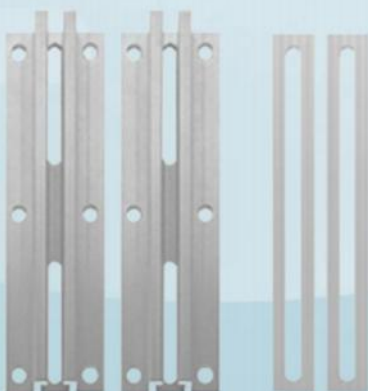
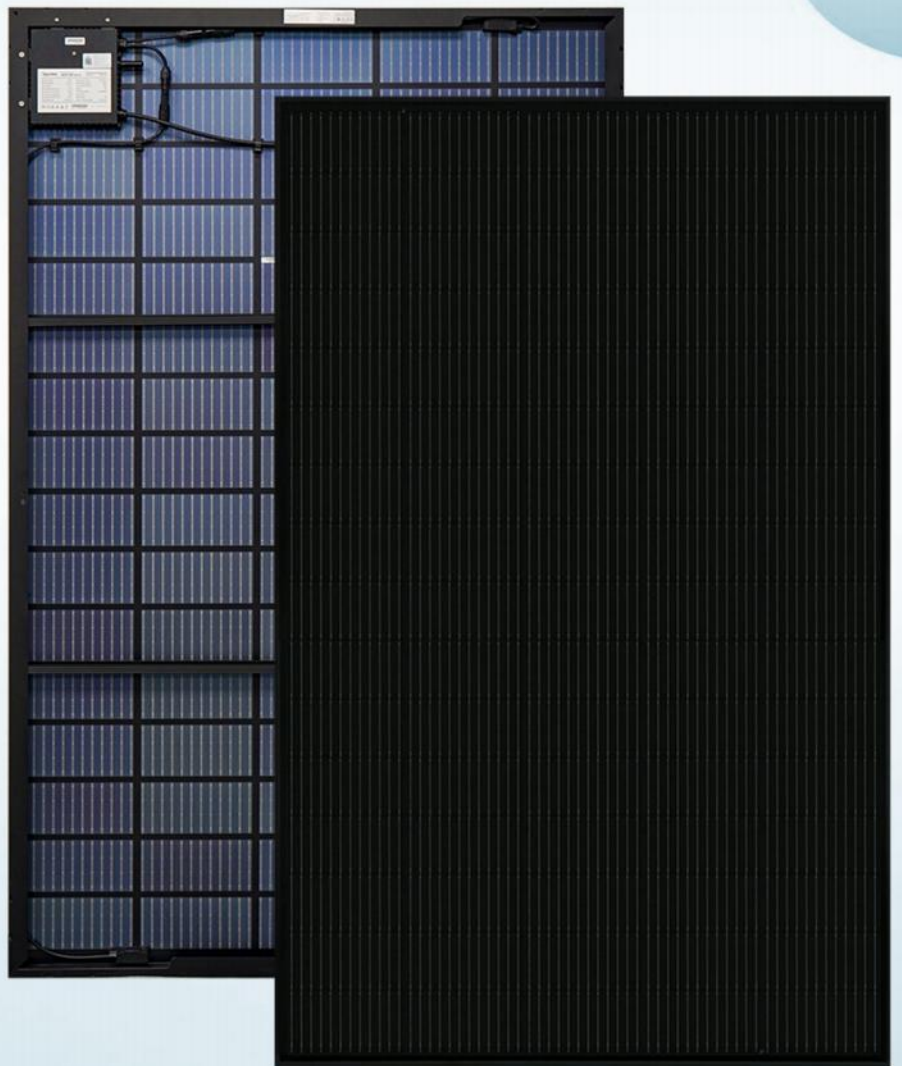




# Product Manual of Balcony & Garden Solar System Set





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# MS(390-410)MB-40H Full Black

390/395/400/405/410 WP



## Better appearance

- Full-black tone makes the modules blend perfectly with the building roof, ideal for residential roofs and BIPVs
- Cleaner and more aesthetic than traditional modules and complements your home's architectural style
- The new layout design is uniform overall, and the vision is extremely beautiful



## High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment



## High energy yield

- Excellent IAM(Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-rowshading conditions



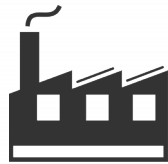
## High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

## APPLICATIONS >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

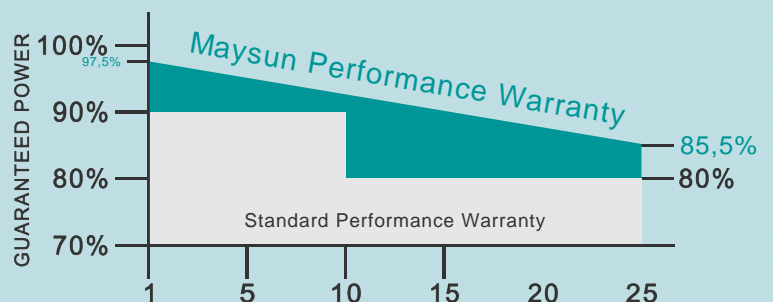


## MAXIMUM EFFICIENCY

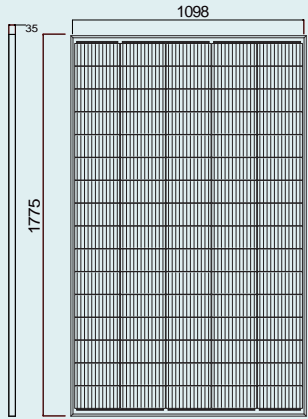
# 21%

## POSITIVE POWER TOLERANCE

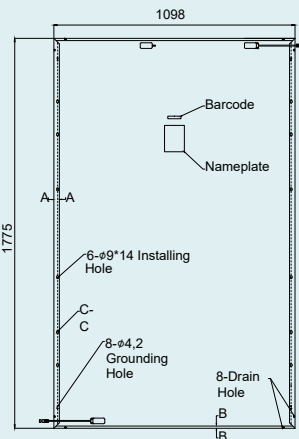
# 0 ~+5W



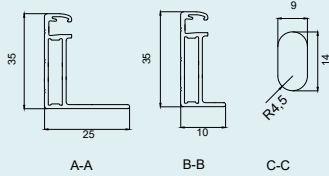
### DIMENSIONS OF PV MODULE (mm)



Front View



Back View

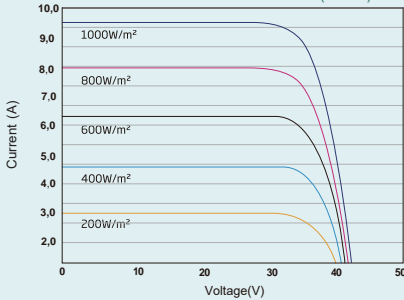


A-A

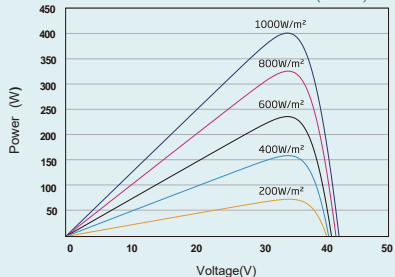
B-B

C-C

### I-V CURVES OF PV MODULE (400W)



### P-V CURVES OF PV MODULE (400W)



### ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	390	395	400	405	410
Power Tolerance- $P_{MAX}$ (W)	0 ~ +5				
Maximum Power Voltage- $V_{MPP}$ (V)	42,63	42,94	43,3	43,65	44,0
Maximum Power Current- $I_{MPP}$ (A)	9,15	9,20	9,24	9,28	9,32
Open Circuit Voltage- $V_{OC}$ (V)	51,59	51,96	52,4	52,82	53,24
Short Circuit Current- $I_{SC}$ (A)	9,70	9,75	9,79	9,83	9,88
Module Efficiency $\eta_m$ (%)	20,0	20,3	20,5	20,8	21,0

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1,5.

\*Measuring tolerance: ±3%.

### ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	295	299	302	306	309
Maximum Power Voltage- $V_{MPP}$ (V)	39,6	39,9	40,2	40,6	40,9
Maximum Power Current- $I_{MPP}$ (A)	7,44	7,49	7,51	7,54	7,56
Open Circuit Voltage- $V_{OC}$ (V)	47,9	48,3	48,6	49,1	49,4
Short Circuit Current- $I_{SC}$ (A)	7,82	7,86	7,89	7,99	8,01

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

### MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	80 cells
Module Dimensions	1775 mm x 1098 mm x 35 mm
Weight	21 kg
Glass	3,2 mm High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	Black
Frame	35 mm Black, anodized aluminium alloy
J-Box	IP 68 rated (2 bypass diodes) + 2 MOS
Cables	Photovoltaic Technology Cable 4,0 mm <sup>2</sup> (0,006 inches <sup>2</sup> ) Portrait: N 700 mm/P 700 mm (27,55/27,55 inches) Length can be customized
Connector	MC4 Compatible

\*Please refer to regional datasheet for specified connector.

### TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of $P_{MAX}$	- 0,34%/°C
Temperature Coefficient of $V_{OC}$	- 0,25%/°C
Temperature Coefficient of $I_{SC}$	0,04%/°C

### MAXIMUM RATINGS

Operational Temperature	- 40 ~ +85°C
Maximum System Voltage	1500V DC (IEC)
	1000V DC (IEC)
Max Series Fuse Rating	20A

### WARRANTY

15 year Product Workmanship Warranty
25 year Power Warranty
2,5% first year degradation
0,5% Annual Power Attenuation

\*Please refer to product warranty for details.

### PACKAGING CONFIGURATION

Modules per set: 2 pieces
Modules per pallet: 18 pieces (9 sets) / 40 pieces (20 sets)
Modules per 40' container: 540 pieces / 520 pieces



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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Specifications included in this datasheet are subject to change without notice.

Website: [www.maysunsolar.com](http://www.maysunsolar.com)

Mono PERC 210mm 80 Cells

# MS(390-410)MB-40H Full Black Bifacial

390/395/400/405/410 WP



## Tailored for balcony and garden solar system set

# Venusun S

-Full Black



### Lighter Weight

14 kg weight greatly facilitates transportation and installation after reducing 7 kg.



### Higher Power

Transparent backsheet generates 5%-20% extra electricity while backsheet can produce power.



### More Application

Designed for compatibility with existing mainstream system components.



### Better Appearance

All-black tone makes Venusun S more harmonious with the architecture, especially suitable for household.



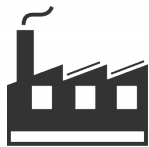
### High Reliability

Suitable for all kinds of weather, Venusun S owns class C fire safety.

## APPLICATIONS >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



On-grid balcony garden and carport

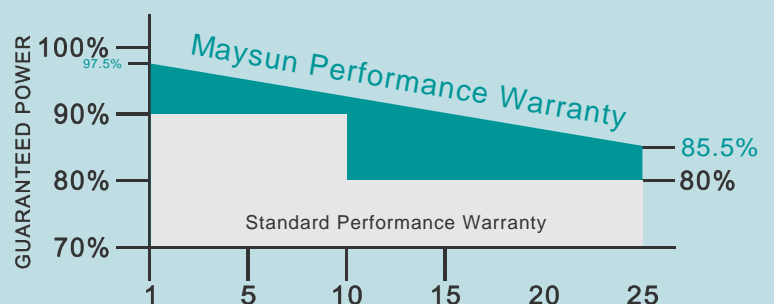


## MAXIMUM EFFICIENCY

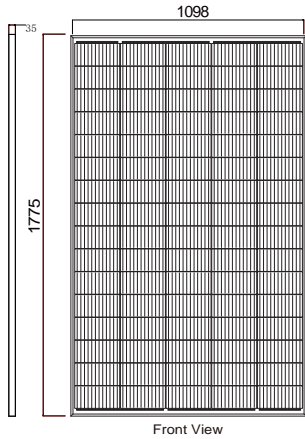
# 21%

## POSITIVE POWER TOLERANCE

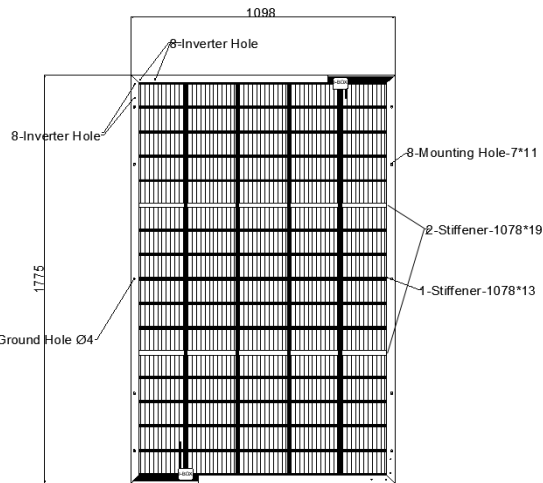
# 0 ~+5W



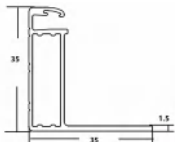
DIMENSIONS OF PV MODULE(mm)



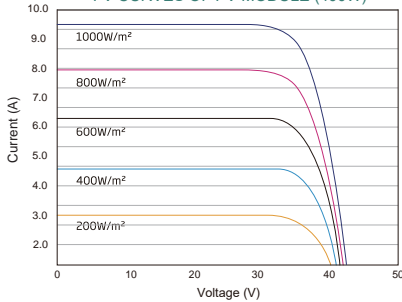
Front View



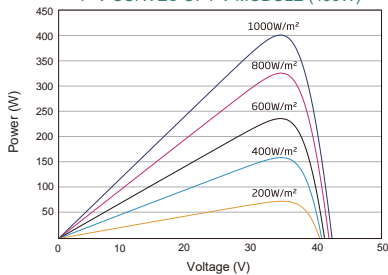
Back View



I-V CURVES OF PV MODULE (400W)



P-V CURVES OF PV MODULE (400W)



### ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	390	395	400	405	410
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Maximum Power Voltage- $V_{MPP}$ (V)	42.63	42.94	43.3	43.65	44.0
Maximum Power Current- $I_{MPP}$ (A)	9.15	9.20	9.24	9.28	9.32
Open Circuit Voltage- $V_{OC}$ (V)	51.59	51.96	52.4	52.82	53.24
Short Circuit Current- $I_{SC}$ (A)	9.70	9.75	9.79	9.83	9.88
Module Efficiency $\eta$ m (%)	20.0	20.3	20.5	20.8	21.0

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. \*Measuring tolerance: ±3%.

### Electrical characteristics with different rear side power gain

5% Maximum Power- $P_{MAX}$ (Wp)	409.5	414.75	420	425.25	430.5
5% Module Efficiency $\eta$ m (%)	21.0	21.32	21.53	21.84	22.05
10% Maximum Power- $P_{MAX}$ (Wp)	429	434.5	440	445.5	451
10% Module Efficiency $\eta$ m (%)	22.0	22.33	22.55	22.88	23.1
20% Maximum Power- $P_{MAX}$ (Wp)	468	474	480	486	492
20% Module Efficiency $\eta$ m (%)	24.0	24.36	24.6	24.96	25.2

Power Bifaciality: 70±5%.

### ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	295	299	302	306	309
Maximum Power Voltage- $V_{MPP}$ (V)	39.6	39.9	40.2	40.6	40.9
Maximum Power Current- $I_{MPP}$ (A)	7.44	7.49	7.51	7.54	7.56
Open Circuit Voltage- $V_{OC}$ (V)	47.9	48.3	48.6	49.1	49.4
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NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

### MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	80 cells
Module Dimensions	1775 mm x 1098 mm x 35 mm
Weight	14 kg
Glass	1.6 mm High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	Black mesh transparent
Frame	35 mm Black, anodized aluminium alloy
J-Box	IP 68 rated (2 bypass diodes) + 1 MOS
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Portrait: N 1650 mm/P 650 mm (66.93/23.62 inches) Length can be customized
Connector	MC4 Compatible

\*Please refer to regional datasheet for specified connector.

### TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of $P_{MAX}$	- 0.34%/°C
Temperature Coefficient of $V_{OC}$	- 0.25%/°C
Temperature Coefficient of $I_{SC}$	0.04%/°C

### MAXIMUM RATINGS

Operational Temperature	- 40 ~ +85°C
Maximum System Voltage	1500V DC (IEC)
	1000V DC (IEC)
Max Series Fuse Rating	20A

### WARRANTY

15 Year Product Workmanship Warranty
25 Year Power Warranty
2.5% First Year Degradation
0.5% Annual Power Attenuation

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Modules per Pallet: 18 pieces (9 sets) / 40 pieces (20 sets)
Modules per 40' Container: 540 pieces / 520 pieces

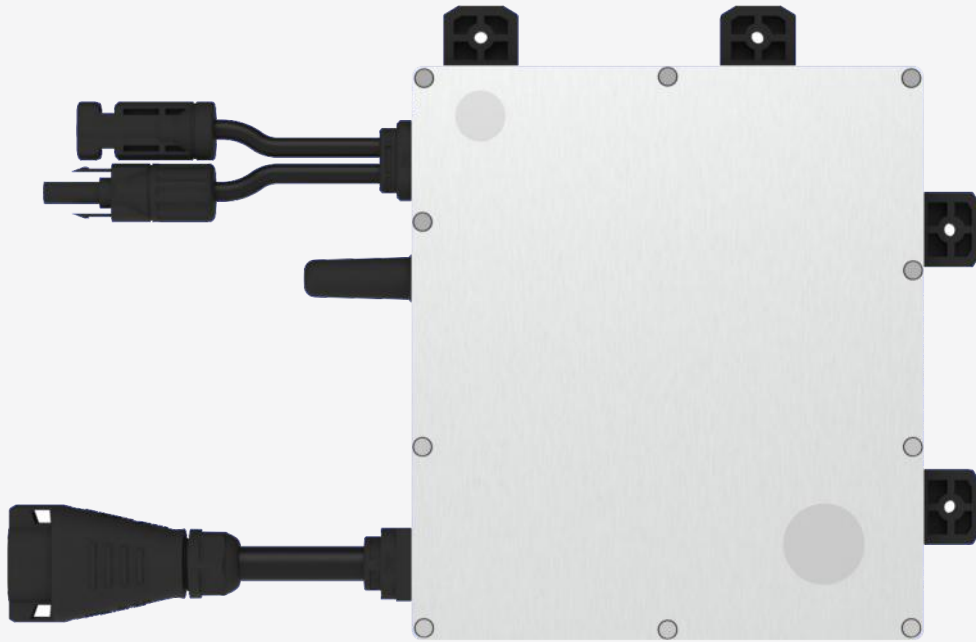


CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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Specifications included in this datasheet are subject to change without notice.

Website: [www.maysunsolar.com](http://www.maysunsolar.com)



## Microinverter Datasheet

**HMS-300-1A**  
**HMS-350-1A**  
**HMS-400-1A**

### Description

Hoymile HMS-400-1A series microinverter benefits from a new design architecture and is more suitable for AC module applications.

Each microinverter connects to one PV module. With module-level MPPT and real-time monitoring function, Hoymile HMS-400-1A series microinverter harvests more energy and offers more convenient operation and maintenance.

The new Sub-1G wireless communication solution allows for more stable communication under various environmental conditions.

### Features

01

Suitable for AC module applications

02

Safer for rooftop solar stations with integrated rapid shutdown functionality and isolated transformer

03

With Reactive Power Control, compliant with EN 50549-1:2019, VDE-AR-N 4105:2018, UL 1741, etc.

04

Grid protection relay integrated

05

Sub-1G wireless solution allows stable communication with Hoymiles gateway DTU

## Technical Specifications

Model	HMS-300-1A	HMS-350-1A	HMS-400-1A
<b>Input Data (DC)</b>			
Commonly used module power (W)	240 to 405+	280 to 470+	320 to 540+
Maximum input voltage (V)		60	
MPPT voltage range (V)		16-60	
Start-up voltage (V)		22	
Maximum input current (A)	12	13	14
Maximum input short circuit current (A)	20	20	25
Number of MPPTs		1	
Number of Inputs per MPPT		1	
<b>Output Data (AC)</b>			
Rated output power (VA)	300	350	400
Rated output current (A)	1.30	1.52	1.74
Nominal output voltage/range (V) <sup>1</sup>	230/180 ~ 275	230/180 ~ 275	230/180 ~ 275
Nominal frequency/range (Hz) <sup>1</sup>		50/45-55	
Power factor (adjustable)		> 0.99 default 0.8 leading ... 0.8 lagging	
Total harmonic distortion		< 3%	
Maximum units per 12 AWG branch <sup>2</sup>	15	13	11
Maximum units per 10 AWG branch <sup>2</sup>	24	21	18
<b>Efficiency</b>			
CEC peak efficiency		96.70%	
Nominal MPPT efficiency		99.80%	
Night power consumption (mW)		< 50	
<b>Mechanical Data</b>			
Ambient temperature range (°C)		-40 to +65	
Storage temperature range (°C)		-40 to +85	
Dimensions (W×H×D [mm])		184.5 × 204.5 × 26	
Weight (kg)		1.71	
Enclosure rating		Outdoor-IP67 (NEMA 6)	
Cooling		Natural convection – No fans	
<b>Features</b>			
Communication		Sub-1G	
Topology		Galvanically Isolated HF Transformer	
Monitoring		S-Miles Cloud	
Compliance		EN 50549-1: 2019, VDE-AR-N 4105: 2018, UL 1741, IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 61000-3-2/-3	

\*1 Nominal voltage/frequency range can be changed due to the requirements of local power department.

\*2 Refer to local requirements for the exact number of microinverters per branch.





Scan QR code  
Watch the installation video



# User Manual

## Balcony Power Station

### Venusun - Full Black

[www.maysunsolar.com](http://www.maysunsolar.com)

## Balcony Power Station Packing List



2 pcs 410W solar panels



2 pcs 400W inverters



5m AC cable  
(with plug and 2 pieces T-shaped connectors)

### Step 1



Unpack and remove the foam pad

### Step 2

Install and fix the solar modules

### Step 3

Plan and lay the AC bus

### Step 4

Connect the micro-inverter to the solar module

### Step 5

Connect the micro-inverter to the T-connector on the AC bus

### Step 6

Connect the plug and household socket

### Step 7

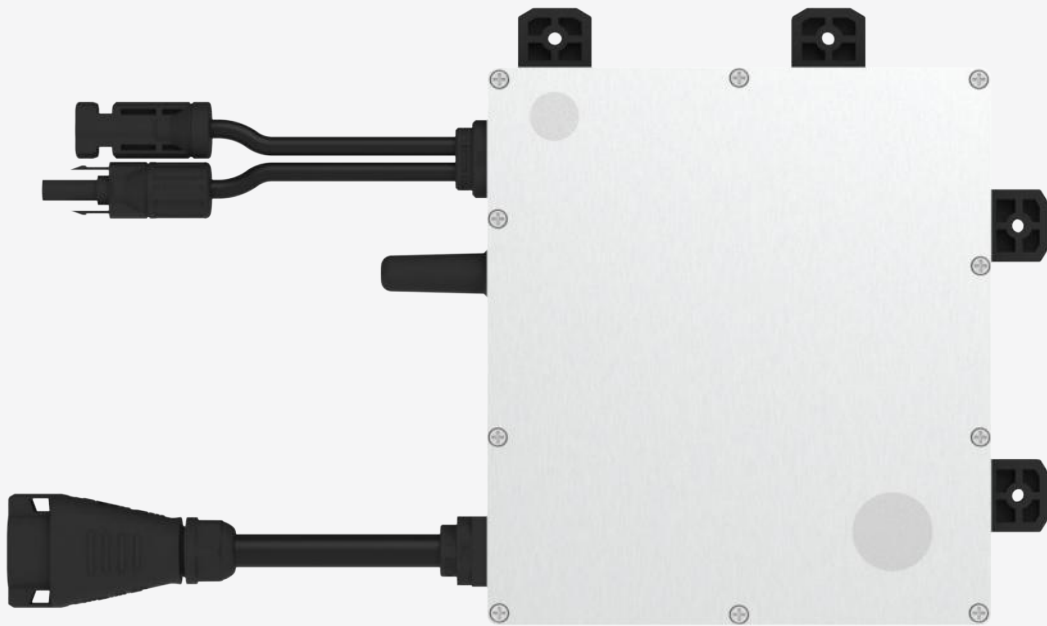
Check whether the system runs normally  
(Please refer to instructions of indicator lights on the manual of the inverter)

### Step 8

If choosing DTU equipment, please refer to DTU User Manual, DTU Quick Installation Guide and S-Miles Cloud Photovoltaic Monitoring Quick Registration Guide to set up the monitoring system.



View installation details



## Single-phase Microinverter

# USER MANUAL

HMS-500-1A  
HMS-450-1A  
HMS-400-1A  
HMS-350-1A  
HMS-300-1A

## About Microinverter

This system is composed of a group of microinverters that convert direct current (DC) into alternating current (AC) and feed the power to the public grid.

Each microinverter works independently so as to guarantee the maximum power generation of each PV module. This setup is highly flexible and reliable as the system enables direct control of the production of each PV module.

## About the Manual

This manual contains important instructions for HMS-300/350/400/450/500-1A microinverters and users shall read in its entirety before installing or commissioning the equipment. For safety reasons, only qualified technicians who have received training or demonstrated relevant skills can install and maintain this microinverter under the guidance of this document.

## Other Information

Product information is subject to change without notice. User manual will be updated regularly, so please refer to Hoymiles official website at [www.hoymiles.com](http://www.hoymiles.com) for the latest version.

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## 1. Important Notes

### 1.1 Product Range

This manual describes the assembly, installation, commissioning, maintenance and troubleshooting of the following models of Hoymiles Microinverter:

- HMS-300-1A
- HMS-350-1A
- HMS-400-1A
- HMS-450-1A
- HMS-500-1A

*\*Note: "300" means 300 W, "350" means 350 W, "400" means 400 W, "450" means 450 W, "500" means 500 W.*




*\*Note: 300/350/400/450/500-1A is only compatible with Hoymiles gateway DTU-Pro-S and DTU-Lite-S.*

### 1.2 Target Group

This manual is only for qualified technicians. For safety purposes, only those who have been trained or demonstrate relevant skills can install and maintain this microinverter under the guidance of this document.

### 1.3 Symbols Used

Safety symbols are used as follows:







Symbol	Description
 <b>DANGER</b>	This indicates a hazardous situation that can result in deadly electric shocks, other serious physical injuries, or fire incidents.
 <b>WARNING</b>	This indicates that directions must be strictly followed to avoid safety hazards including equipment damage and personal injury.
 <b>CAUTION</b>	This indicates that the act is forbidden. You should stop, use caution and fully understand the operations explained before proceeding.

## 1.4 Safety Instructions

The HMS-300/350/400/450/500-1A microinverter is designed and tested according to international safety requirements. However, certain safety precautions must be taken when installing and operating this inverter. The installer must read and follow all instructions, cautions and warnings in this installation manual.

<ul style="list-style-type: none"> <li>All operations including transportation, installation, start-up and maintenance must be carried out by qualified, trained personnel.</li> </ul>
<ul style="list-style-type: none"> <li>Check the product before installation to make sure there is no damage caused during transportation because such damage can compromise the insulation integrity and safety clearances. Choose installation location carefully and adhere to specified cooling requirements. Unauthorized removal of necessary protections, improper use, incorrect installation and operation may cause damage to the equipment or incur serious safety and shock hazards.</li> </ul>
<ul style="list-style-type: none"> <li>You should get necessary approvals from local power operator before connecting the microinverter to the power grid. This connection must be made only by qualified technical personnel. It is the responsibility of the installer to provide external disconnect switches and Over Current Protection Devices (OCPD).</li> </ul>
<ul style="list-style-type: none"> <li>Each input of the inverter is connected to one PV module. Do not connect batteries or other sources of power supply. The inverter can be used only if all the technical parameters are observed and applied.</li> </ul>
<ul style="list-style-type: none"> <li>Do not install the equipment in flammable, explosive, corrosive, extremely hot/cold, and humid environment. Do not use the equipment when safety devices in these environments are not working.</li> </ul>
<ul style="list-style-type: none"> <li>Personal protective equipment such as gloves and goggles must be used during installation.</li> </ul>
<ul style="list-style-type: none"> <li>Inform the manufacturer about non-standard installation conditions.</li> </ul>
<ul style="list-style-type: none"> <li>Do not use the equipment if any operating anomalies are found.</li> </ul>
<ul style="list-style-type: none"> <li>All repairs must be done with qualified spare parts which must be installed in accordance with their intended use and by a licensed contractor or authorized Hoymiles service representative.</li> </ul>
<ul style="list-style-type: none"> <li>Liabilities arising from components that are not produced by Hoymiles are on the part of their respective manufacturers.</li> </ul>
<ul style="list-style-type: none"> <li>Whenever the inverter has been disconnected from the public grid, please be extremely careful as some components can retain charge sufficient to create a shock hazard. Before touching any part of the inverter, please ensure the surface and the whole equipment are within the limit of safe temperature and voltage potential.</li> </ul>
<ul style="list-style-type: none"> <li>Hoymiles is not liable for any damage caused by incorrect or improper operation.</li> </ul>
<ul style="list-style-type: none"> <li>Electrical installation and maintenance shall be conducted by licensed electrician and shall comply with local wiring rules.</li> </ul>

## 1.5 Explanation of Symbols

Symbol	Usage
	<p><b>Treatment</b></p> <p>To comply with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device no longer needed must be returned to an authorized dealer or approved collection and recycling facility.</p>
	<p><b>Caution</b></p> <p>Do not come within 8 inches (20 cm) of the microinverter when it is in operation.</p>
	<p><b>Danger of high voltage</b></p> <p>High voltage in the microinverter can cause dangers to life.</p>
	<p><b>Beware of hot surface</b></p> <p>The inverter can become hot during operation. Avoid contact with metal surfaces during operation.</p>
	<p><b>CE mark</b></p> <p>The inverter complies with the Low Voltage Directive for the European Union.</p>
	<p><b>Read manual first</b></p> <p>Please read the installation manual first before installation, operation and maintenance.</p>

## 1.6 Radio Interference Statement

This microinverter has been tested and complies with the requirements of CE EMC, meaning that it will not be affected by electromagnetic interference. Please note that incorrect installation may cause electromagnetic disturbances.

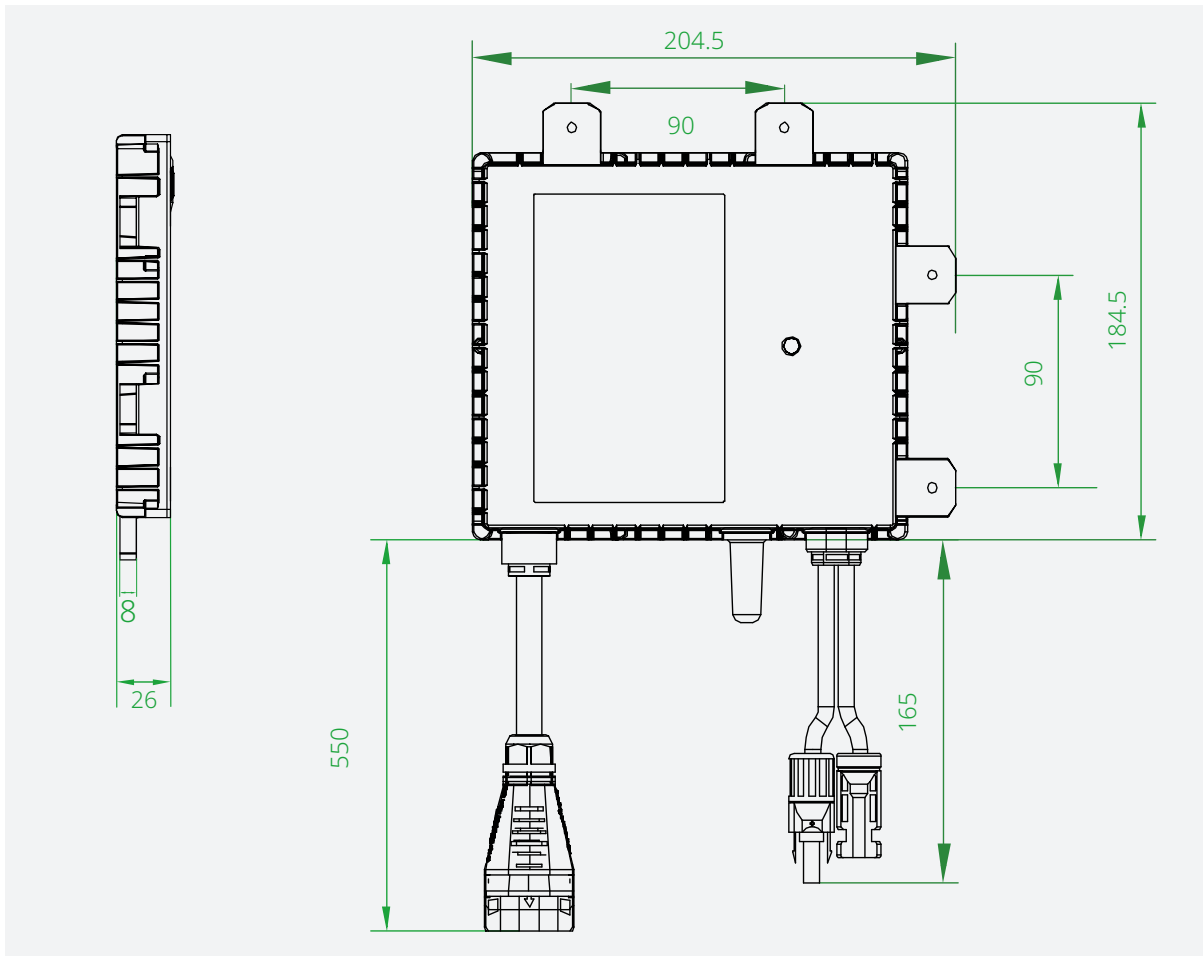
You can turn the equipment off and on to see if radio or television reception is interfered by this equipment. If this equipment does cause harmful interference to radio or television, please try the following measures to fix the interference:

- 1) Relocate other apparatus' antenna.
- 2) Move the microinverter farther away from the antenna.
- 3) Separate the microinverter and the antenna with metal/concrete materials or roof.
- 4) Contact your dealer or an experienced radio/TV technician for help.

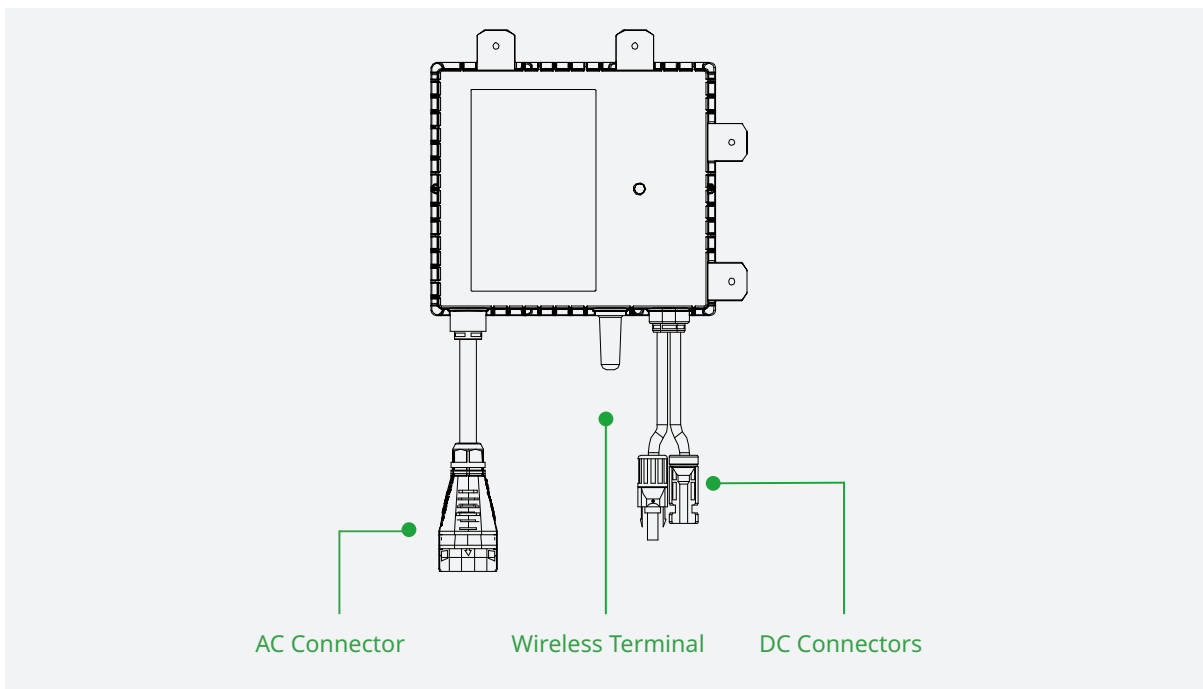


## 2. Product Information

### 2.1 Dimensions (mm)

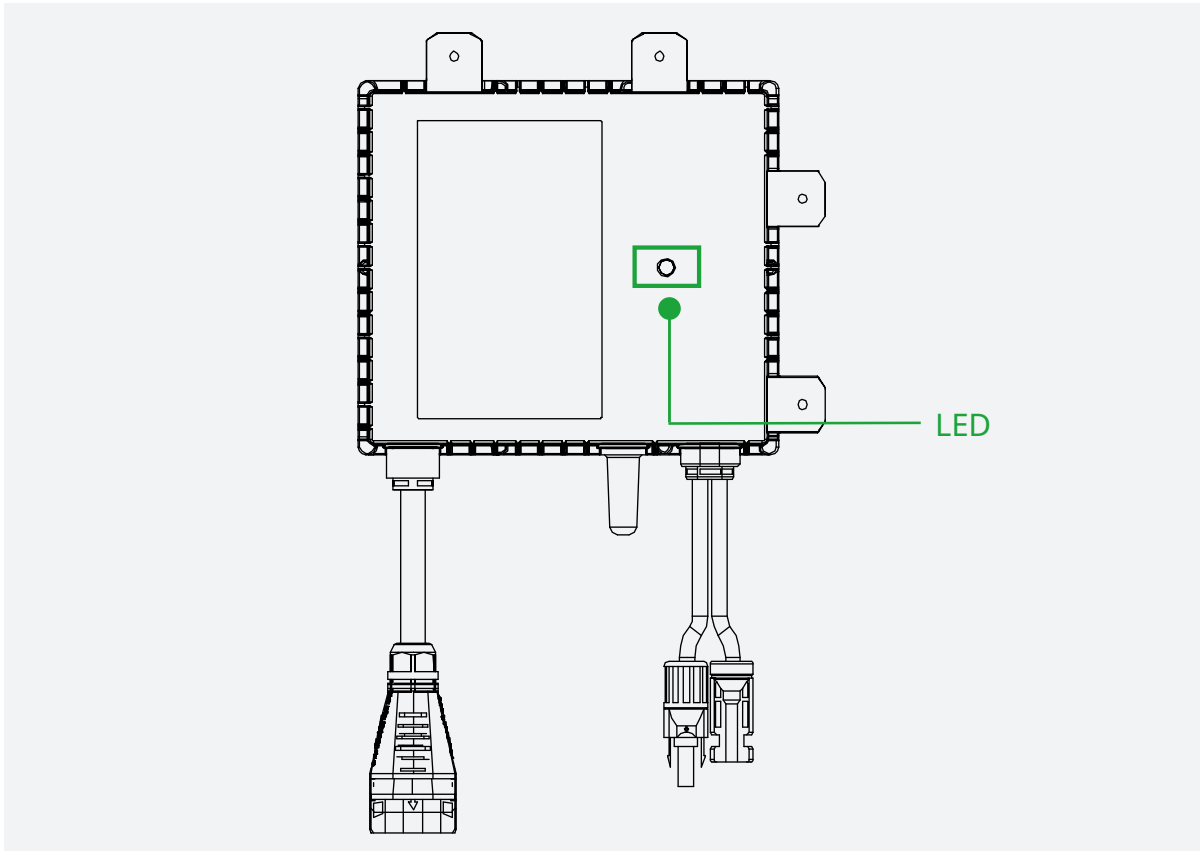


### 2.2 Interface Layout



## 2.3 LED Indicator Status

The LED flashes five times at start-up. The green flashes (1s gap) indicate normal start-up.



<b>(1) During Start-up</b>
<ul style="list-style-type: none"> <li>Flashing green five times (0.3s gap): Start-up success</li> <li>Flashing Red five times (0.3s gap): Start-up failure</li> </ul>
<b>(2) During Operation</b>
<ul style="list-style-type: none"> <li>Fast green flashes (1s gap): Producing power</li> <li>Slow green flashes (2s gap): Input is abnormal</li> <li>Red flashes (0.5s gap): Invalid AC grid or hardware failure. Refer to Hoymiles Monitoring Platform for more details</li> <li>Red flashes (1s gap): Not producing power due to invalid AC grid</li> <li>Solid red: Hardware failure. Please refer to Hoymiles Monitoring Platform for more details</li> </ul>
<b>(3) Other Status</b>
<ul style="list-style-type: none"> <li>Red and Green flashes alternately: Firmware is broken</li> </ul>

**\*Note:**

1. The microinverter is powered by DC side. If the LED light is not on, please check the DC side connection. If the connection and input voltage are normal, contact your dealer or hoymiles technical support team.

2. All the faults are reported to the DTU. Refer to the local DTU app or Hoymiles Monitoring Platform for more information.

### 3. Installation Preparation

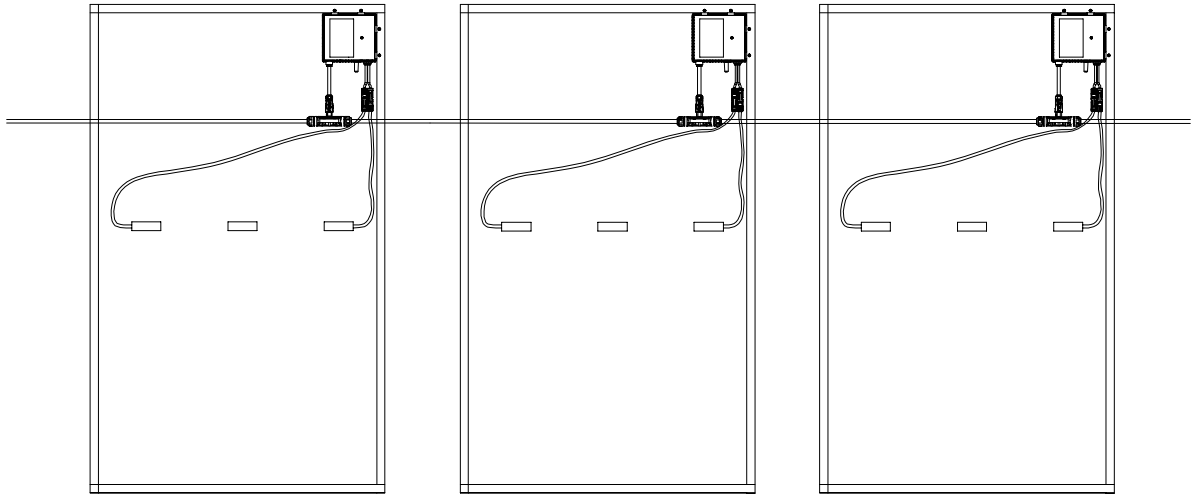
#### 3.1 Precautions

The equipment is installed based on the system design and the location of installation.

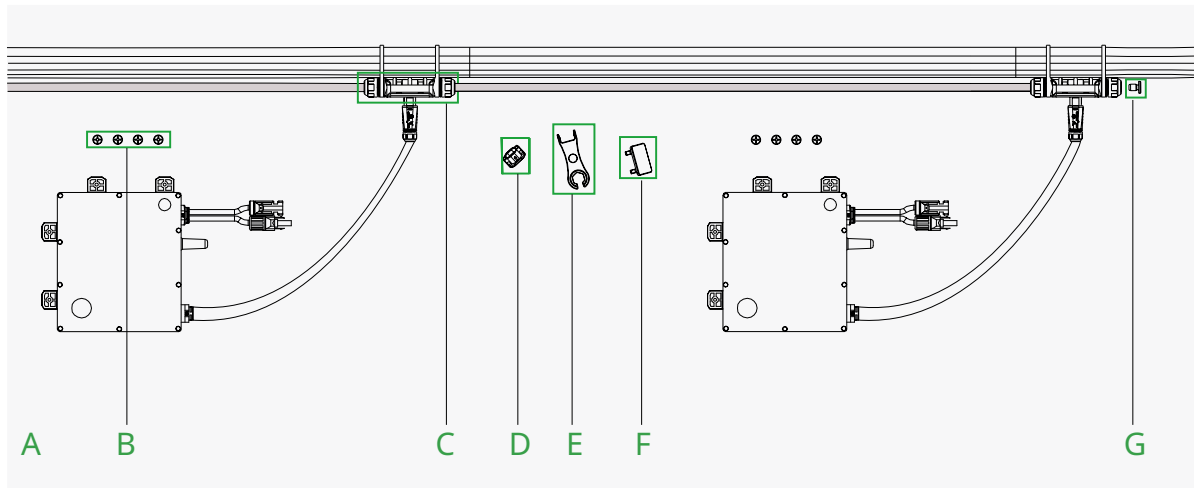
<p><b>When installing the microinverter, please:</b></p>
<ul style="list-style-type: none"> <li>• Check and ensure the mechanical compatibility of microinverter and PV module connectors, otherwise the microinverter may shut down due to earth fault and other functional problems.</li> </ul>
<ul style="list-style-type: none"> <li>• disconnect the equipment from the grid (power disconnect switch open) and keep the PV modules shaded or isolated.</li> </ul>
<ul style="list-style-type: none"> <li>• ensure that the mounting surface or structure can support the microinverter and the mounting bracket, and that it is wider than the bracket.</li> </ul>
<ul style="list-style-type: none"> <li>• use the existing holes only instead of drilling more holes in the microinverter.</li> </ul>
<ul style="list-style-type: none"> <li>• consult the module manufacturer before drilling through the module frame, as it may void the warranty.</li> </ul>
<ul style="list-style-type: none"> <li>• have the drilling location on the module frame evaluated and confirmed by the module manufacturer, as improper drilling can compromise structural strength or damage the modules.</li> </ul>
<ul style="list-style-type: none"> <li>• do not use a hammer drill because the vibration may damage the microinverter and void the warranty.</li> </ul>
<ul style="list-style-type: none"> <li>• use either a torque wrench that meets the installation torque requirements or an electric drill with a self-adjusting clutch.</li> </ul>
<p><b>When installing the AC modules, please:</b></p>
<ul style="list-style-type: none"> <li>• make sure the environmental conditions fit the microinverter's requirements (degree of protection, temperature, humidity, altitude, etc.) as specified in the Technical Data section.</li> </ul>
<ul style="list-style-type: none"> <li>• install only on structures specifically designed for PV modules (supplied by installation technicians).</li> </ul>
<ul style="list-style-type: none"> <li>• keep the microinverter in well-ventilated place to avoid overheating.</li> </ul>
<ul style="list-style-type: none"> <li>• keep the microinverter away from gases or flammable substances.</li> </ul>
<ul style="list-style-type: none"> <li>• avoid electromagnetic interference because it can compromise the normal operation of electronic equipment.</li> </ul>
<ul style="list-style-type: none"> <li>• use an appropriate lifting technology and auxiliary lift devices if needed to avoid muscle strain or back injuries.</li> </ul>

### 3.2 Wiring Diagram

As shown in the wiring diagram below, the microinverter in the AC module system is mounted on the PV module frame. Its AC-side output connectors are connected to the AC Trunk Cable, through which the microinverter can be connected to the distribution box and the local grid network.



### 3.3 Accessories



Item	Description
A	AC Trunk Cable, 12/10 AWG Cable
B	M5 × 15 screws (Prepared by the installer)
C	AC Trunk Connector
D	AC Trunk Port Cap
E	AC Trunk Port Disconnect Tool
F	AC Trunk Connector Unlock Tool
G	AC Trunk End Cap

**\*Note:**

All accessories above are not included in the package and should be purchased separately. Please contact the salesperson for pricing.

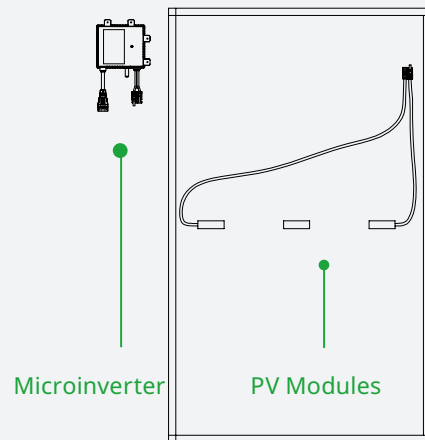
## 4. Installation Steps

### 4.1 Microinverter Installation

1. Fix the microinverter to the PV module frame.

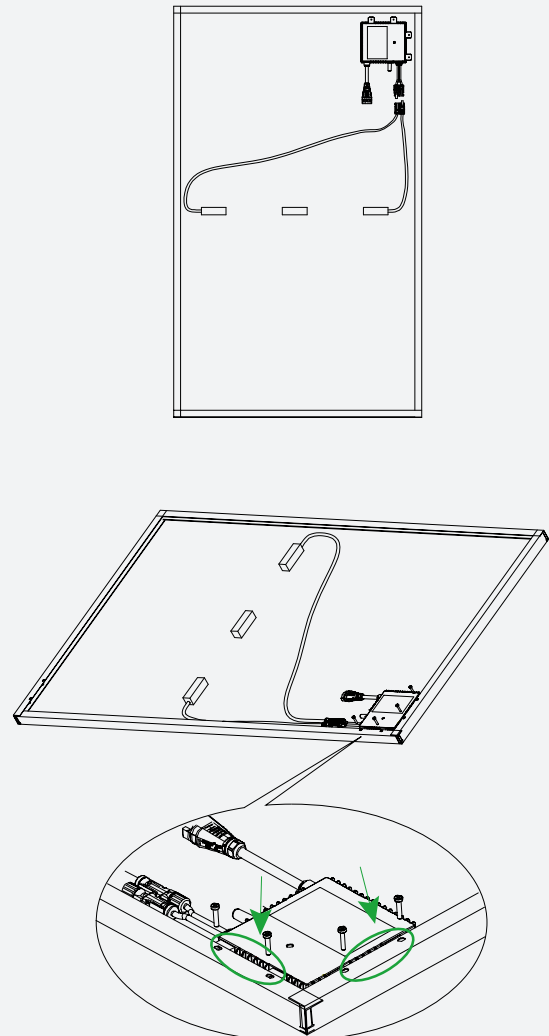
a. Identify the mounting location.

- Plan and determine the optimal position on the PV module frame to mount the microinverter
- Mark the position of each microinverter on the frame.
- Drill holes at the marked positions on the PV module frame.



b. Position the microinverters.

- Position the microinverter on the designated mounting location, aligning its mounting holes with those on the PV module frame.
- Fix the microinverter to the frame with M5 stainless screws. Torque the screws to 4-5 N·m (3.25-3.5ft/lb).



c. Check and make sure the microinverter is properly fixed to the frame.

2. Connect the microinverter to the PV modules.

a. Connect the positive output connector of the PV module to the positive input connector of the microinverter.

b. Connect the negative output connector of the PV module to the negative input connector of the microinverter.

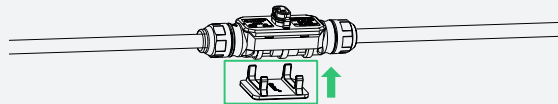
## 4.2 PV Module Installation

### 4.2.1 Making the Trunk Cables

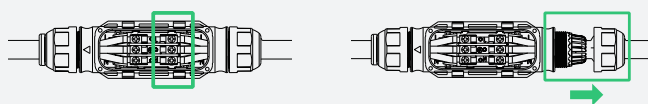
#### Step 1: Determine the cable length and make a trunk cable.

1. Determine the cable length based on the PV module layout to ensure the trunk cable is aligned with each PV module.
2. Disassemble the AC Trunk Connector and remove the cable.

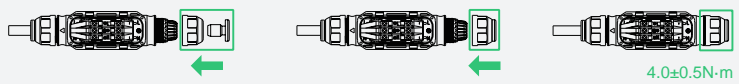
- Unlock the connector's uppercover with AC Trunk Connector Unlock Tool.



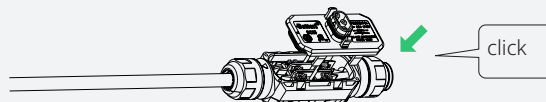
- Loosen the three screws with the screwdriver. Untighten the cap and remove the cable.



- Insert the AC Trunk End cap and screw the cap back to port, then tighten the cap.

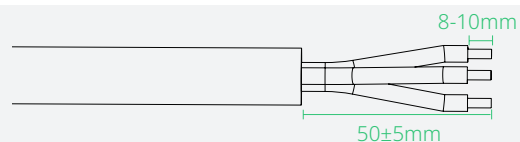


- Plug the upper cover back to the Trunk connector.

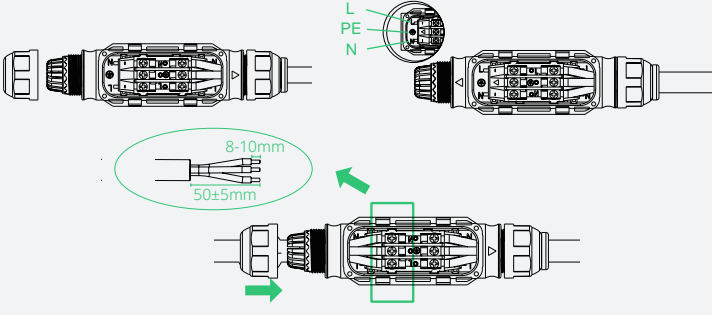


#### Step 2: Install the AC cable (AC end cable).

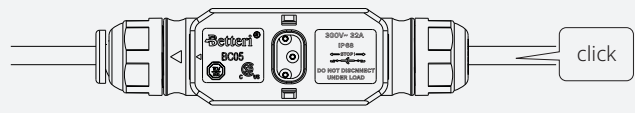
- Prepare a segment of AC cable of suitable length, with stripping requirements fulfilled.



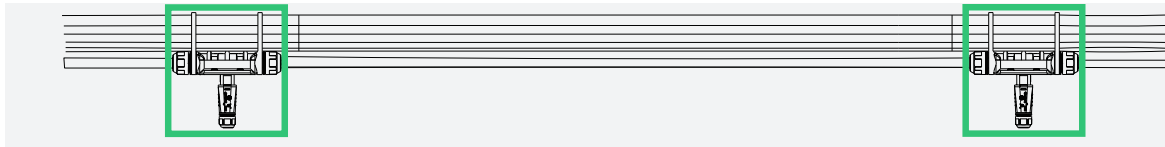
- Insert the cable into the cap in a way that the L, N and PE are in corresponding slots.



- Tighten the screws, and then tighten the cap back to the port. Plug the upper cover back to the Trunk connector.



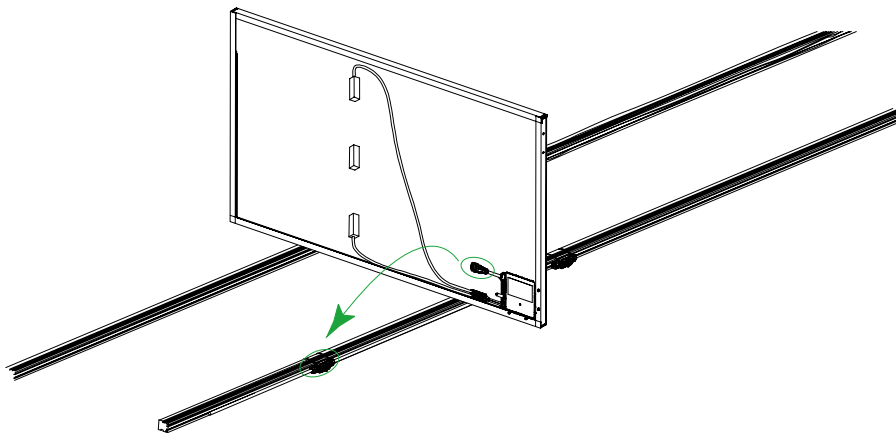
**Step 3: Adjust the position of the Trunk Connector according to that of the PV module. Securely attach the AC Trunk Cable to the mounting bracket with tie wraps.**



**4.2.2 Mounting PV Modules on Bracket and Completing AC Connection**

**Step 1: Complete the AC wiring of the microinverter.**

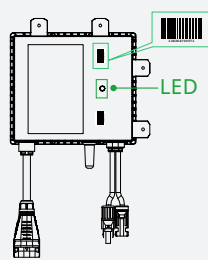

1. Mark the position of each PV module on the mounting bracket.
2. Mount the PV module on the bracket (do not cover the AC Trunk Connector). Plug the AC Connector of the microinverter into the AC Trunk Connector until it clicks.



**Step 2: Create an installation map.**

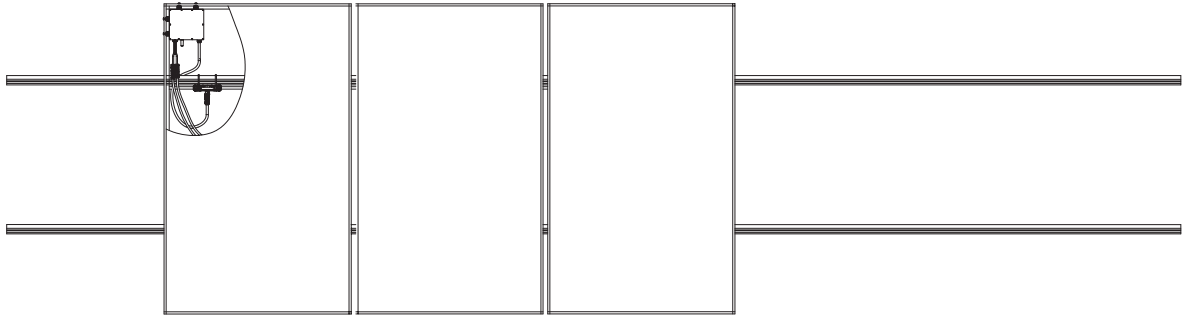
- Peel the removable serial number label (as shown in the figure) from each microinverter.

- Affix the serial number label to the corresponding location on the installation map.

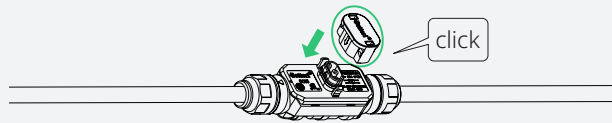



**Step 3: Fix the PV modules.**

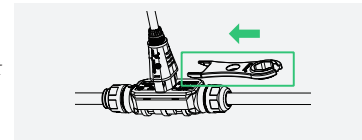
Put the PV modules on suitable locations in turn and fix them firmly.

**Step 4: Inspect the installation.**

- Plug the AC Trunk Port Cap in any unused AC Trunk Port for water and dust-proofing.

**Note:**

1. Make sure that the AC Trunk Connectors are kept away from any drainage channels.
2. In case you need to remove the microinverter AC cable from AC Trunk Connector, insert the AC Trunk Port Disconnect Tool into the side of AC Sub Connector to complete the removal.

**Step 5: Complete the installation.**

Connect the other side of the AC cable to the distribution box, and wire it to the local grid network.

**Step 6: Energize the system.**

1. Turn on the AC breaker of the branch circuit.
2. Turn on the main AC breaker of the house. Your system will start to generate power in about two minutes.

**Step 7: Set up a monitoring system.**

Refer to the "DTU User Manual", "DTU Quick Installation Guide", and "Quick Installation Guide for S-Miles Cloud" to install the DTU and set up the monitoring system.

Product information is subject to change without notice. (Please download reference manuals at [www.hoymiles.com](http://www.hoymiles.com))



## 5. Troubleshooting

### 5.1 Troubleshooting List

Code	Alarm range	Alarm status	Handling suggestions
121		Over temperature protection	<ol style="list-style-type: none"> <li>1. Check the ventilation and ambient temperature at the microinverter installation location.</li> <li>2. If the ventilation is poor or the ambient temperature exceeds the limit, please improve the ventilation and heat dissipation.</li> <li>3. If the problem persists when ventilation and ambient temperature are appropriate, contact your dealer or Hoymiles technical support team.</li> </ol>
124		Shut down by remote control	<ol style="list-style-type: none"> <li>1. Check the status of zero export management and whether the microinverters were manually shut down.</li> <li>2. If the alarm still persists, please contact your dealer or Hoymiles technical support team.</li> </ol>
125		Grid configuration parameter error	<ol style="list-style-type: none"> <li>1. Check if the grid configuration parameter is correct and upgrade.</li> <li>2. If the fault still exists, contact your dealer or Hoymiles technical support team.</li> </ol>
127		Firmware error	<ol style="list-style-type: none"> <li>1. Check if the firmware is correct and has been upgraded.</li> <li>2. Check the communication between DTU and Hoymiles monitoring system, and between DTU and microinverter. Then try again.</li> <li>3. If the fault still exists, contact your dealer or Hoymiles technical support team.</li> </ol>
129		Abnormal bias	<ol style="list-style-type: none"> <li>1. If the alarm occurs occasionally and the microinverter can still work normally, no special treatment is required.</li> <li>2. If the alarm occurs frequently and cannot be recovered, contact your dealer or Hoymiles technical support team.</li> </ol>
130		Offline	<ol style="list-style-type: none"> <li>1. Please make sure that the microinverter works normally (check if the DC voltage is within normal range and confirm the status of the LED indicator).</li> <li>2. Check if the SN on microinverter label is the same as on the monitoring platform.</li> <li>3. Check the communication status between the DTU and Hoymiles monitoring system, and between the DTU and the microinverter. If the communication is poor, try to make some improvements.</li> <li>4. If the alarm occurs frequently and cannot be recovered, contact your dealer or Hoymiles technical support team.</li> </ol>
141	Grid	Grid overvoltage	<ol style="list-style-type: none"> <li>1. If the alarm occurs occasionally, the grid voltage may be just abnormal temporarily. The microinverter can automatically recover after grid voltage becomes normal.</li> <li>2. If the alarm occurs frequently, check whether the grid voltage is within the acceptable range. If not, contact the local power operator or change the grid overvoltage protection limit in the grid profile via Hoymiles monitoring system with the consent of the local power operator.</li> </ol>

142	Grid	10 min value grid overvoltage	<p>1. If the alarm occurs occasionally, the grid voltage may be just abnormal temporarily. The microinverter can automatically recover after grid voltage becomes normal.</p> <p>2. If the alarm occurs frequently, check whether the grid voltage is within the acceptable range. If not, contact the local power operator or change the grid overvoltage protection limit via Hoymiles monitoring system with the consent of the local power operator.</p>
143	Grid	Grid undervoltage	<p>1. If the alarm occurs occasionally, the grid voltage may be just abnormal temporarily. The microinverter can automatically recover after grid voltage becomes normal.</p> <p>2. If the alarm occurs frequently, check whether the grid voltage is within the acceptable range. If not, contact the local power operator or change the grid undervoltage protection limit in the grid profile via Hoymiles monitoring system with the consent of the local power operator.</p> <p>3. If the fault still exists, check the AC switch or AC wiring.</p>
144	Grid	Grid overfrequency	<p>1. If the alarm occurs occasionally, the grid frequency may be just abnormal temporarily. The microinverter can automatically recover after grid frequency becomes normal.</p> <p>2. If the alarm occurs frequently, check whether the grid frequency is within the acceptable range. If not, contact the local power operator or change the grid overfrequency protection limit via Hoymiles monitoring system with the consent of the local power operator.</p>
145	Grid	Grid underfrequency	<p>1. If the alarm occurs occasionally, the grid frequency may be just abnormal temporarily. The microinverter can automatically recover after grid frequency becomes normal.</p> <p>2. If the alarm occurs frequently, check whether the grid frequency is within the acceptable range. If not, contact the local power operator or change the grid underfrequency protection limit via Hoymiles monitoring system with the consent of the local power operator.</p>
146	Grid	Rapid grid frequency change rate	<p>1. If the alarm occurs occasionally, the grid frequency may be just abnormal temporarily. The microinverter can automatically recover after grid frequency becomes normal.</p> <p>2. If the alarm occurs frequently, check whether the grid frequency change rate is within the acceptable range. If not, contact the local power operator or change the grid frequency change rate limit in the grid profile in the grid profile via Hoymiles monitoring system with the consent of the local power operator.</p>
147	Grid	Power grid outage	Please check whether the AC switch, branch breaker and AC wiring is normal.
148	Grid	Grid disconnection	Please check whether the AC switch, branch breaker and AC wiring is normal.

149	Grid	Island detected	<ol style="list-style-type: none"> <li>1. If the alarm occurs occasionally, the grid frequency may be just abnormal temporarily. The microinverter can automatically recover after grid voltage becomes normal.</li> <li>2. If the alarms occur frequently on all the microinverters in your station, contact the local power operator to check whether there is a grid island.</li> <li>3. If the alarm still exists or happens on only several microinverters, please contact your dealer or Hoymiles technical support.</li> </ol>
205	MPPT-A	Input overvoltage	<ol style="list-style-type: none"> <li>1. Please make sure that the PV module open-circuit voltage is less than or equal to the maximum input voltage.</li> <li>2. If the PV module open-circuit voltage is within the normal range, contact your dealer or Hoymiles technical support team.</li> </ol>
206	MPPT-B	Input overvoltage	<ol style="list-style-type: none"> <li>1. Please make sure that the PV module open-circuit voltage is less than or equal to the maximum input voltage.</li> <li>2. If the PV module open-circuit voltage is within the normal range, contact your dealer or Hoymiles technical support team.</li> </ol>
209	PV-1	No input	<ol style="list-style-type: none"> <li>1. Please confirm whether this port is connected to the PV module.</li> <li>2. If the PV module is connected, please check the DC cable connection between this port and the PV module.</li> </ol>
213	MPPT-A	PV-1 & PV-2 abnormal wiring	<ol style="list-style-type: none"> <li>1. Please check whether the DC connections on port 1 and 2 are correct.</li> <li>2. Check if the DC extension cable is made correctly.</li> </ol>
215	PV-1	Input overvoltage	Check the input voltage of PV-1 port.
216	PV-1	Input undervoltage	Check the input voltage of PV-1 port.
301 - 314		Device failure	<ol style="list-style-type: none"> <li>1. If the alarm occurs occasionally and the microinverter can still work normally, no special treatment is required.</li> <li>2. If the alarm occurs frequently and cannot be recovered, contact your dealer or Hoymiles technical support team.</li> </ol>

## 5.2 Insulation Resistance Detection


A resistance sensor is contained in the microinverter to measure the resistance between the PV module output and the ground. The resistance may decrease if there is a problem with PV module insulation, DC wiring or module connectors. If the resistance falls below the preset threshold, the microinverter will stop generating power and report the earth fault, which will persist until it is cleared on Hoymiles monitoring platform S-Miles Cloud and until the microinverter is restarted.

Note that the fault cannot be cleared if the cause is still present. Please contact your installer or Hoymiles technicians in such case.

## 5.3 On-site Inspection (For qualified installers only)








Troubleshoot a malfunctioning microinverter according to the following steps.

1	Check if the utility voltage and frequency are within the respective range shown in Technical Data section of this manual.
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2	<p>Check the connection to the utility grid.</p> <p>Disconnect the AC and the DC power. Please note that when the inverter is in operation, disconnect the AC power first to de-energize the inverter, and then disconnect the DC power.</p> <p>Re-connect the PV modules to the microinverter. LED will flash red to indicate normal DC connection.</p> <p>Re-connect the AC power. LED will flash green for five times to indicate normal DC and AC connection.</p> <p>Never disconnect the DC wires while the microinverter is producing power. Re-connect the DC module connectors and wait for five short LED flashes.</p>
3	<p>Check the interconnection between all the microinverters on the AC branch circuit. Confirm that each inverter is energized by the utility grid as described in the previous step.</p>
4	<p>Make sure that every AC breaker is functioning properly and is closed.</p>
5	<p>Check the DC connection between the microinverter and the PV module.</p>
6	<p>Make sure that PV modules' DC voltage is within the allowable range shown in the Technical Data section of this manual.</p>
7	<p>If the problem persists, please call Hoymiles customer support.</p>
	<p>Do not try to repair the microinverter by yourself. If the troubleshooting fails, please return it to the factory for replacement.</p>

### 5.4 Routine Maintenance

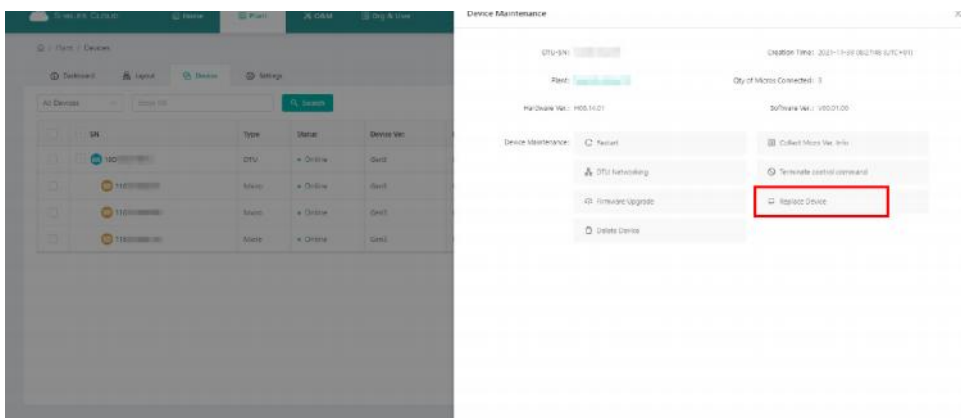
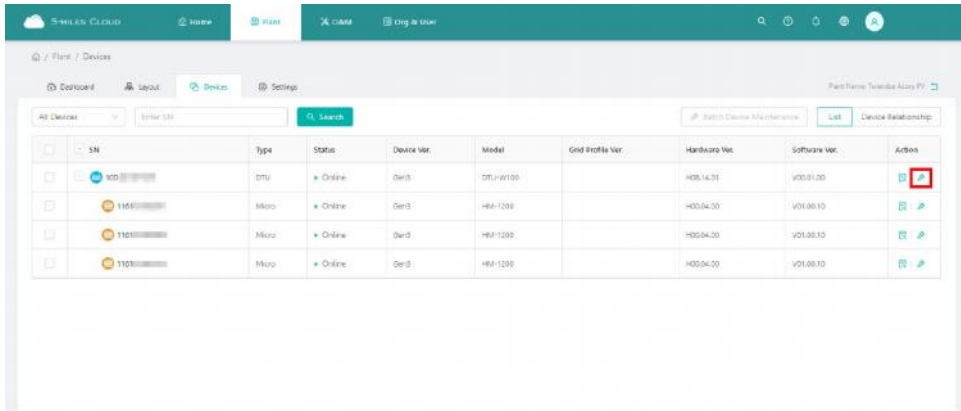
1. Only authorized personnel are allowed to carry out the maintenance operations and are responsible for reporting any anomalies.
2. Always use personal protective equipment provided by the employer during maintenance operation.
3. During normal operation, check the environmental conditions regularly to 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 obstructed.
4. DO NOT use the equipment if any problems are detected. Restore its working conditions after the fault is fixed.
5. Conduct annual inspections on various components, and clean the equipment with a vacuum cleaner or special brushes.

	<p>Do not attempt to dismantle or repair the microinverter! No user-serviceable parts inside for the safety and insulation reasons!</p>
	<p>The AC output wiring harness (AC drop cable on the microinverter) cannot be replaced. The equipment should be scrapped if the cord is damaged.</p>
	<p>Maintenance operations must be carried out with the equipment disconnected from the grid (power switch open) and the PV modules shaded or isolated, unless otherwise indicated.</p>
	<p>Never clean the equipment with rags made of filamentary or corrosive materials to avoid corrosion and electrostatic charges.</p>
	<p>Do not attempt to repair the product. All repairs should be done using only eligible spare parts.</p>
	<p>If all the microinverters are connected to the DTU-Pro-S, the DTU can limit the output power imbalance of all the microinverters between phases to below 3.68 kW if required. Please refer to "Hoymiles Technical Note Limit Phase Balance" for more details.</p>
	<p>Each branch should have a circuit breaker. Central protection unit is unnecessary.</p>

## 6. Replacement and Decommission

### 6.1 Microinverter Replacement

<p><b>a. How to remove the microinverter</b></p> <ul style="list-style-type: none"> <li>De-energize the AC branch circuit breaker.</li> <li>Remove the PV module from the rack, and cover the module.</li> <li>Check the equipment with an electric meter and make sure there is no current flowing in the DC wires between module and microinverter.</li> <li>Remove the DC connectors with DC disconnect tool.</li> <li>Remove the AC Sub Connector with AC disconnect tool.</li> <li>Loosen the fixing screws on the top of the microinverter and remove the microinverter from the PV racking.</li> </ul>
<p><b>b. How to replace the microinverter in monitoring platform</b></p> <ul style="list-style-type: none"> <li>Please note down the new microinverter’s SN.</li> <li>Please make sure the AC branch circuit breaker is off, and install the replacement unit according to the microinverter installation steps.</li> <li>Go to the monitoring platform (if customer has already registered this station online), please access the “Device List” page and find the device that you just replaced. Please click “Device Maintenance” on the right side of the page, and select “Replace Device”. Input the new microinverter’s SN and click “Ok” to complete the station change.</li> </ul>



## 6.2 Microinverter Decommission

Disconnect the inverter from DC input and AC output, remove all connection cables from the microinverter, and remove the microinverter from the frame.

Please pack the microinverter in the original packaging. If the original packaging is no longer available, you can use a carton box that can hold 5 kg and can be fully closed.

## 6.3 Storage and Transportation

Hoymiles packages are specially designed to protect components so as to facilitate transportation and subsequent handling. Transportation of the equipment, especially by road, must be done in a way that can protect the components (particularly the electronic components) from violent shocks, humidity, vibration, etc. Please dispose of the packaging elements in appropriate ways to avoid unforeseen injury.

Please examine the conditions of the components to be transported. Upon receiving the microinverter, you should check the container for any external damage and verify the receipt of all items. Please call the carrier immediately if there is any damage or if any parts are missing. In case of any damage caused to the inverter, contact the supplier or authorized distributor to request a repair/return and ask for instructions regarding the process.

The storage temperature range of microinverter is -40°C to 85°C.

## 6.4 Disposal

- If the equipment is not used immediately or is stored for a long period of time, make sure that it is properly packed. The equipment must be stored indoors with good ventilation and without any potential damage to the components of the equipment.
- Take a complete inspection when restarting the equipment after it has stopped operation for a long time.
- Please dispose of the microinverters properly in accordance with local regulations after they are scrapped because of potential harms to the environment.

## 7. Technical Data

Model	HMS-300-1A	HMS-350-1A	HMS-400-1A	HMS-450-1A	HMS-500-1A
<b>Input Data (DC)</b>					
Commonly used module power (W)	240 to 405+	280 to 470+	320 to 540+	360 to 600+	400 to 670+
Maximum input voltage (V)	60				
MPPT voltage range (V)	16 to 60				
Start-up voltage (V)	22				
Maximum input current (A)	12	13	14	15	16
Maximum input short circuit current (A)	20	20	25	25	25
Number of MPPTs	1				
Number of Inputs per MPPT	1				
<b>Output Data (AC)</b>					
Rated output power (VA)	300	350	400	450	500
Rated output current (A)	1.30	1.52	1.74	1.96	2.17
Nominal output voltage/range (V) <sup>1</sup>	230 / 180-275	230 / 180-275	230 / 180-275	230 / 180-275	230 / 180-275
Nominal frequency/range (Hz) <sup>1</sup>	50 / 45-55				
Power factor (adjustable)	> 0.99 default 0.8 leading ... 0.8 lagging				
Total harmonic distortion	< 3%				
Maximum units per 12 AWG branch <sup>2</sup>	15	13	11	10	9
Maximum units per 10 AWG branch <sup>2</sup>	24	21	18	16	14
<b>Efficiency</b>					
CEC peak efficiency	96.70%				
Nominal MPPT efficiency	99.80%				
Night power consumption (mW)	< 50				
<b>Mechanical Data</b>					
Ambient temperature range	-40°C to +65°C (-40°F to +149°F)				
Storage temperature range	-40°C to +85°C (-40°F to +185°F)				
Dimensions (W × H × D)	184.5 × 204.5 × 26 mm (7.26 x 8.05 x 1.02 inch)				
Weight	1.71 kg (3.77 lb)				
Enclosure rating	Outdoor-IP67 (NEMA 6)				
Cooling	Natural convection – No fans				
<b>Features</b>					
Communication	Sub-1G				
Topology	Galvanically Isolated HF Transformer				
Monitoring	S-Miles Cloud				
Compliance	EN 50549-1: 2019, VDE-AR-N 4105: 2018, UL 1741, IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 61000-3-2/-3				

\*1 Nominal voltage/frequency range can be changed due to the requirements of local power department.

\*2 Refer to local requirements for the exact number of microinverters per branch.

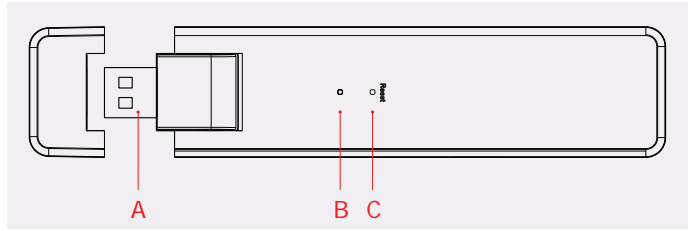


### Important:

DTU-Lite-S(Wi-Fi) is only compatible with Hoymiles new HMS and HMT series of microinverters.

## 1. Interface Layout

Item	Description
A	USB Connector
B	Status Indicator
C	Reset Button



## 2. Installation

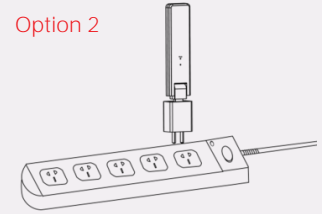
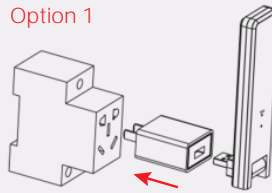
A) Check the box for the following items:

- ✓ Hoymiles DTU-Lite-S(Wi-Fi)
- ✓ Adapter

B) Power the DTU-Lite-S(Wi-Fi)

Option 1: Connect the DTU to the adapter and plug it into a wall socket

Option 2: Connect the DTU to the adapter and plug it into the power strip.



Note:

1. Please make sure that it is placed at least 0.5 meters above the ground, and try to install the DTU at a 90 degrees angle perpendicular to the ground.
2. To prevent signal attenuation, please do not install the DTU directly above metal or concrete.

## 3. Online Setting

A) Plug in the power adapter to energize the DTU. Once the DTU powers on, the red, green and blue lights will flash for one second in turn for 30 seconds.

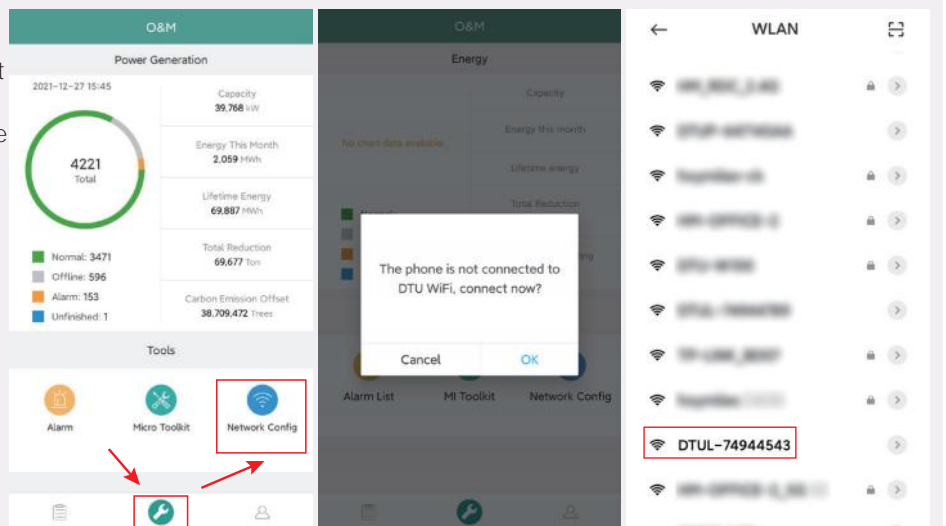
B) Download the Hoymiles mobile installer App.



C) Use the App to connect to the DTU:

Open the Installer App on smart phone/tablet and log in. Click "O&M" at the bottom of the page and then click "Network Config".

Select the DTU's wireless network and click "Connect". (The network name of the DTU consists of DTUL and product serial number, and is not password-protected by default.)





## D) Set up with Internet

When the connection is successful, click "Network Config" again and enter the Network Config page.

Select the router Wi-Fi and enter the password.

Click "Send to DTU".

The network configuration takes about 1 minute, please be patient.

If the network is not connected, please check the internet as instructed.

Check the indicator light of DTU when the connection is successful (green light shall remain on).

*Note: If your configuration page is inconsistent with the above, please update the DTU firmware to the latest version.*

## 4. Installation Map

Please complete the installation map.

A) Peel the serial number label (as circled below) from the DTU and affix it to the installation map.

B) Complete system information of the installation map as shown on the right.

## 5. MI Toolkit

MI Toolkit is one of the toolkits that come with S-Miles Cloud App. It can be used for on-site inspection after the PV power station is complete, so that the operation of microinverter can be monitored without Site Creation.

For more operation details regarding MI Toolkit, please refer to "User Manual for DTU-Lite-S(Wi-Fi)".

## 6. Warning

Please complete the online account creation to complete the DTU installation (refer to "Quick Installation Guide for S-miles Cloud Online Registration" for detailed account creation steps).

### ⚠ Warning

- Only qualified personnel can install or replace the DTU.
- Do not attempt to repair the DTU by yourself. If the DTU breaks down, please contact your distributor for maintenance. Disassemble the DTU without permission will invalidate the warranty.



# Data Transfer Unit **USER MANUAL**

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DTU-Lite-S

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# 1. Important Safety Information

## 1.1 Read This First

This manual includes important instructions for installing and maintaining the Hoymiles Data Transfer Unit (DTU-Lite-S).

DTU-Lite-S is only compatible with Hoymiles new HMS and HMT series of microinverters.

## 1.2 Safety Instructions

Symbol	Usage
	This indicates a hazardous situation that can result in deadly electric shocks, serious physical injuries, and fire incidents.
	This indicates that directions must be strictly followed to avoid safety hazards such as equipment damage and personal injury.
	This indicates that the act is forbidden. You should stop, use caution and fully understand the operations explained before proceeding.

- Note that only professionals can install or replace DTU.
- Do not try to repair DTU without Hoymiles' permission. If the DTU is damaged, please send it back to your installer for repair/replacement. Disassembling DTU without Hoymiles' permission will invalidate the remaining warranty period.
- Please read all the instructions and warnings in the technical specifications carefully.
- Do not use Hoymiles products in a way that is not suggested by the manufacturer. Otherwise it can cause death, personal injuries, or equipment damage.

## 1.3 User

This manual is only for professional installation and maintenance personnel.

## 1.4 Support and Contact Information

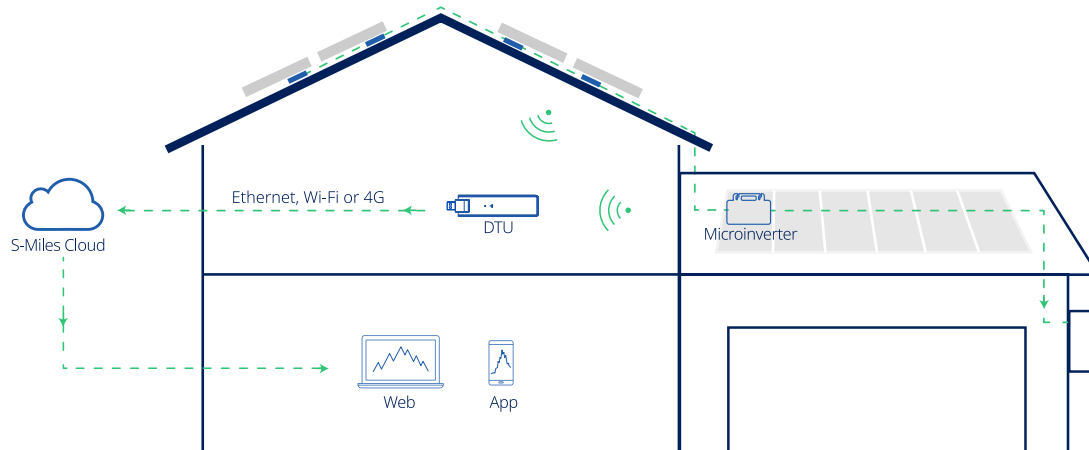
If you have technical queries concerning our products, please contact your installer or distributor. If further technical support is required, please contact our support team at [service@hoymiles.com](mailto:service@hoymiles.com).

For other questions please contact [info@hoymiles.com](mailto:info@hoymiles.com)

## 1.5 Other Information

Product information is subject to change without notice. The user manual will be updated regularly. Please refer to Hoymiles official website at [www.hoymiles.com](http://www.hoymiles.com) for the latest version.

## 2. Hoymiles Microinverter System



The complete Hoymiles PV microinverter system is composed of PV microinverter, Hoymiles gateway DTU and Hoymiles S-Miles Cloud.

The microinverter converts direct current to alternating current and sends each module's power generation and operation data to the DTU.

DTU can communicate with multiple microinverters, collect their operation data, and send them to S-Miles Cloud.

On S-Miles Cloud, you can check the real-time data of each PV module and perform remote operation and maintenance.

### 2.1 Microinverter

Microinverters convert the DC output of PV modules into grid-compliant AC power. They send their operation data and the output information of PV modules to the DTU, which is the hardware basis of the module-level monitoring. With conversion efficiency up to 96.7% and MPPT efficiency up to 99.9%, Hoymiles microinverters rank among the first class in the industry worldwide.

### 2.2 DTU

DTU is the key component in Hoymiles microinverter system. It works as the communication gateway between the Hoymiles microinverters and S-Miles Cloud. The DTU communicates with the microinverter in a wireless way and collects the operation data of the system. Meanwhile, the DTU connects to the Internet using different communication options such as Ethernet, Wi-Fi or 4G and communicates with S-Miles Cloud. The operation data of the microinverter system will be uploaded to S-Miles Cloud via DTU.

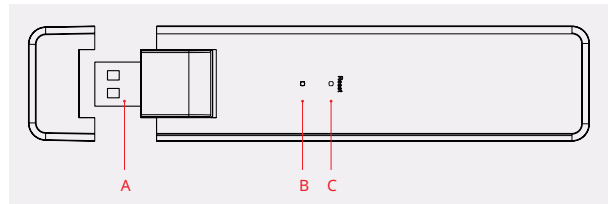
### 2.3 S-Miles Cloud

It collects the operation data and status of the microinverters in the system and provides module-level monitoring for the users and maintenance staff. The following diagram shows the Hoymiles Microinverter system.

### 3. Interface Layout

#### 3.1 For Wi-Fi Version

Item	Description
A	USB Connector
B	Status Indicator
C	Reset Button



### 4. Installation Planning and Preparation

#### 4.1 Pre-installation

##### 4.1.1 System Capacity

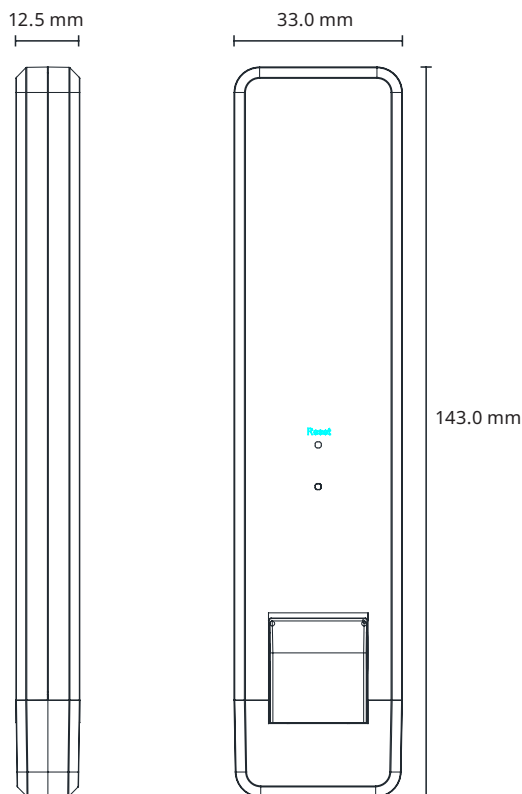
The DTU-Lite-S is capable of monitoring up to 99 PV modules. If the communication between the DTU and microinverter is affected by the installation conditions, the number of PV modules that the DTU can monitor may be reduced.

*Note: The maximum number of modules is only possible in open space when installation conditions detailed in DTU and microinverter manuals are fulfilled and the microinverter and DTU are properly placed apart as required.*

##### 4.1.2 Environmental Requirements for DTU Installation:

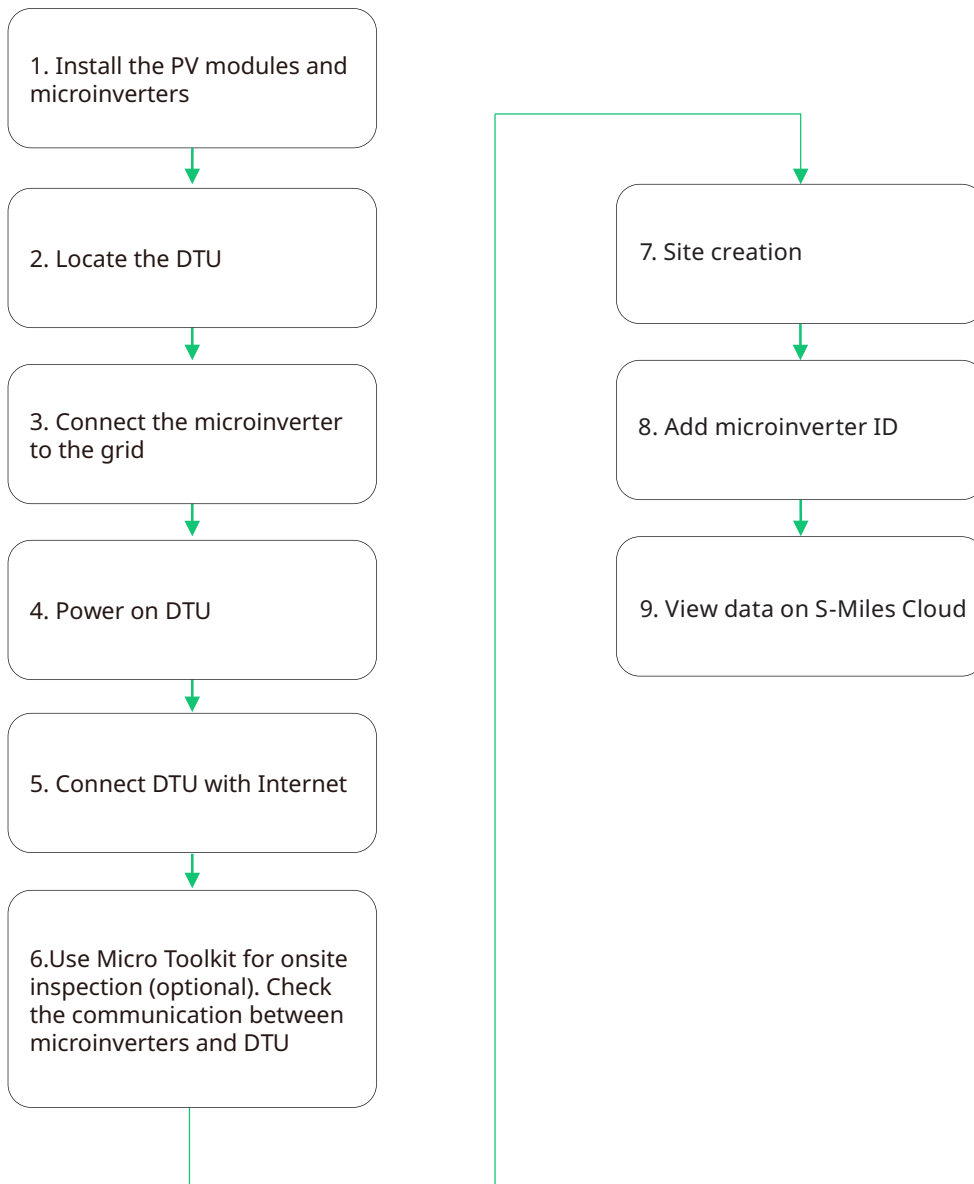
- The DTU should be installed away from dust, liquid, acidic, or corrosive gas.
- The ambient temperature should be between -20°C and 55°C.

#### 4.2 Dimensions



### 4.3 System Installation Steps

Steps 1 to 6 need to be finished on site while steps 7 to 9 can be done either on site or at home. Step 6 must be done correctly in order to complete site creation on S-Miles Cloud.



## 5. DTU Installation

### 5.1 Installation Instructions

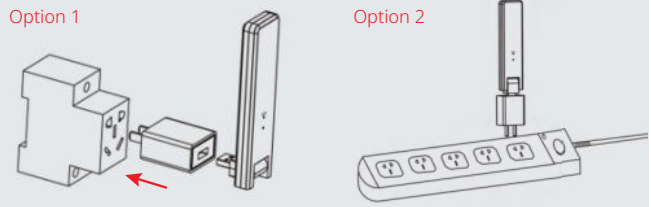
A) Check the box for the following items:

- ✓ Hoymiles DTU-Lite-S
- ✓ Adapter

B) Power the DTU-Lite-S

Option 1: Connect the DTU to the adapter and plug it into a wall socket.

Option 2: Connect the DTU to the adapter and plug it into the power socket.



Note:

1. Please make sure that it is placed at least 0.5 meters above the ground, and try to install the DTU perpendicular to the ground.
2. To prevent signal attenuation, please do not install the DTU directly above metal or concrete.

### 5.2 Online Setting

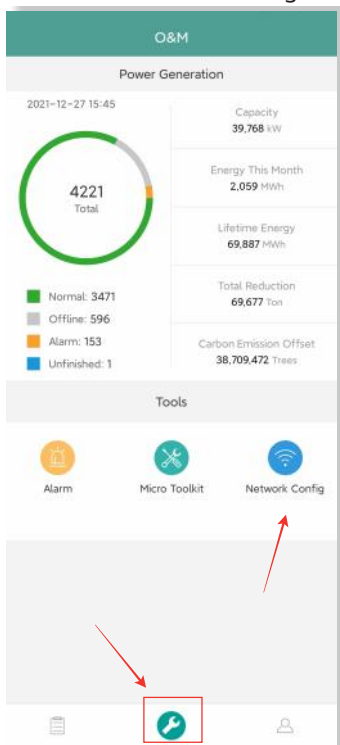
A) Plug in the power adapter to power the DTU, once the DTU powers on, the red, green and blue lights will flash for one second in turn for 30 seconds.

B) Download the Hoymiles mobile installer App



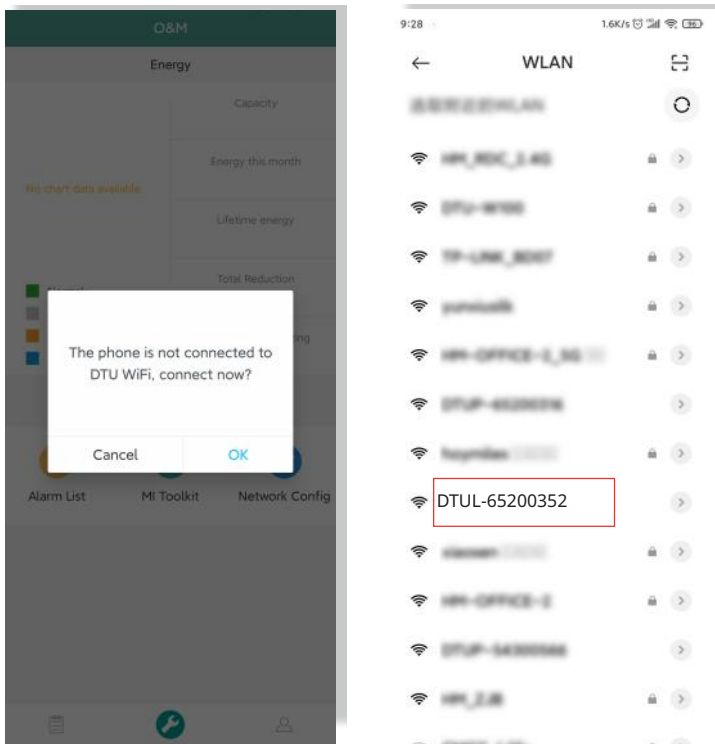
C) Use the App to connect to the DTU

- ✓ Open the Installer App on smart phone/tablet and log in. Click “O&M” at the bottom of the page and then click “Network Config”.



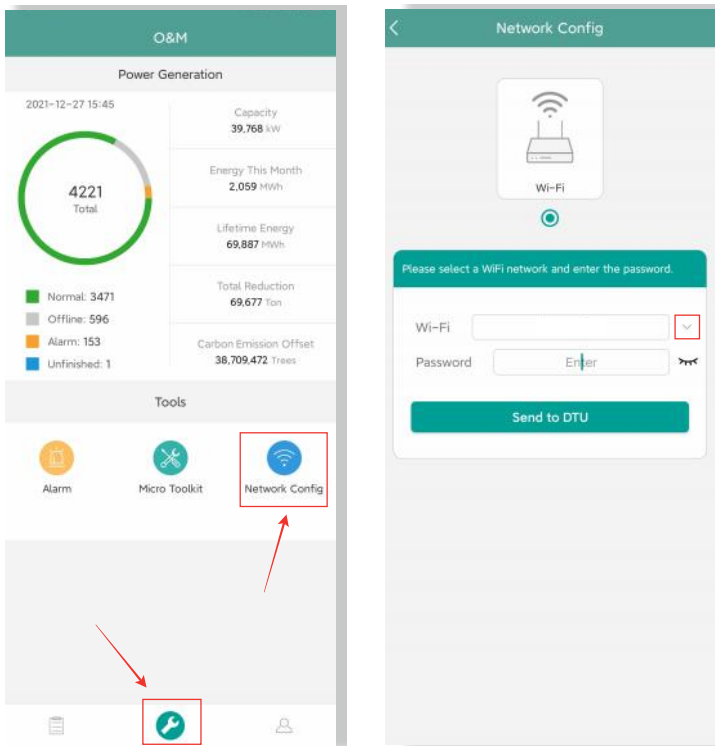


- ✓ Select the DTU's wireless network and click Connect. (The network name of the DTU consists of DTUL and product serial number, and is password-free by default.)

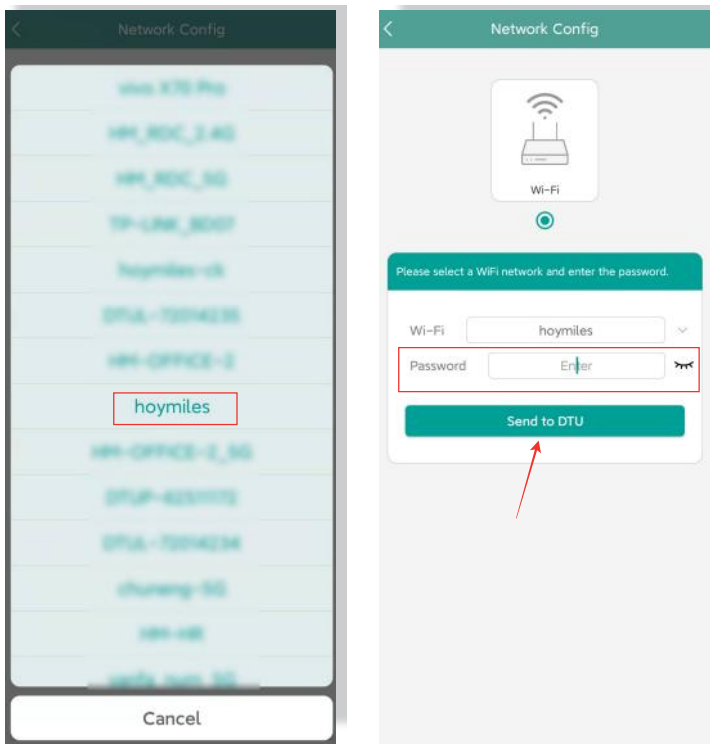


D) Set up with Internet

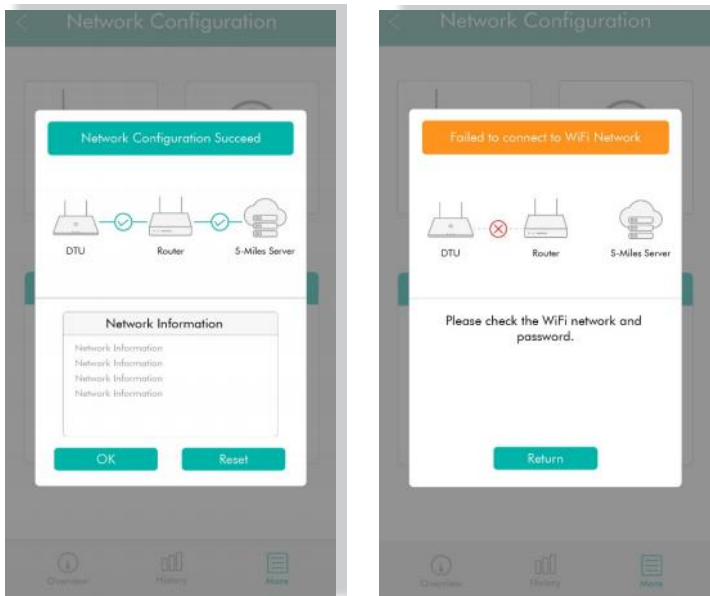
- ✓ When the connection is successful, click "Network Config" again and enter the Network Config page.



- ✓ Select the router Wi-Fi and enter the password.
- ✓ Click "Send to DTU".



- ✓ The network configuration takes about 1 minute, please be patient.
- ✓ If the network is not connected, please check the internet as instructed.



- ✓ Check the indicator light of DTU when the connection is successful (green light shall remain on).  
Note: If your configuration page is inconsistent with the above, please update the DTU firmware to the latest version.

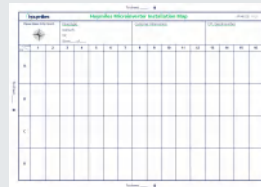
### 5.3 Complete Installation Map

Please complete the installation map.

- A) Peel the serial number label from the DTU and affix it to the installation map.



- B) Complete system information of the installation map as shown on the right.

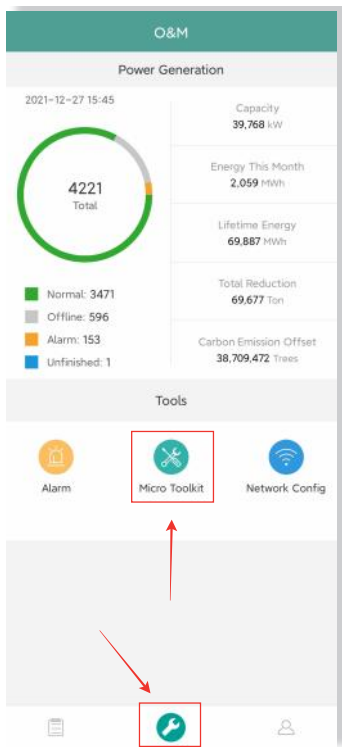


## 6. Micro Toolkit

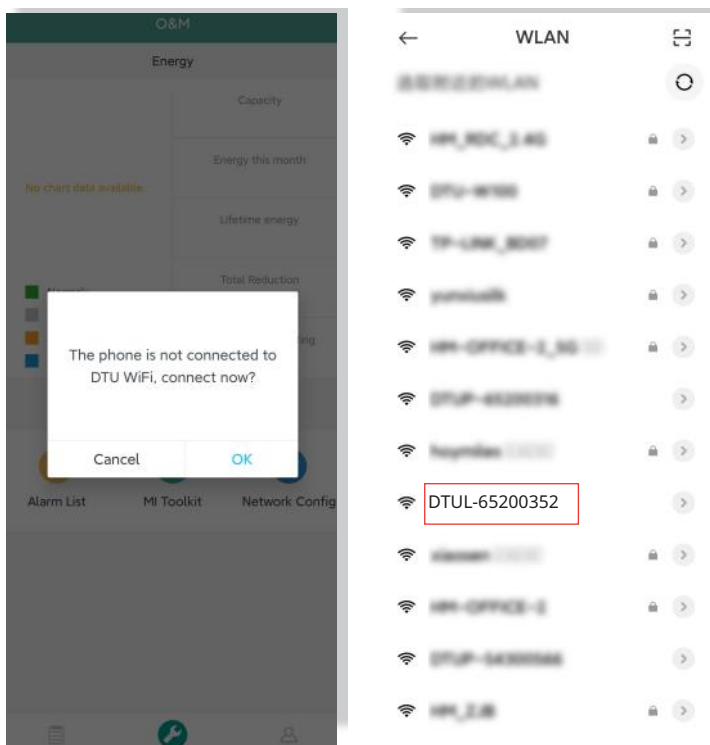
Micro Toolkit is one of the toolkits that come with the S-Miles Cloud app. It can be used for on-site inspection after the PV power station is complete, so that the operation of microinverter can be monitored without Site Creation.

### 6.1 Connect to the DTU

- ✓ Open the Installer app on smart phone/tablet and log in.
- ✓ Click “O&M” on the bottom of the page and then “Micro Toolkit”.



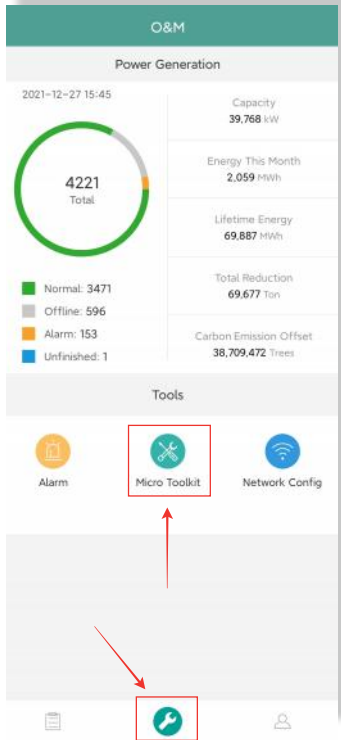
- ✓ Select the DTU's wireless network and click "Connect". (The network name of the DTU consists of DTUL and product serial number, and is password-free by default.)



## 6.2 Field Commissioning and Data Viewing

### 6.2.1 Data Overview

1. Click O&M and enter Micro Toolkit.

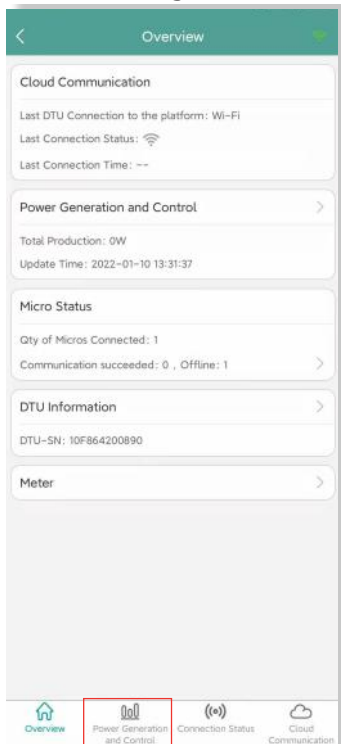


2. If you have already created the power station on the monitoring platform, you can directly view the data and information on the overview page. (Refer to Section 6.2.3 for more details)

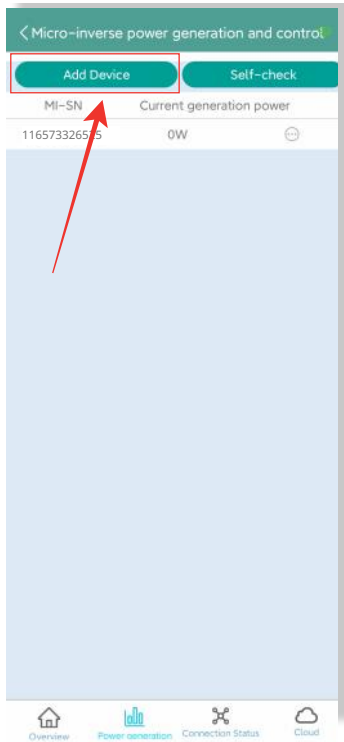
### 6.2.2 Add Microinverter

If power station is not yet created on the platform, you need to type in microinverter SN to view power station data as instructed below.

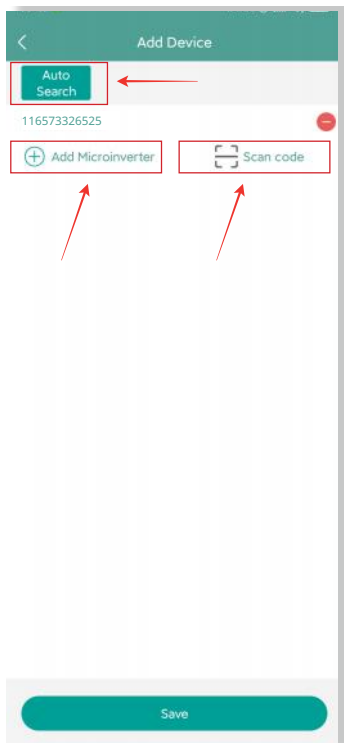
1. Click "Power generation" button



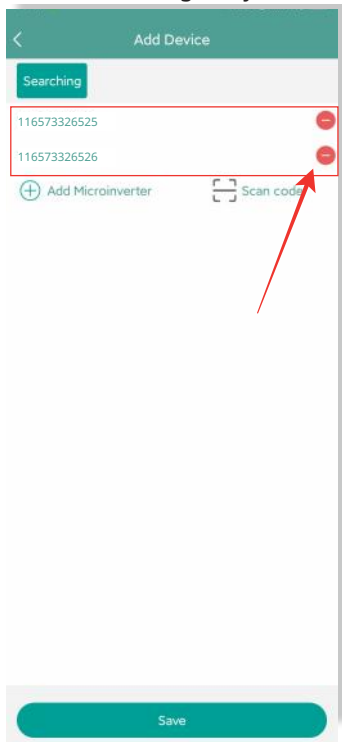
2. Press the "Add Device" button to add the microinverter to the list. (The microinverter added here is only used for on-site debugging, and it will not be uploaded to the server, nor can it replace the power station creation on S-Miles Cloud.)



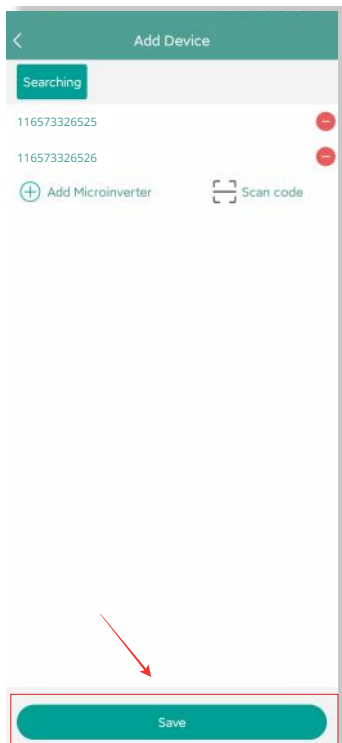
3. You can click "Automatic Search" to add microinverter, or you can type in / scan the microinverter ID.



4. The search result of microinverters and microinverters added will be displayed in the list. Tap the button on the right if you want to delete it.

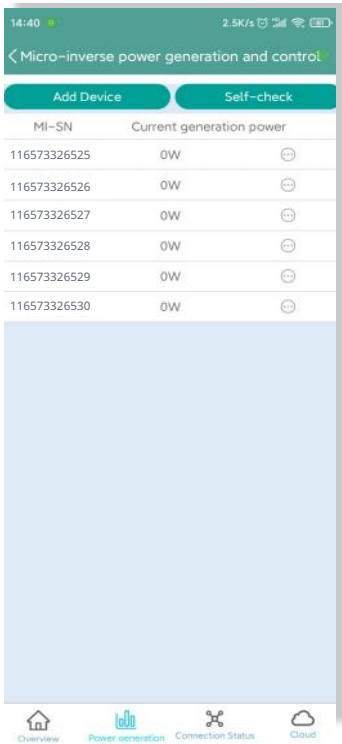


5. Confirm that the microinverter ID in the list is correct, and tap Save.



**6.2.3 View Microinverter Data**

1. Click “Power Generation” and you can see the list of microinverter and PV power of each microinverter.



2. If you want to see more details of one microinverter, just click the serial number, then you can check the input and output data on the page shown as below.

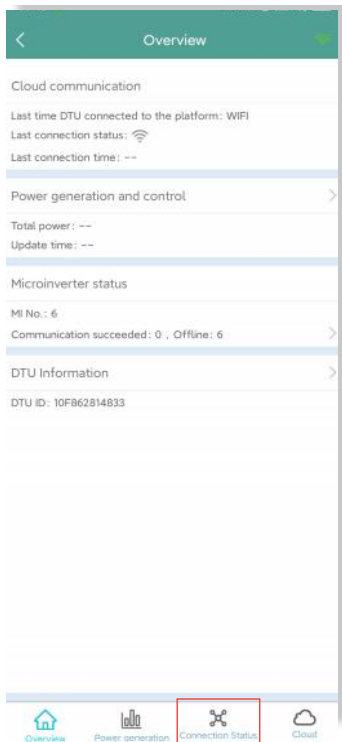


**Note:** If the microinverter signal is so weak that the real-time data are not updated, move the DTU closer to the microinverter.

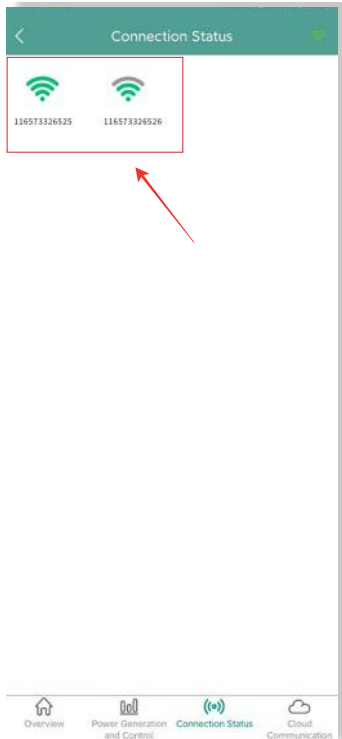


## 6.2.4 View Communication Status with Microinverter

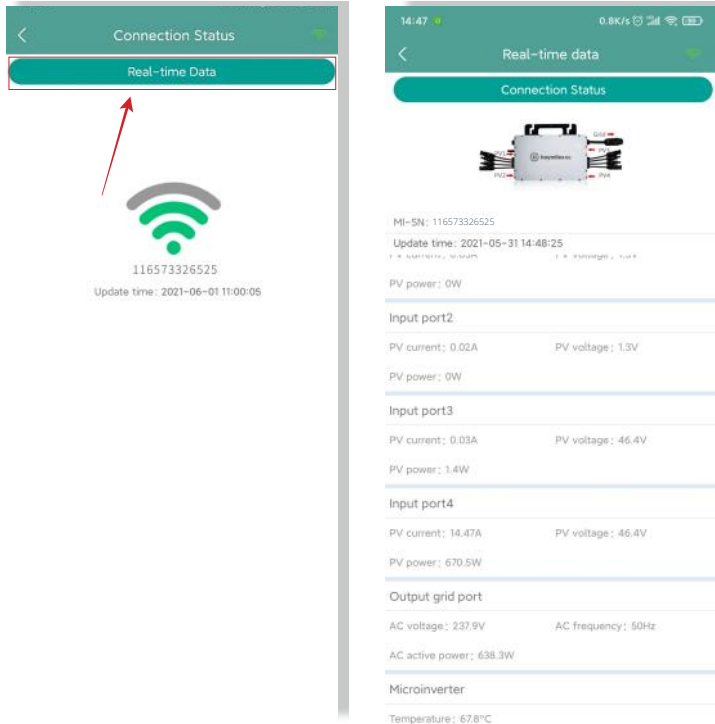
1. Re-enter Micro Toolkit and tap “Connection Status”.



2. On this page, you can check the signal strength between the DTU and each microinverter. Tap the signal icon to enter the respective microinverter page (signal quality is constantly refreshed).



3. You can also tap the button to switch the signal quality and real-time data page.



Note: If the microinverter has no signal, please check whether the microinverter is powered on or refer to the microinverter user manual for troubleshooting.

## 7. Site Creation on S-Miles Cloud

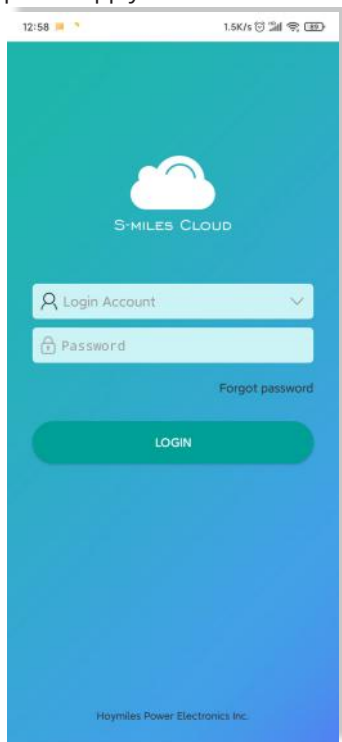
This is a brief description of how to create a new site. You can refer to “Quick Installation Guide for S-Miles Cloud Online Registration” for detailed account creation instructions.

### 7.1 Site Creation

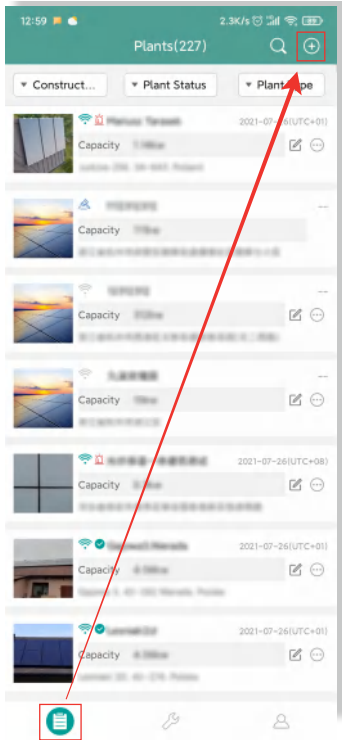
1. Search “Hoymiles” in the App Store (IOS) or the Play Store (Android), or scan the QR code to download the Hoymiles Installer app.



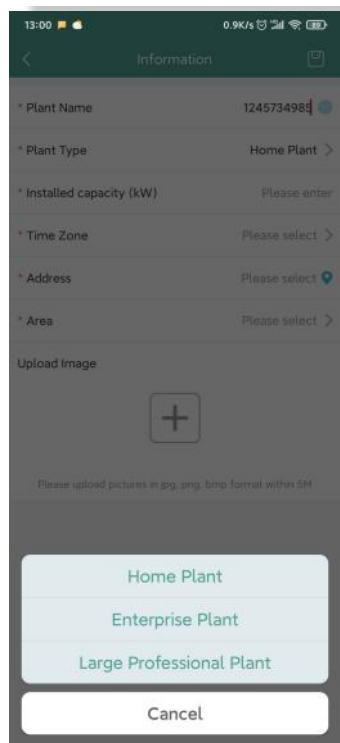
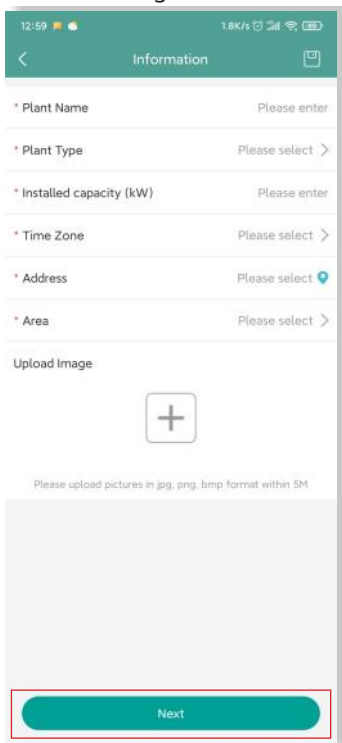
2. Open the app and log in with your installer account and password. If you are a new installer with Hoymiles, please apply for an Installer account from your distributor in advance.



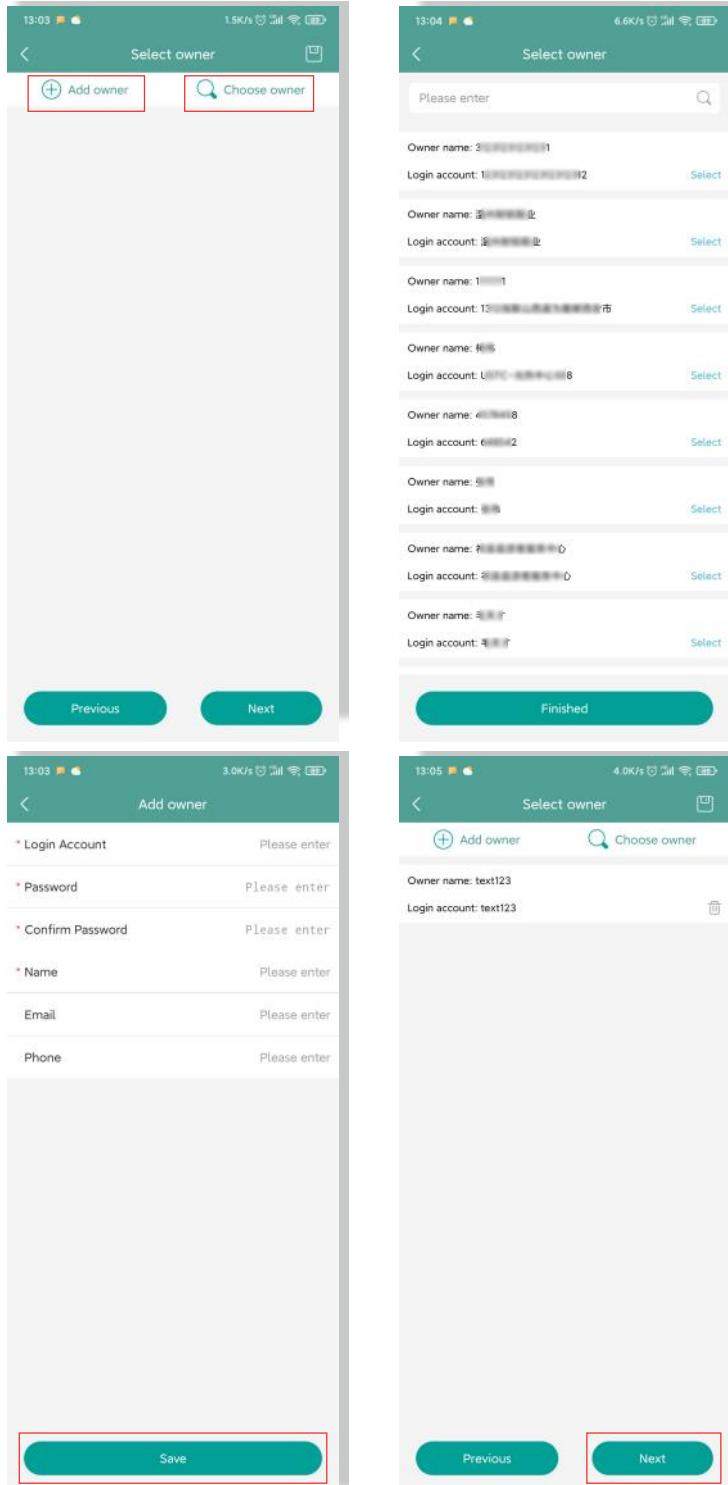
3. Select the “Station” tab on the bottom, and then select “⊕” on the right top side of the page to add station.



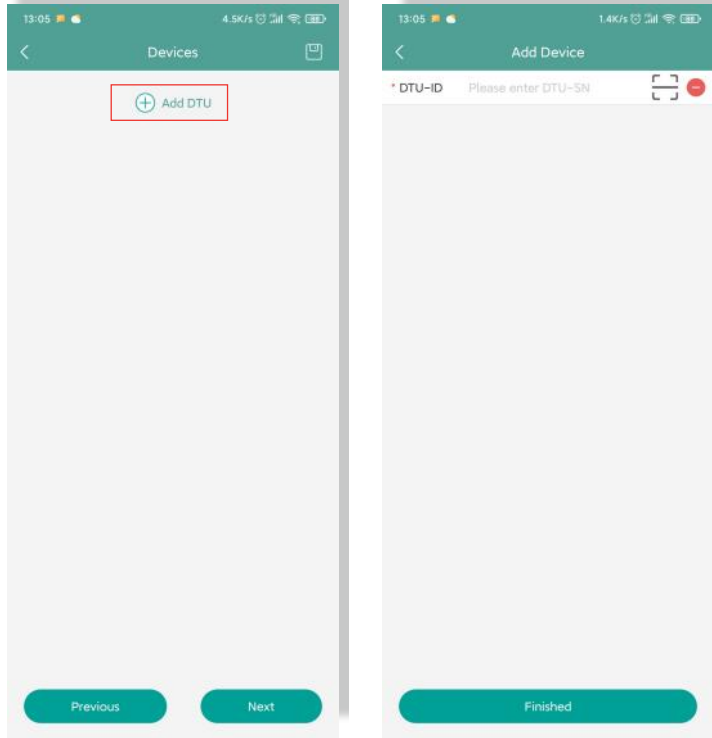
Fill in the station details and press “Next”. Select one from the three types of plant: Home Plant, Enterprise Plant, and Large Professional Plant.



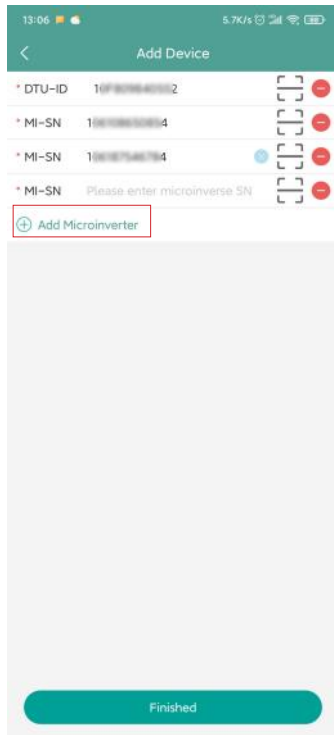
4. Select owner for the plant. Create a new one if there is none.



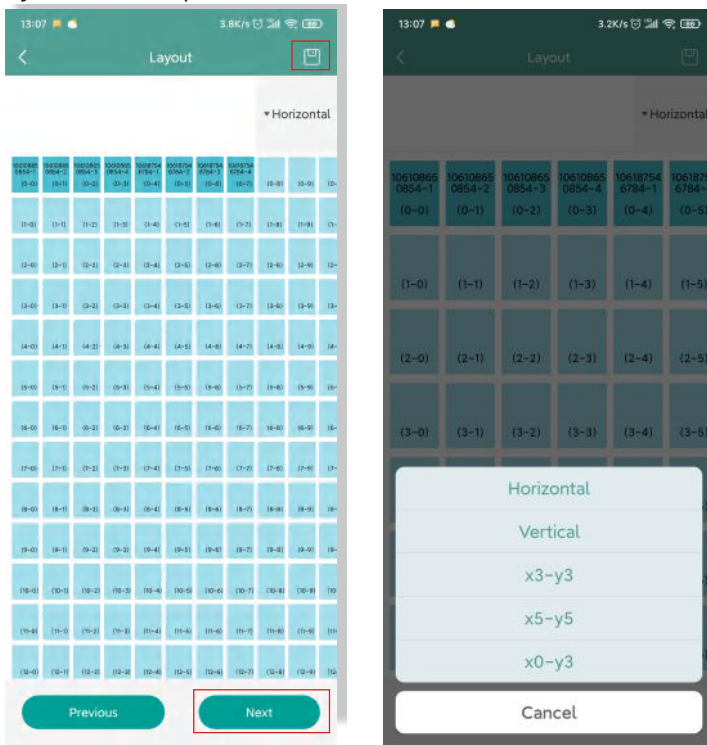
5. Press "Add DTU ID". Scan or input the DTU ID.



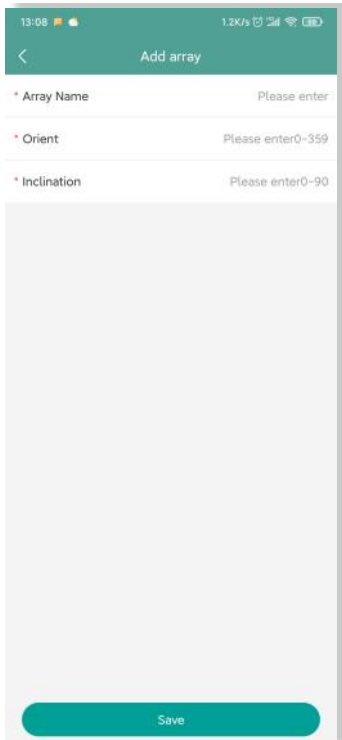
6. Scan or input the microinverter ID. Press "Finish" when all microinverter IDs have been input.



7. Customize the layout based on the installation (or click the tick box on the top right to select preset layouts). Then tap “Next”.



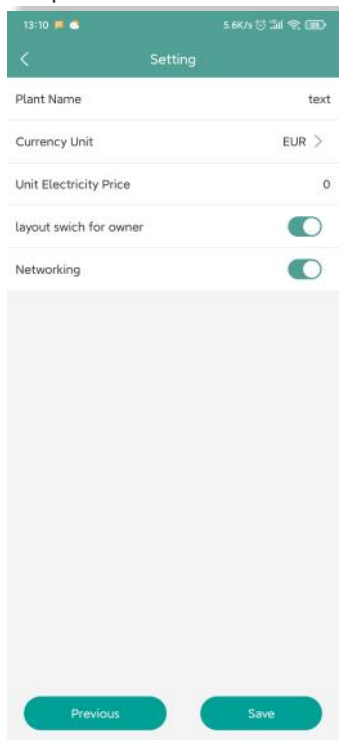
8. Save the design layout and fill in the information.



9. Upload a picture of the site and tap “Next”.



10. Please enter the currency unit and your electricity price. Click the “Networking” button and tap “Save” to complete the site creation.

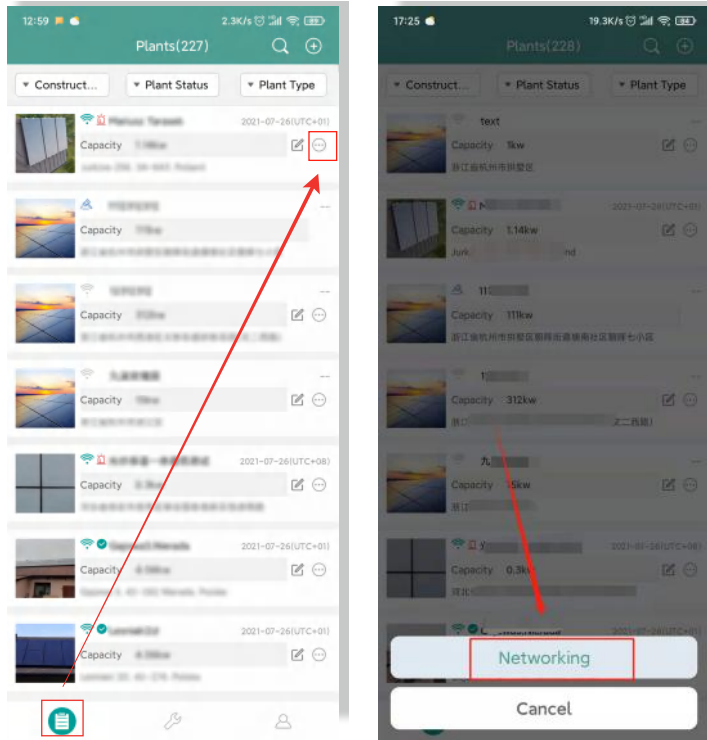


11. The new site will appear on the station list under the Installer account.

12. Please wait about 30 minutes, and the station will appear online where you can see the ID of all microinverters.



13. Networking will fail if the DTU is not powered on. Please tap networking again after the DTU is powered on.

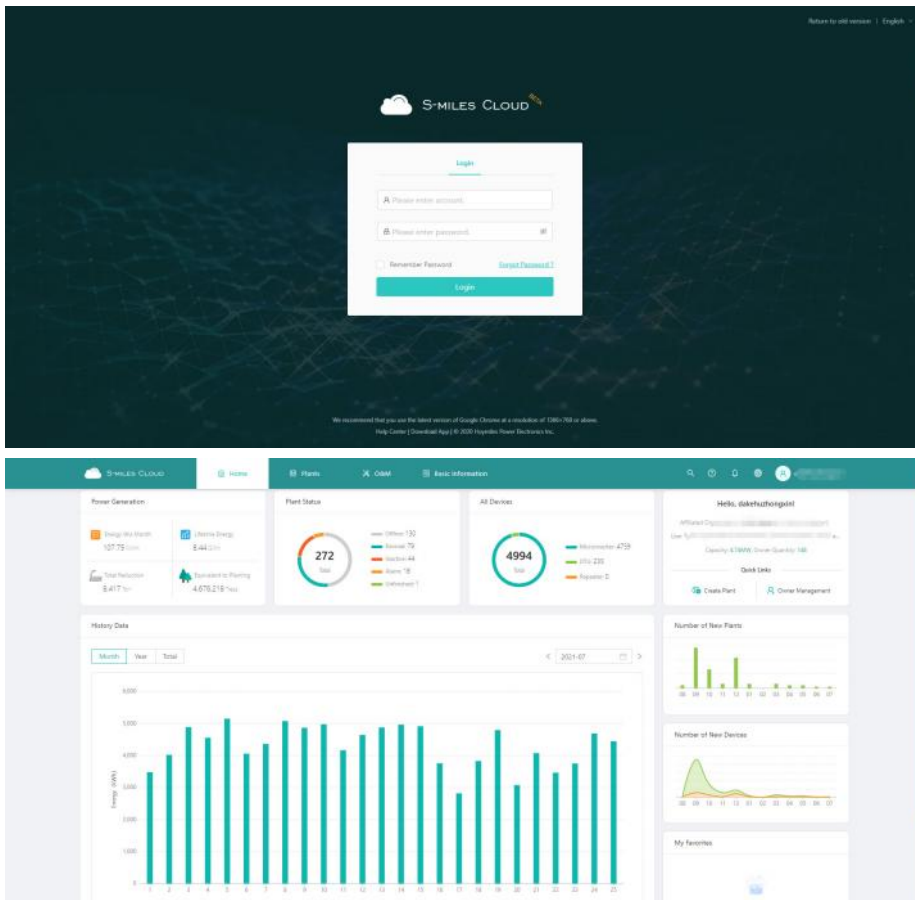


## 7.2 Customer Login

- A. Please download the End User app by searching "Hoymiles" in App Store (IOS) or Play Store (Android).
- B. Log in with the password and username that have been set up by the installer on the previous step.
- C. Customers will be able to view all details once the data start to upload. If it's the first power station created, normally it takes around 30 minutes for the data to come through.
- D. Customers can also view power generation details on the S-Miles Cloud monitoring platform at [global.hoymiles.com](http://global.hoymiles.com).

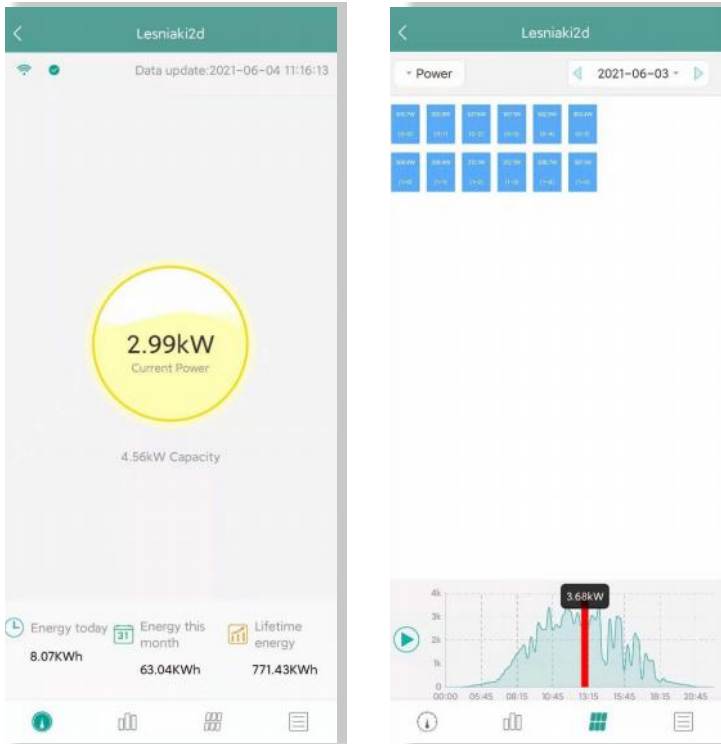
### 7.3 Browse Station on Webpage

Log in to your account and browse the station on webpage.



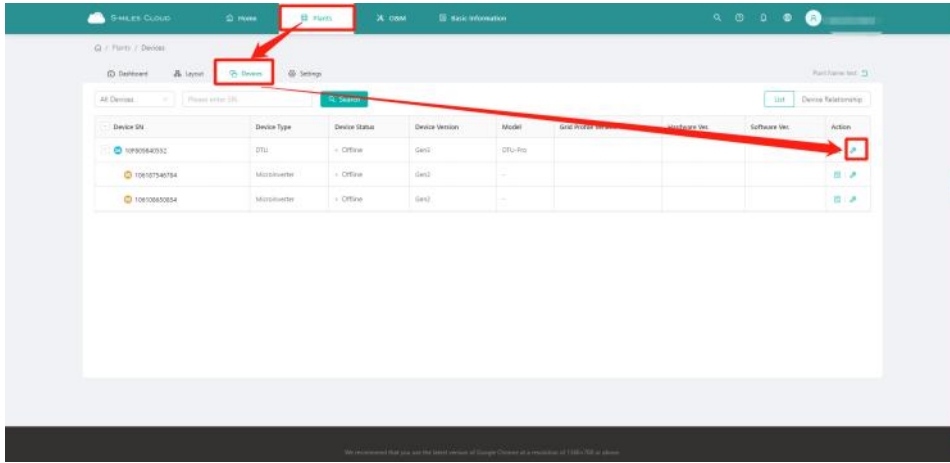
### 7.4 View Phone App

Download the app on your mobile phone and view station information.

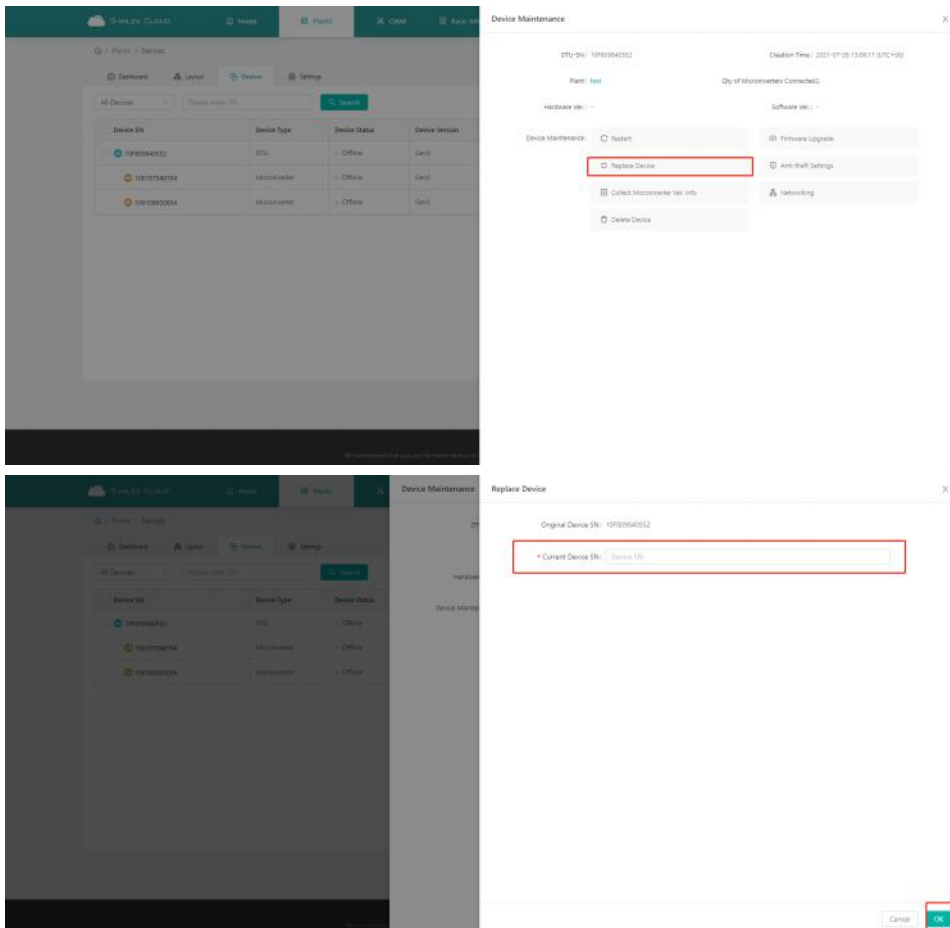


## 8. DTU Replacement

1. If you need to replace the original DTU, please complete the installation according to the instructions in this manual. Otherwise data on the monitoring platform may be lost.
2. Log in to your account on the web. Select “Devices > Action > Device Maintenance” for the plants that need a DTU replacement.



3. Click “Replace Device”, enter the current device SN and click “OK” to complete DTU replacement.



## 9. LED Indicators

You can also learn about the system status via LED indicators.

<b>Red Light</b>	<b>Description</b>
Flashes every 1 second	Wi-Fi disconnected
Flashes every 0.5 seconds	Connection with server failed
<b>Blue Light</b>	<b>Description</b>
Flashes every 1 second	No ID
Flashes every 0.5 seconds	Received data from server
<b>Green Light</b>	<b>Description</b>
Flashes every 0.5 seconds	ID searching incomplete
Lights up constantly	Normal
<b>RED+GREEN+BLUE</b>	<b>Description</b>
Each color flashes once every 1 second	Power on
Each color flashes twice every 1 second	Firmware upgrade

## 10. Technical Data

Model	DTU-Lite-S
<b>Communication to Microinverter</b>	
Type	Sub-1G
Maximum distance (open space)	400 m
Monitoring data limit from solar panels <sup>1</sup>	99
<b>Communication to S-Miles Cloud</b>	
Signal	802.11b/g/n
Sample rate	Per 15 minutes
<b>Interaction</b>	
LED	LED Indicator
Local App	S-Miles Toolkit
<b>Power Supply (Adapter)</b>	
Type	External adapter
Adapter input voltage/frequency	100 to 240 V AC / 50 or 60Hz
Adapter output voltage/current	5V / 2A
Power consumption (DTU)	Typ. 1.0W / Max. 5.0W
<b>Mechanical Data</b>	
Ambient temperature range (°C)	-20 to +55
Dimensions (W × H × D mm)	143 × 33 × 12.5
Weight (kg)	0.1
Installation option	Direct plug-in
<b>Compliance</b>	
Certificate	CE, FCC, IC, RCM, Anatel
<b>Microinverter Compatibility</b>	
Microinverter model	HMS series, HMT series

\*1 This depends on the installation environment. Please refer to user manual for more details.

# Guide for Output Power Adjustment of Balcony Power Station

Preconditions: Make sure that the DTU and the micro-inverter are running normally, and the communication connection run normally.

Steps:

1. Open the S-Miles Cloud and log in your account.
2. Click the button at the bottom left corner of the APP to find the power station that needs to be adjusted.
3. Click the button at the bottom right corner of the screen to switch to the setting page.
4. Click the third column **Power Adjustment**.
5. Confirm the default power setting in the upper right corner.
6. Set the power output percentage (can be set from 2 to 100).

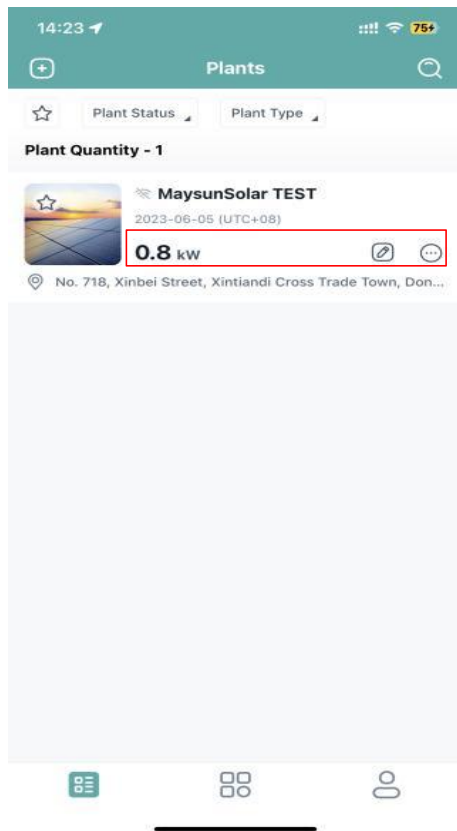
Take the 800W power station adjusted to 600W as an example:

$(600/800) * 100\% = 75\%$ , then the number we need to fill in is 75.

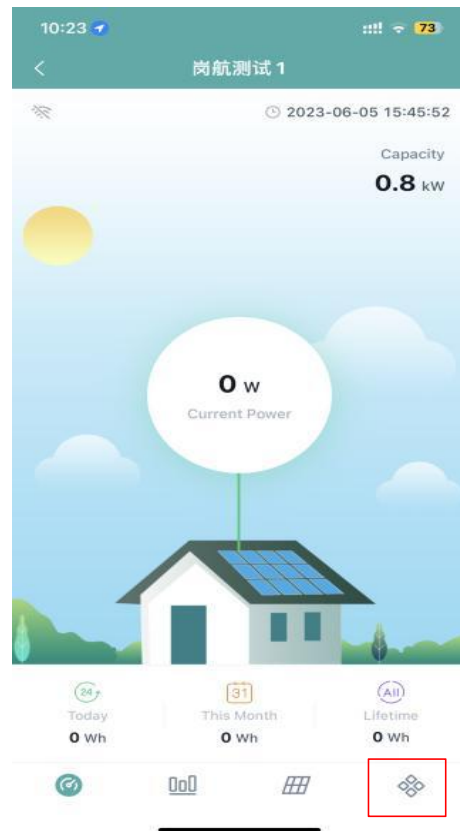
7. Then click the setting button below and wait for the command to be issued successfully.

Note: If you need to restore full power output, change the value to 100 and save and send the command.

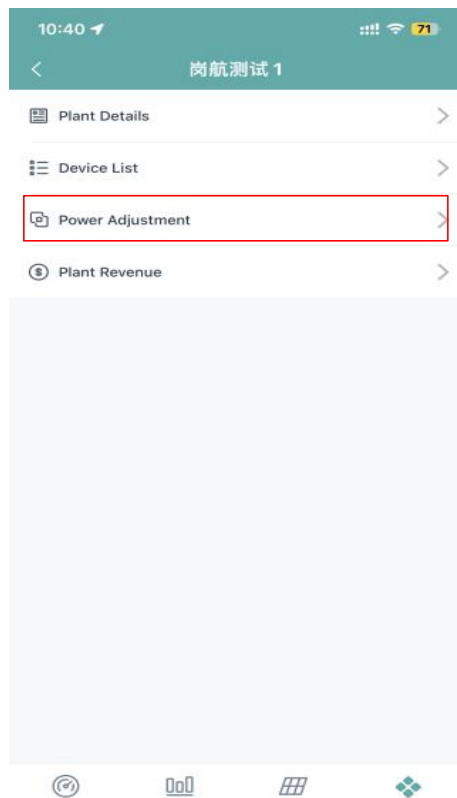
Illustrations:



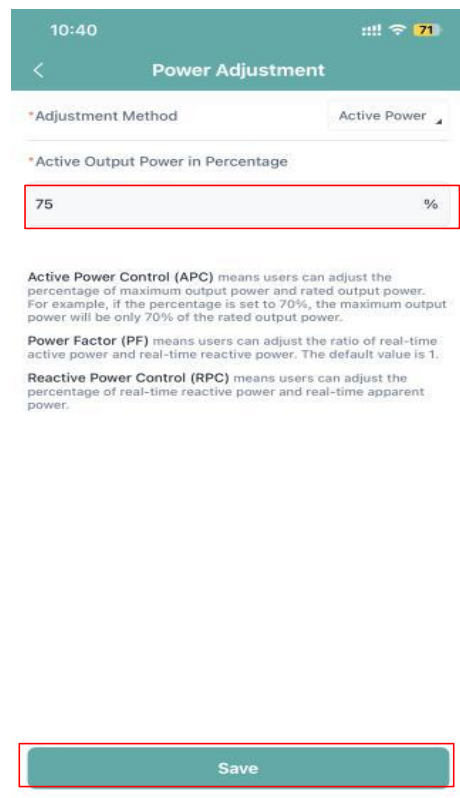
Step 1



Step 2



Step 3



Step 6-7