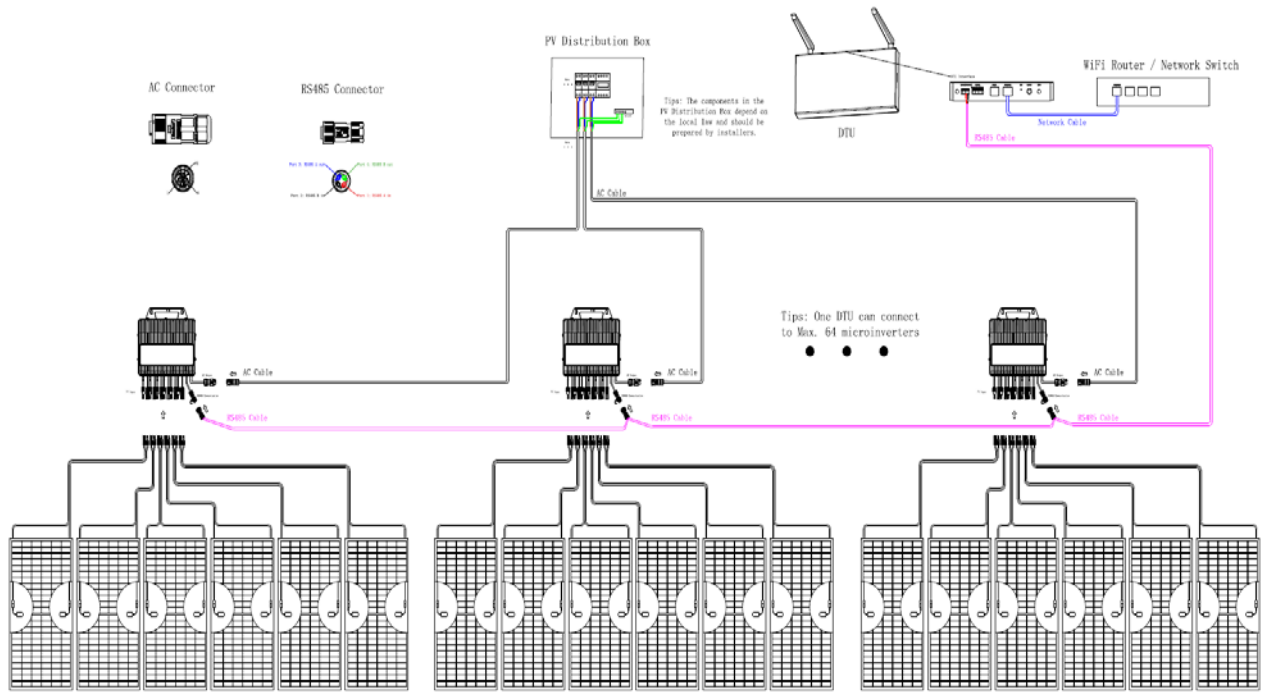
Match the bracket's upper buckle with monitor device. Then match the bracket's lower buckle by gently press the lower side of the monitor device until hear the "Click".



Step 3. Connect the RS485 port (Inverter)

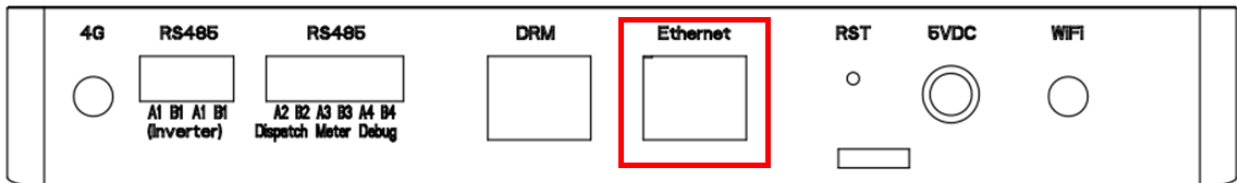


Connect the RS485 Port (inverter) A1 and B1 to the microinverters.



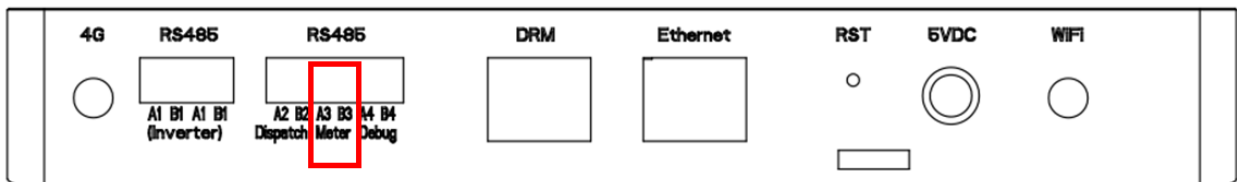
The definition of microinverter RS485 connector can be found in the Quick Installation Guide or User Manual of TSUN RS485 microinverter.

Step 4. Connect the Ethernet port



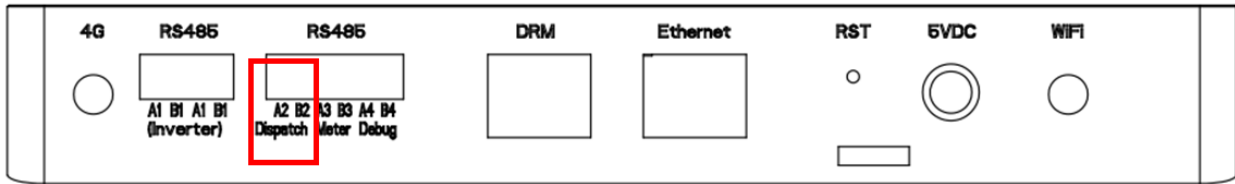
Connect the Ethernet Port to the WiFi router or network switch.

Step 5. (Optional) Connect the Meter port



Connect the RS485 Port (Meter) A3 and B3 to the power meter.

Step 6. (Optional) Connect the Dispatch port



Connect the RS485 Port (Dispatch) A2 and B2 to the power control device.

More information can be found in Annex I [SunSpec Modbus Profile V1.2](#).

Step 7. Power on the DTU

Power on the DTU.

Step 8. Finish the installation of microinverter

Finish the installation of microinverters.

Step 9. Register in TSUN Portal Website

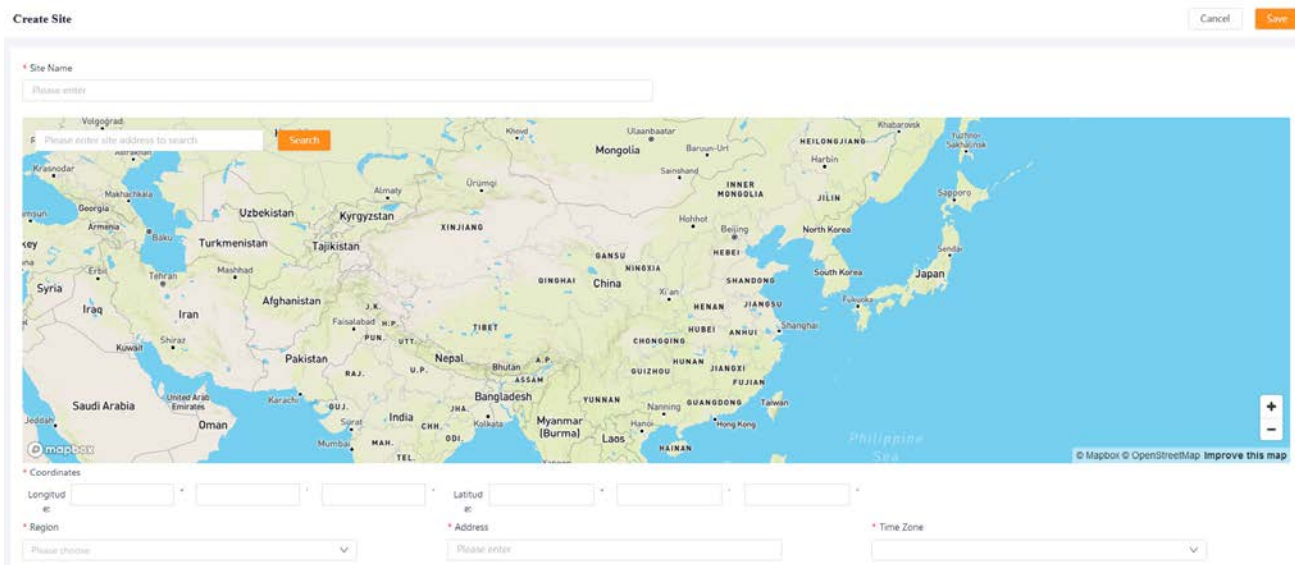
Visit pro.talent-monitoring.com and register as an installer.



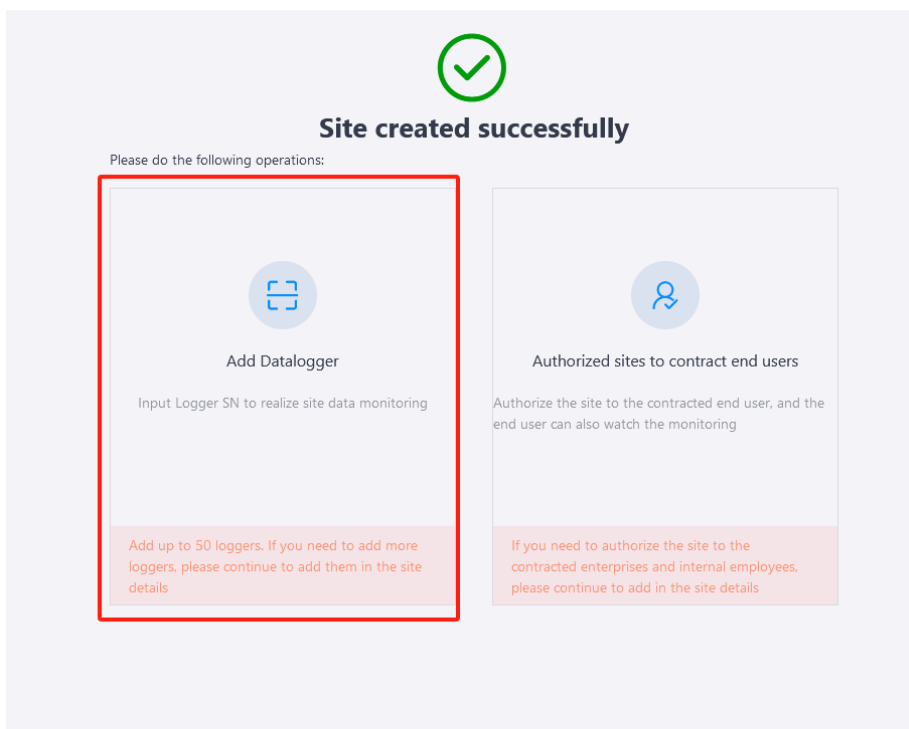
Step 10. Create a solar plant and add DTU device.

Create a new plant and finish the plant detail.

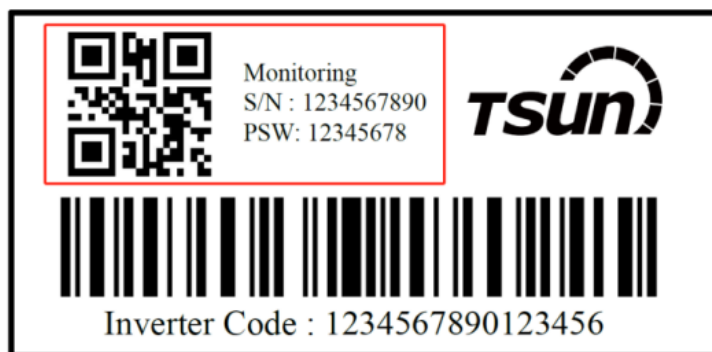
Tips: The system type must be set to **“solar + grid + consumption”**



Add the SN of DTU.

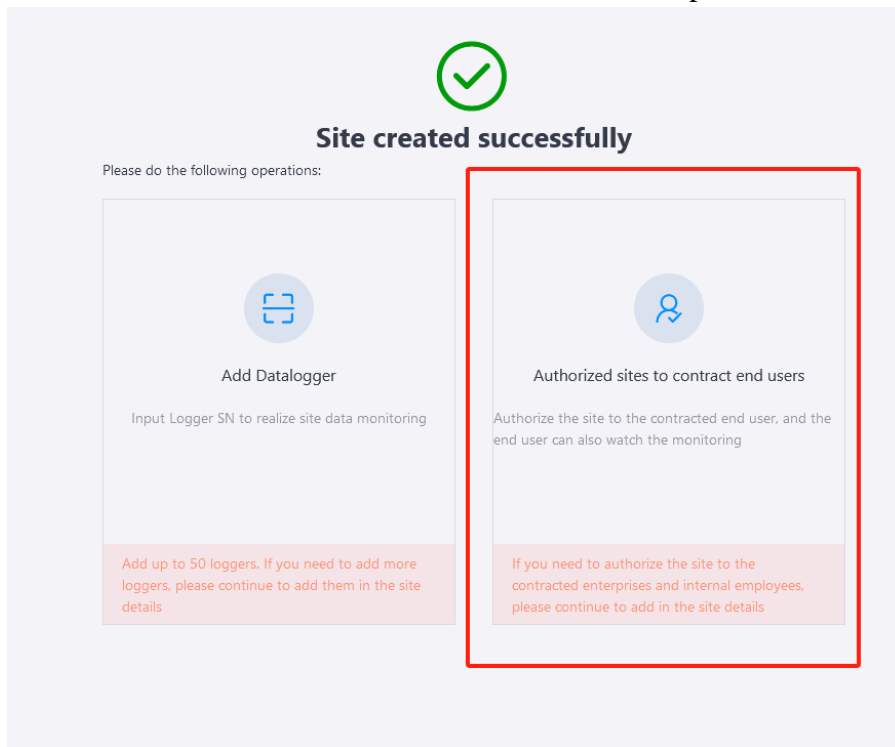


Tips: The 10-digits SN can be found in the backside of DTU.



Step 11. Create an end-user account and authorize the solar plant.

Create an end-user account and finish the details. Authorize the solar plant to this end-user account.



Contract Initiator
 TSUNESS Co., Ltd
 Site authorized by the contract initiator to the contract recipient
 test

Contract Recipient

E-mail

* Name

* E-mail

* Username

* Password

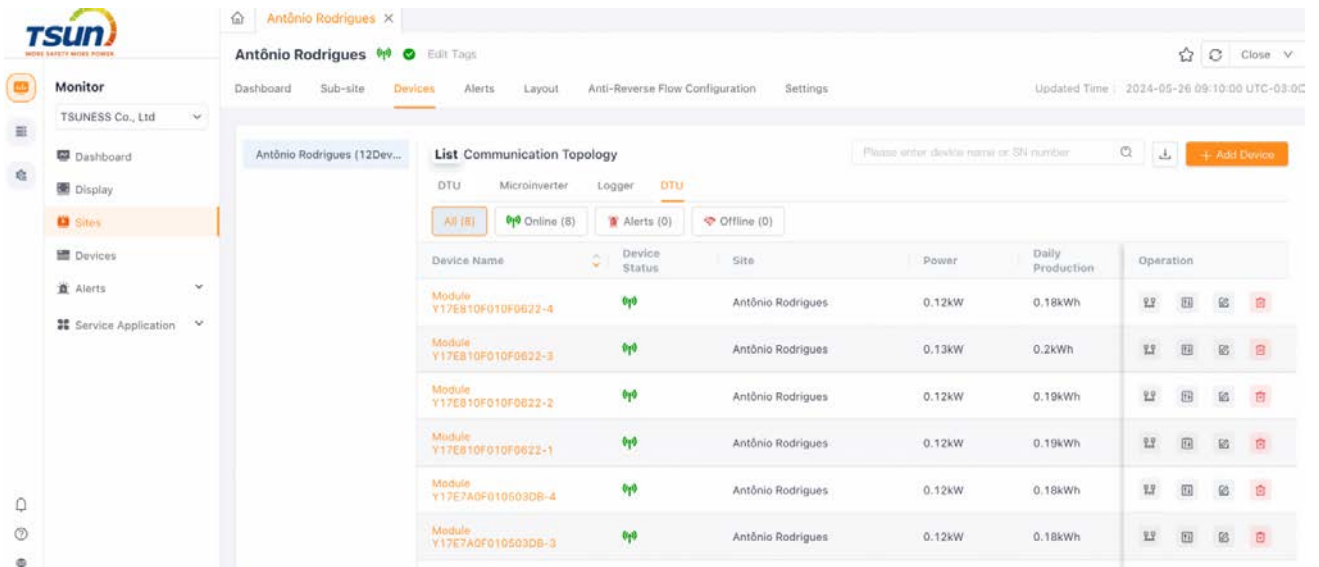
Does the end user have an account? [Click here](#) Search Account

* Contract Scheme

This scheme is suitable for roof owners or device after-sales service units, and can only check and operate authorized sites

Step 12. Config the DTU.

Click  button in "Device List" page to configure DTU.




Download template and fill in the SN and phase relationship in the template.

DTU configuration

Configuration log

Through this function, you can configure the DTU-connected microinverter device to achieve normal communication and three-phase phase settings of the device

step 1 : Upload the connection relationship and phase settings between DTU and microinverter



- 1.Before uploading, please download the " [template](#) "
- 2.Please ensure that the uploaded EXCEL format has been filled in correctly according to the template
- 3.DTU supports the configuration of up to 64 devices,please do not exceed this number

Cancel Next step

DTU configuration

Configuration log

Through this function, you can configure the DTU-connected microinverter device to achieve normal communication and three-phase phase settings of the device

step 1 : Confirm the information and start configuration
 If the information is incorrect, please modify the configuration file and go back to the previous step to upload it again

Phase	SN
A	Y190283726155273
A	Y190283726155274
B	Y190283726155275
B	Y190283726155276
C	Y190283726155277
C	Y190283726155278

Upload the module version and complete the configuration.

DTU configuration

Configuration log



loading
61/400 s

DTU configuration

Configuration log



Configuration successful

Step 13. Download the website.

Download “TSUN Smart” APP in Google Play or Apple Store. End user can visit this solar plant by TSUN Smart.



Maintenance Guide

Routine Maintenance

- ◆ Only authorized personnel are allowed to carry out the maintenance operations and are responsible for reporting any anomalies.
- ◆ Always use the personal protective equipment provided by the employer when carrying out maintenance.
- ◆ During normal operation, check that the environmental and logistic conditions are appropriate. Make sure that the conditions have not changed over time and that the equipment is not exposed to adverse weather conditions and has not been covered with foreign bodies.
- ◆ DO NOT use the equipment if any problems are found and restore the normal conditions after the fault has been corrected.
- ◆ The firmware version can be checked by using the monitoring system.
- ◆ Do not attempt to dismantle the DTU or make any internal repairs! To preserve the integrity of safety and insulation, the DTU is not designed to allow internal repairs!
- ◆ Avoid temporary repairs. All repairs should be carried out using only genuine spare parts.

Storage and Dismantling

- ◆ If the equipment is not used immediately or is stored for long periods, check whether it is correctly packed. The equipment must be stored in well-ventilated indoor areas that do not have characteristics that might damage the components of the equipment.
- ◆ Take a complete inspection when restarting after a long time or prolonged stop.
- ◆ Please dispose of the equipment properly after scrapping, as component parts are potentially harmful to the environment, following the regulations in force in the country of installation.

Recycling and Disposal

This device should not be disposed of as residential waste. A DTU that has reached the end of its life is not required to be returned to the dealer. Users must find an approved collection and recycling facility in the area.

Warranty Service

This Warranty is subject to the following conditions:

- ◆ The products must have been installed and correctly commissioned by an authorized and licensed installer. Proof may be required of correct commissioning of the Product (such as a certificate of compliance). Claims for failures due to incorrect installation or commissioning are not covered under this Warranty.
- ◆ Where a Product or part thereof is replaced or repaired under this Warranty, the balance of the original Warranty period will apply. The replacement product or part(s) do not carry a new voluntary warranty.
- ◆ The product must have its original serial number and rating labels intact and readable.
- ◆ This Warranty does not extend to any product that has been completely or partially disassembled or modified, except where such disassembly is carried out by TSUNESS
- ◆ The terms of this Warranty cannot be amended except in writing by one of our authorized officers.
- ◆ There must have been a commissioning report signed by the end user and the installer for product commissioning and handling instructions.

Exclusions

- (a) TSUNESS makes no warranties, either expressed or implied, orally, or in writing, concerning any other warranty coverage except those expressly stated in this limited Factory Warranty.
- (b) The Factory Warranty does not cover damages that occur due to:
 - Transport damage;
 - Installation or commissioning through any person who is not an Authorized, Certified Dealer;
 - Failure to observe the user manual, maintenance regulations, and intervals;
 - Modifications, changes, or attempted repairs, except as conducted by an Authorized Dealer;
 - Incorrect use or inappropriate operation;
 - Failure to observe the applicable safety regulations;
 - Force majeure.
- (c) This factory warranty does not cover cosmetic defects which do not directly influence energy production, or degrade form, fit, and function.
- (d) Claims that go beyond the scope of this limited Factory Warranty, in particular claims for compensation for direct or indirect damages arising from the defective device, for compensation for

costs arising from disassembly and installation, or loss of profits, are expressly NOT covered by this Factory Warranty.

(e) In no event will TSUNESS Co., Ltd be held responsible or liable for any personal injuries resulting from the use of the system, or for any other damages, whether direct, indirect, incidental, or consequential; even if TSUNESS Co., Ltd has been advised of such damages.

Distributor Responsibility

In the event of an equipment failure or fault, it is the Distributor's responsibility to work directly with the TSUNESS Service Centre to limit the return of non-faulty equipment. TSUNESS Service Centre will work with the Distributor to rectify the fault or fault message through telephone support or with direct PC links. Note: To qualify for further compensation and a replacement unit, the distributor/installer must first contact TSUNESS and fulfill the distributor's /installer's responsibilities under instruction.

Within the warranty period of the DTU, the invoice and date of purchase are required for the service. Besides, the trademark on the product should be visible, otherwise, a warranty is not available.


More information can be found in TSUN Warranty Policy.

Annex I: SunSpec Modbus Profile V1.2

Modbus Register Number	SunSpec-Name	Description / Number code(s)	Type	Access	Remark
40001	SID	A well-known value 0x53756e53. Uniquely identifies this as a SunSpec Modbus Map: 1400204883	uint32	RO	
40003	ID	A well-known value 1. Uniquely identifies this as a SunSpec Common Model	uint16	RO	
40004	L	Well-known # of 16 bit registers to follow : 66	uint16	RO	
40005	Mn	Well known value registered with SunSpec for compliance: SMA	string16	RO	
40021	Md	Manufacturer specific value (32 chars): Solar Inverter	string16	RO	
40037	Opt	Manufacturer specific value (16 chars): Model ID	string8	RO	
40045	Vr	Manufacturer specific value (16 chars)	string8	RO	
40053	SN	Manufacturer specific value (32 chars)	string16	RO	
40069	DA	modbus device address	uint16	RW	
40344	ID	A well-known value 123. Uniquely identifies this as a SunSpec Immediate Controls Model	uint16	RO	
40345	L	Well-known # of 16 bit registers to follow : 24	uint16	RO	
40348	Conn	Enumerated valued. Connection control	uint16	RW	
40349	WMaxLimPct	Set power output to specified level	uint16	RW	0-100 (0-100%)
40353	WMaxLim_Ena	Enumerated valued. Throttle enable/disable control: 0	uint16	RW	0:disable 1:enable
40359	VArWMaxPct	Reactive power in percent of WMax	int16	RW	0-100 (0-100%)
40365	VArPct_Mod	Enumerated value. VAR percent limit mode	uint16	RW	0x99: QPLeading 0x9A: QPLagging
40366	VArPct_Ena	Enumerated valued. Percent limit VAR enable/disable control: 0	uint16	RW	0:disable 1:enable
1、Adder 1 2、Standard Modbus Protocol 3、9600, 8bit, No parity bit, 1bit Stopbit					



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