



# Data Transfer Unit **USER MANUAL**

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DTU-Pro

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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-Pro).

## 1.2 Safety Instructions

Symbol	Usage
 <b>DANGER</b>	Indicates hazardous situations that can result in deadly electric shock hazards, other serious physical injuries, or fire hazards.
 <b>WARNING</b>	Indicates directions that must be fully understood and followed in their entirety to avoid potential safety hazards including equipment damage or personal injury.
 <b>CAUTION</b>	Indicates that the described operation must not be carried out. The reader should stop, use caution, and fully understand the operations explained before proceeding.

- Note that only professionals may install or replace DTU.
- Do not try to repair the DTU without approval from Hoymiles. If the DTU is damaged, send the DTU back to your installer for repairing/replacement. Disassembling the DTU without approval from Hoymiles will invalidate the remaining warranty period.
- Read all instructions and warnings on the technical specifications carefully.
- Do not use Hoymiles products in a way that is not suggested by the manufacturer. Doing so may cause death or injury to persons or damage to the equipment.

## 1.3 User

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

## 1.4 Support and Contact Information

If you have technical queries concerning our products, contact your system installer or distributor. If further support is required, contact Hoymiles' support at this link.

- [www.hoymiles.com](http://www.hoymiles.com)
- Hoymiles Technical Service Center: [service@hoymiles.com](mailto:service@hoymiles.com)

## 1.5 Other Information

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

## 2. Hoymiles Microinverter System

### 2.1 Microinverter

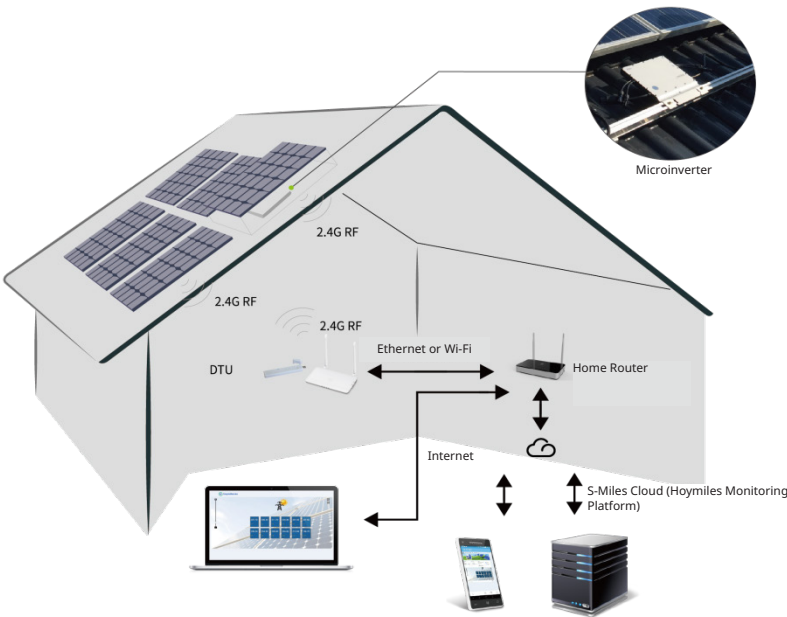
It converts the DC output of PV modules into grid-compliant AC power. It sends the output information of PV modules and the operation data of the microinverters to the DTU, which is the hardware basis of module-level monitoring. With conversion efficiency up to 96.7% and MPPT efficiency up to 99.9%, Hoymiles microinverters are among the high-quality microinverters in the world.

### 2.2 DTU

The DTU is a key component in the Hoymiles microinverter system. It works as the communication gateway between the Hoymiles microinverters and the S-Miles Cloud (Hoymiles Monitoring Platform). The DTU communicates wirelessly with the microinverters via 2.4 GHz Proprietary RF (Nordic), and collects the operation data of the system. Meanwhile, the DTU connects to the Internet via the router and communicates with the S-Miles Cloud (Hoymiles Monitoring Platform). The microinverter system operation data will be uploaded to the S-Miles Cloud (Hoymiles Monitoring Platform) via DTU.

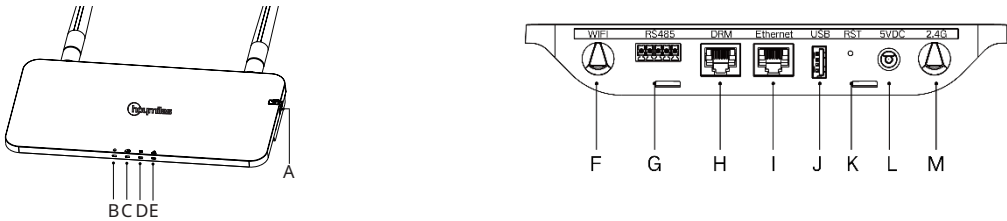
### 2.3 S-Miles Cloud (Hoymiles Monitoring Platform)

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



## 3. Interface Layout

### 3.1 Interface Layout



Item	Description
A	SD Card Slot
B	DTU Power Indicator
C	DTU Communication Indicator (With Server)

D	DTU Communication Indicator (With Microinverter)
E	DTU Alarm Indicator
F	Wi-Fi Antenna (2.4G)
G	RS485
H	DRM Port (For Australia only)
I	Ethernet Port
J	USB Port
K	Reset Hole
L	Power Port
M	2.4G Antenna

### 3.2 Export Management Function (RS485 port)

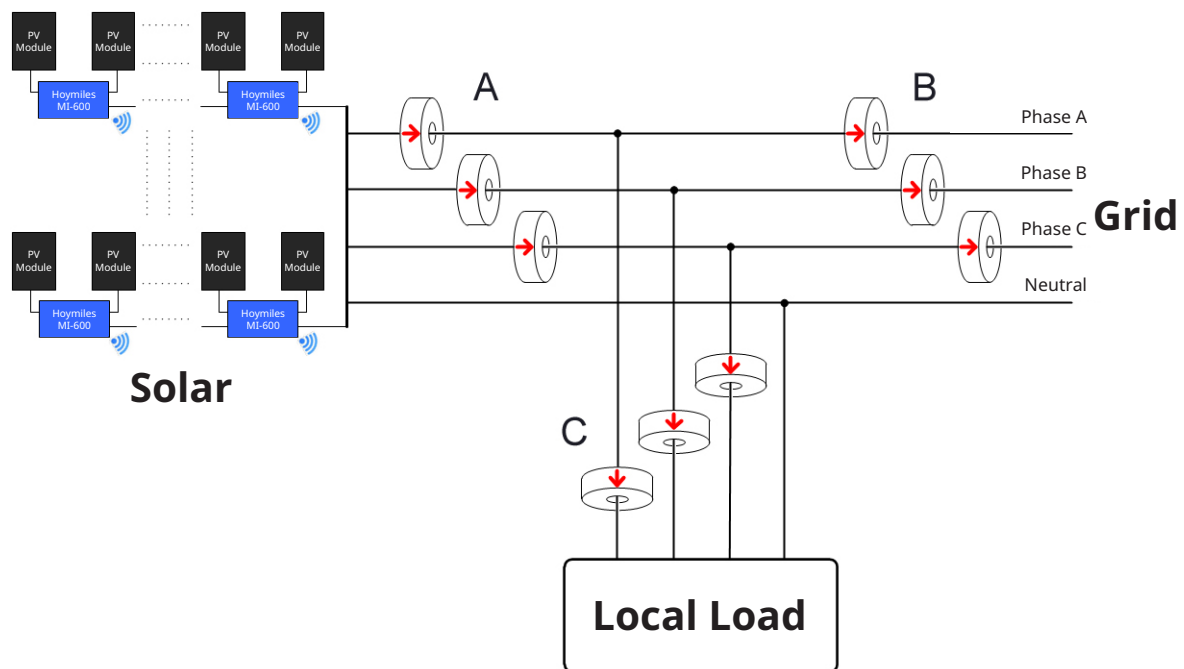
#### a. Devices Required.

- Hoymiles Microinverter: 4-in-1 Unit, 2-in-1 Unit and Single Unit
- DTU: DTU-Pro:
- Meter: Chint Meter (DDSU666)/Chint Meter (DTSU666)/CCS WattNode Meter

#### b. Export Control Type.

- Type 1: Zero Export: limits the export power to zero to prevent the generated power fed back to the grid.
- Type 2: Export Limit: limits the export power within a certain value.
- Type 3: Production and Consumption Monitoring: enable to measure the PV generation with high accuracy.

#### c. Installation Diagram.



**Note:** Refer to the “Hoymiles Export Management Technical Note” for more details.

### 3.3 Remote Active Power Control (RS485 port)

In some countries, it might be required that the generating plants should be equipped with a logic interface (input port) to cease the output of active power or limit active power to a regulated level. This logic input can be the RS485 port, Ethernet port, and so on. The DTU-Pro provides the RTU Modbus protocol over RS485 port for this remote active power control. For more information, refer to the “Modbus Implementation Technical Note”.

### 3.4 DRM Port

The DRM port is provided to support several demand response modes as below by connecting the external control device with a standard RJ-45 connector. The DTU-Pro can support DRM0/5/6/7/8 if used with Hoymiles microinverters.

Mode	Requirement
DRM0	Operate the disconnection device
DRM1	Do not consume power
DRM2	Do not consume at more than 50% of rated power
DRM3	Do not consume at more than 75% of rated power and source reactive power if capable
DRM4	Increase power consumption (subject to constraints from other active DRMs)
DRM5	Do not generate power
DRM6	Do not generate at more than 50% of rated power
DRM7	Do not generate at more than 75% of rated power and sink reactive power if capable
DRM8	Increase power generation (subject to constraints from other active DRMs)

### 3.5 Local Installation Assistant

Local Installation Assistant is a new function integrated with DTU-Pro. Download the Installer App (for installer/distributor use only) before use.



The DTU-Pro is improved over the previous generations of DTU product, and is developed with this new function that allows the installer to:

- a. Complete the Wi-Fi configuration in one step.
- b. See how many microinverters under this DTU are working properly (and the details for each microinverter) and how many are abnormal (and the details for each microinverter) at a glance through the plant overall inverter status indication.
- c. Add connection status, which displays the signal strength between each microinverter with connected DTU, so that the installer can adjust the DTU installation location accordingly. This function simplifies DTU installation and avoids a second visit for installer due to the poor connections between DTU and certain microinverters.

**Note:** Refer to the “Hoymiles Local Installation Assistant Technical Note” for more details.

## 4. DTU Installation

### 4.1 System Capacity

The DTU-Pro is capable of monitoring up to 99 panels. If the communication between the DTU and the microinverters suffers interference caused by installation conditions, the number of PV modules that the DTU can monitor may be reduced.

**Note:** Max. monitoring quantity is for open space with ideal installation conditions described in both the DTU and microinverter manuals. The distance between the microinverter and the DTU needs to be within the required range.

### 4.2 Basic Conditions Required

Before installing the DTU, ensure that the site meets the following requirements:

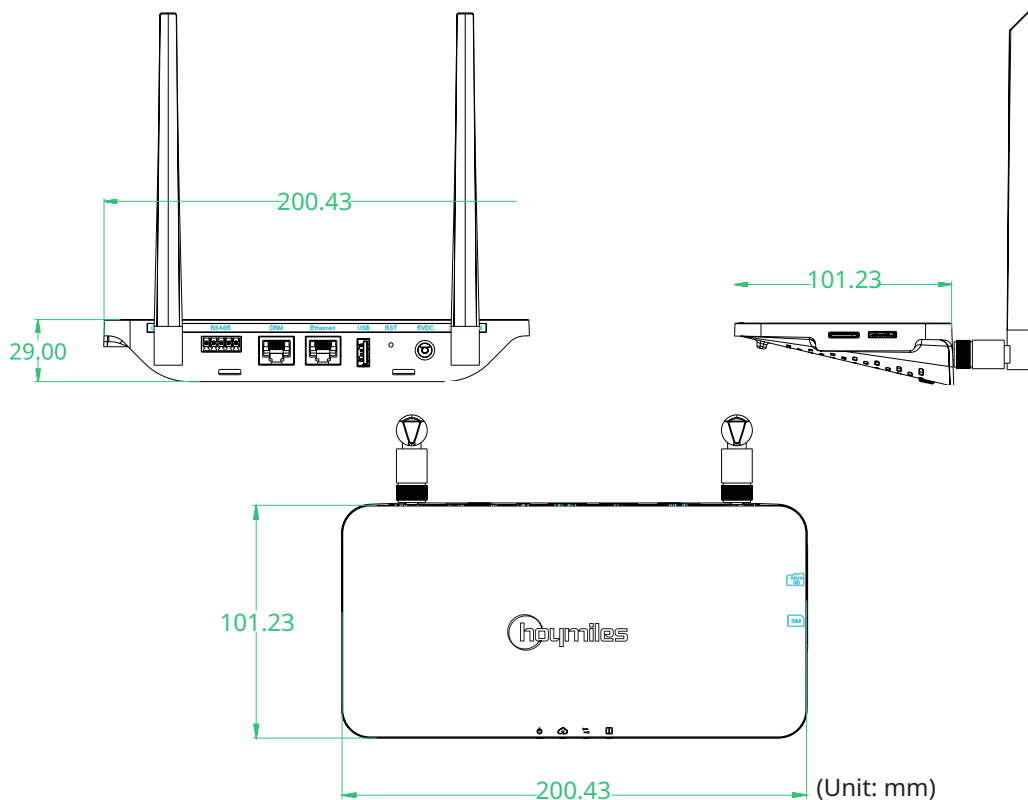
- Standard 220 VAC power outlet.
- Stable broadband Internet connection.
- Router with Ethernet port.

Environmental requirements for DTU installation:

- Away from dust, liquid, acids, or corrosive gas.
- The temperature should be between -20°C and 55°C.

If you plan to install the DTU on the wall, prepare two #8 (4.166 mm diameter) screws and a screwdriver in advance.

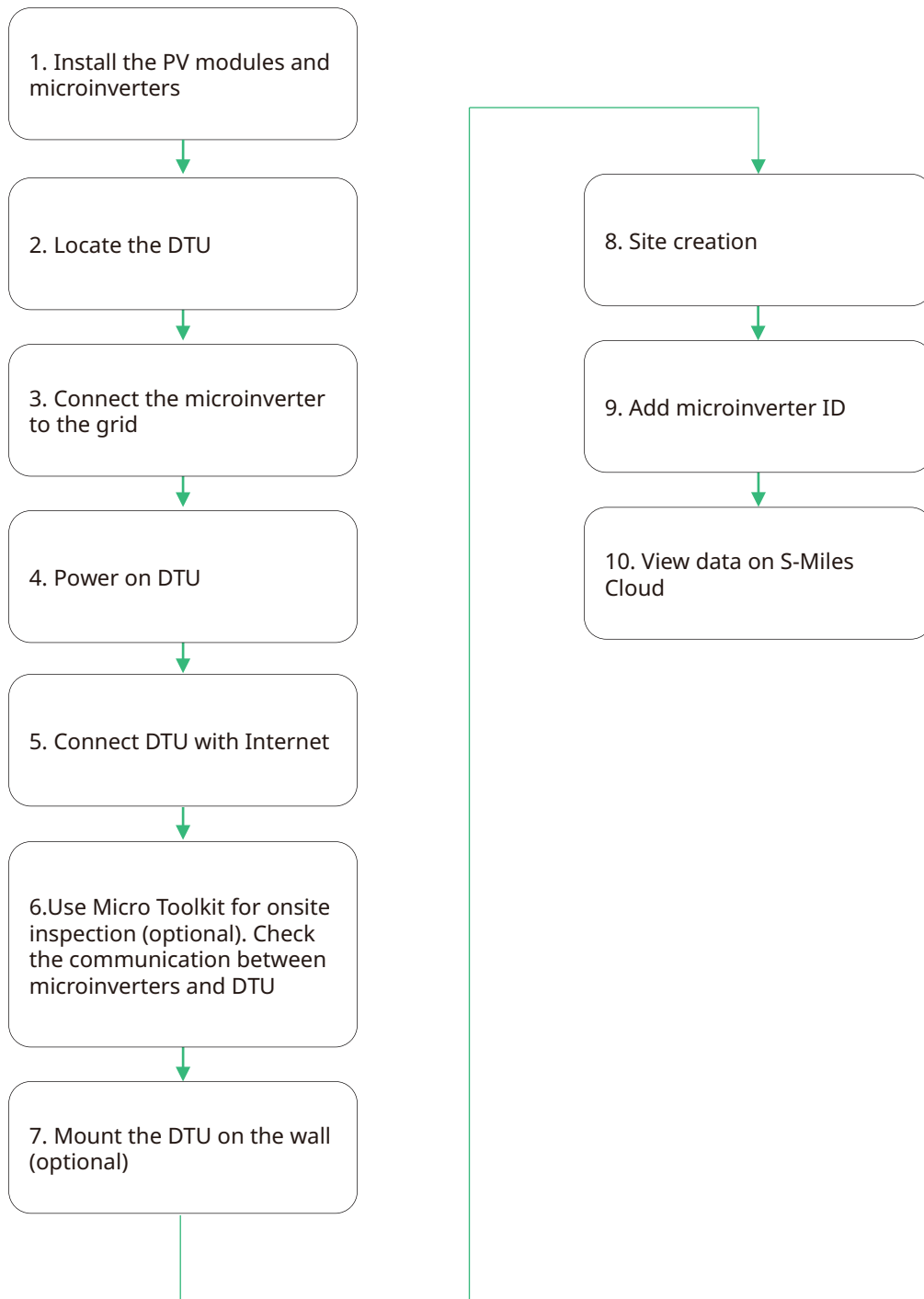
### 4.3 Dimensions



## 4.4 System Installation Steps

Work that needs to be done on site

Work that can be done either on site or at home. Step 6 must be done correctly in order to complete these steps on site.





## 4.5 Preparation

- A. Download the Hoymiles Installer App.



- B. Check the box for following items:

- ✓ Hoymiles DTU-Pro (Two Antennas)
- ✓ Adapter
- ✓ Bracket
- ✓ 5 Pin Plug

- C. Choose the way DTU-Pro connects to the Internet:

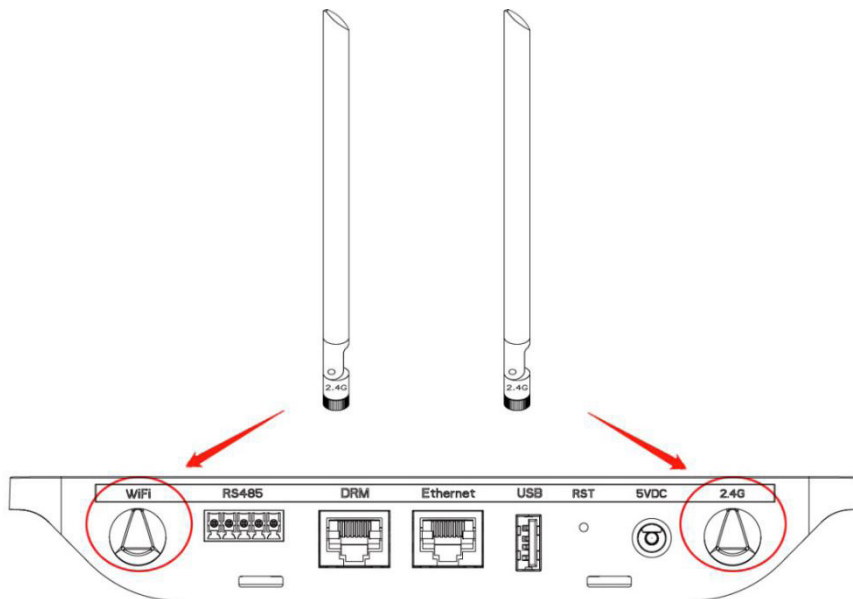
Use Wi-Fi or Ethernet. Prepare for the following items, if needed:

- ✓ Ethernet Cable (if Ethernet option is selected).
- ✓ Hoymiles Installer App.

## 4.6 Install the DTU

**Step 1:** Install the antennas.

Take the two 2.4G antennas out of the box, and screw the antennas into the Wi-Fi port and 2.4G port.



**Note:** If the DTU installation location is inside a metal box or under a metal/concrete roof, an extended 2.4G cable or 2.4G suction antenna is suggested, which can be purchased from Hoymiles or a local electrical store (Contact Hoymiles Technical Service Center for the detailed type information of the cable or antenna at [support@hoymiles.com](mailto:support@hoymiles.com)).

**Step 2:** Choose an installation location.

- Install on the top floor to increase signal strength.
- Install near the center of the PV array.

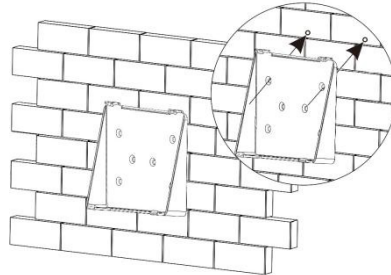
- Install at least 0.5 m above the ground and more than 0.8 m away from corners.

**Note:** Please do not install the DTU directly above metal or concrete to prevent signal interference.

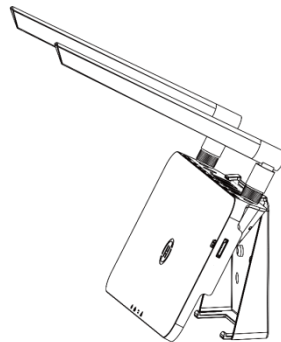
**Step 3:** Choose the installation method.

**Option 1:** Mount the DTU on the wall.

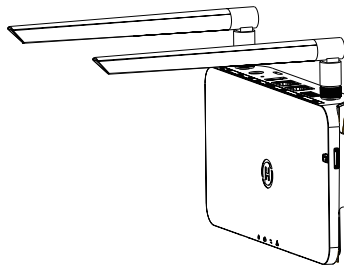
- Screw the bracket on the wall, please use at least two screw holes (one on each side) to affix the bracket (M4 screws need to be prepared by installer).



- Match the bracket's upper buckle with the DTU-Pro.

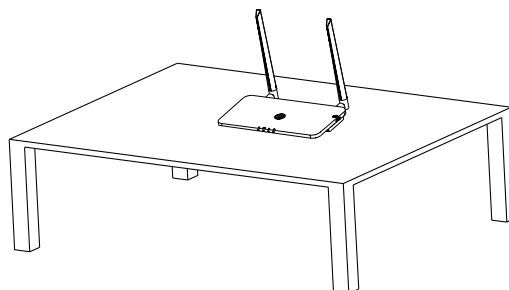


- Match the bracket's lower buckle by gently pressing the lower side of the DTU-Pro until you hear a clicking sound. Please make sure the antennas are perpendicular to the wall.



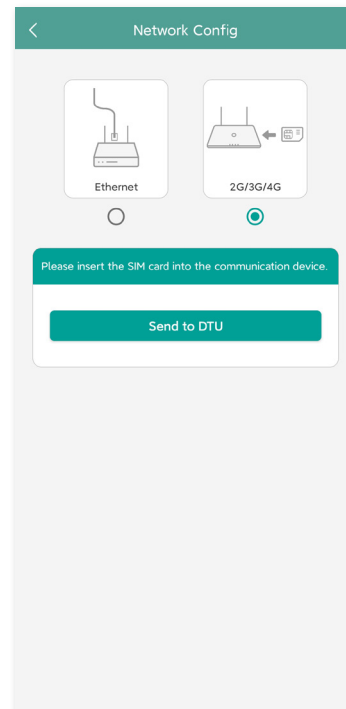
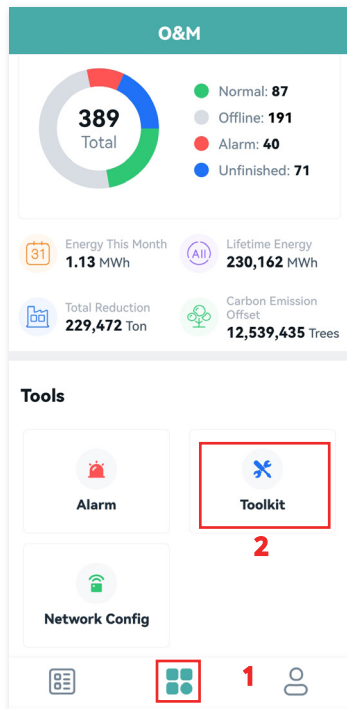
**Option 2:** Place the DTU on the table.

- If you place the DTU on the table, please make sure the antennas are perpendicular to the table.



- Plug in the power adapter to power the DTU.
- Set up with Internet.
- Use the smartphone/tablet to open the Installer App and login. Locate "Me" on the bottom of the page and select "Network Config". and then complete the Wi-Fi configuration (If Wi-Fi option is selected).

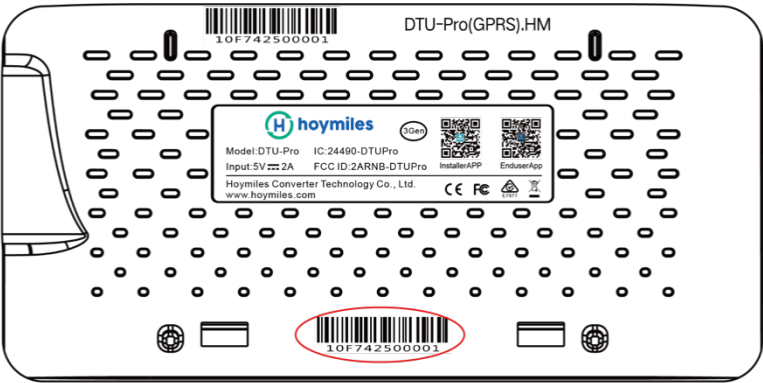
- d. Use a LAN cable, with one end connected to the house router and the other to the DTU Ethernet port. Use the smartphone/tablet to open the Installer App and login.
- e. Tap "O&M" icon on the bottom of the page, then tap the "Network Config" icon.



5. Complete Installation Map


Complete the installation map.

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



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

To sheet ↑

<div><div>hoymiles</div><div>Hoymiles Microinverter Installation Map</div><div>AP040228 V1.3</div></div>																
Please Make N for North 			Panel type: Azimuth: Tilt: Sheet ____ of ____					Customer Information:				DTU Serial Number				
COLUMN ROW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A																
B																
C																
D																

To sheet ↓

To sheet →

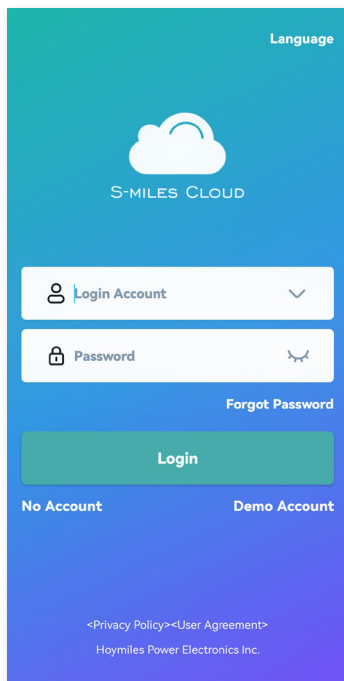
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## 6. Plant Creation on S-Miles Cloud (Hoymiles Monitoring Platform)

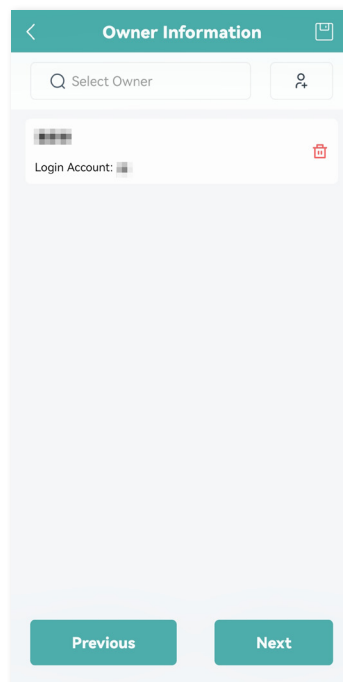
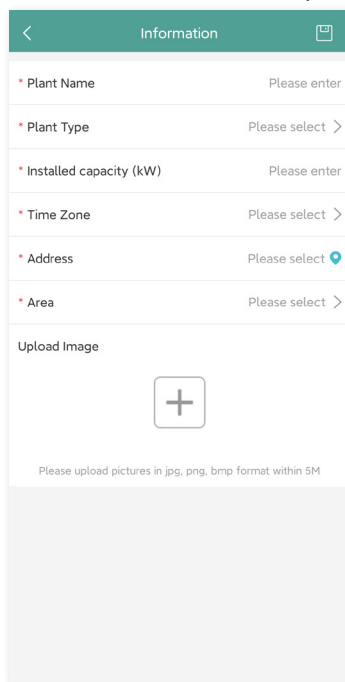
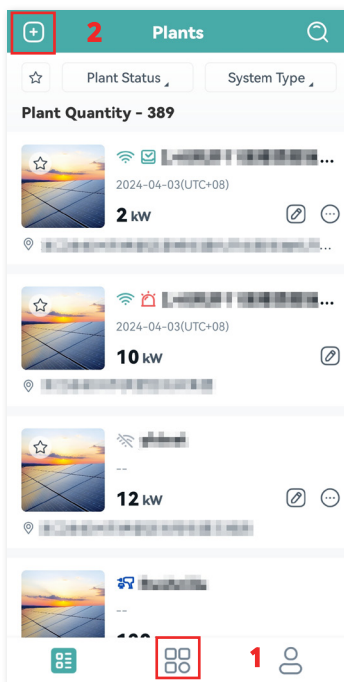
This is a brief description of how to create a new site. You can refer to “Quick Installation Guide for S-Miles Cloud Online Registration” for detailed account creation instructions.

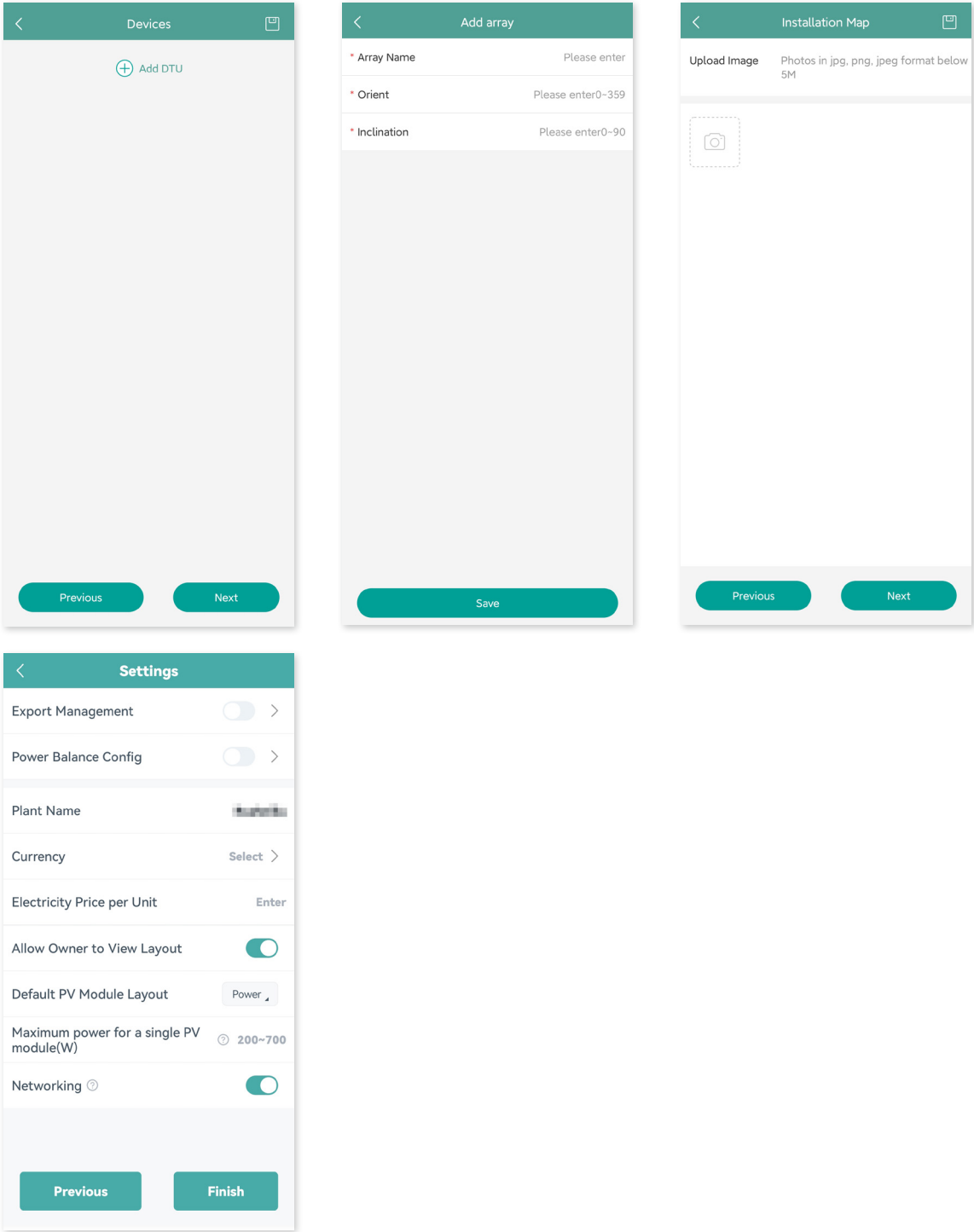
### 6.1 Power Plant Creation

1. 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.



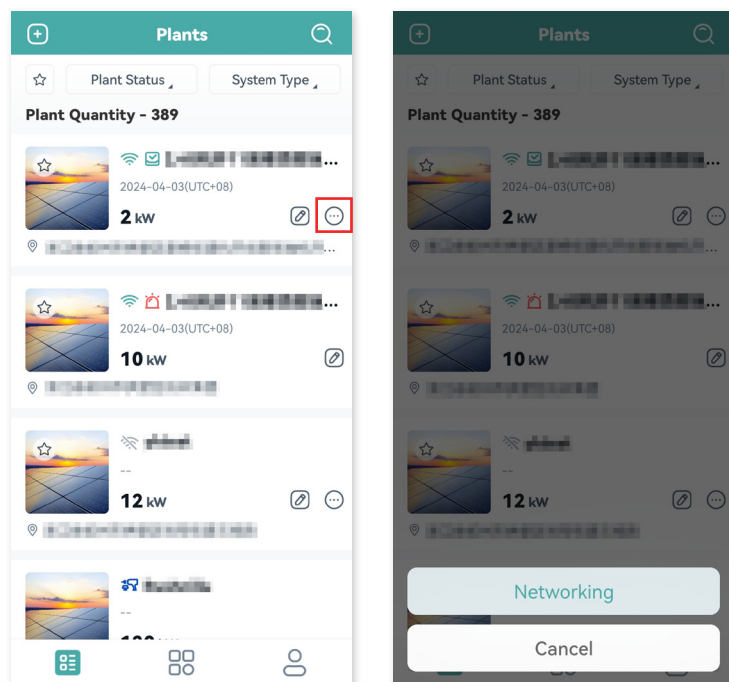
2. Select the “Plants” icon on the bottom, and then select “+” on the right top side of the page to add station. Follow the on-screen instructions to fill in the station details and press “Next”.





The new site will appear on the station list under the Installer account. Please wait about 30 minutes, and the station will appear online where you can see the ID of all microinverters.

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

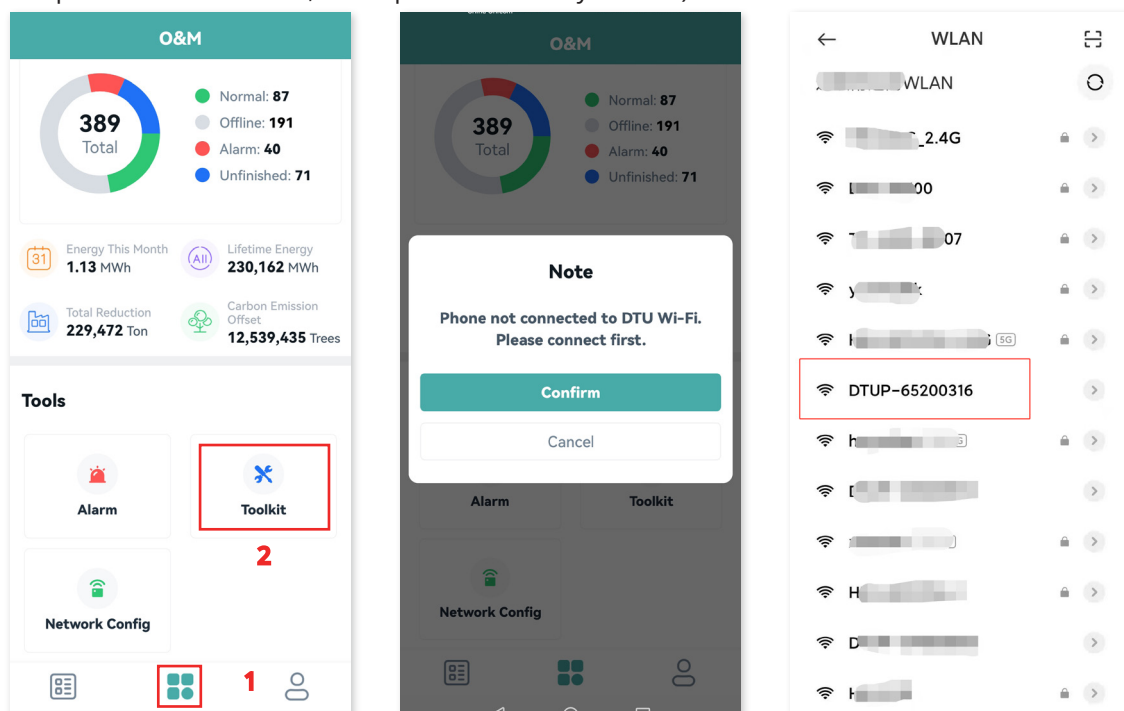


## 7. Toolkit

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.

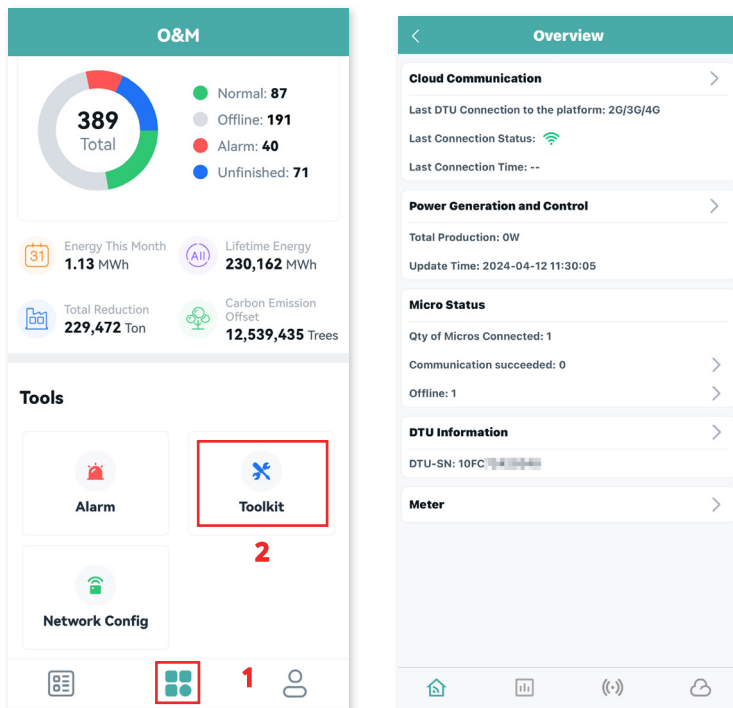
### 7.1 Connect to the DTU

- ✓ Open the Installer app on smart phone/tablet and log in.
- ✓ Click "O&M" on the bottom of the page and then "Toolkit".
- ✓ Select the DTU's wireless network and click "Connect". (The network name of the DTU consists of DTUP and product serial number, and is password-free by default.)



## 7.2 Data Overview

1. Click O&M and enter Toolkit.



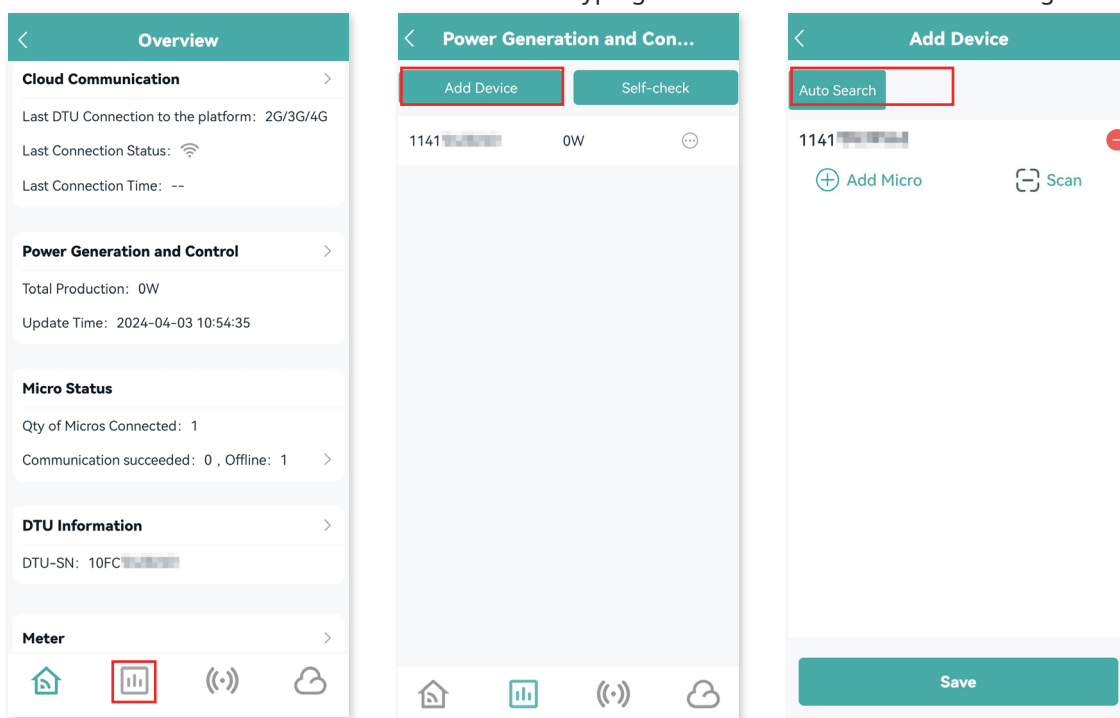
2. If you have already created the power station on the monitoring platform, you can directly view the data and information on the overview page.

## 7.3 Field Commissioning and Data Viewing

### 7.3.1 Add Microinverter

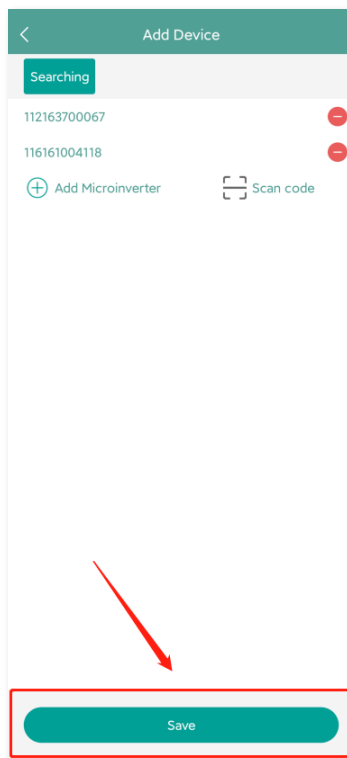
If power station is not yet created on the platform, you need to type in microinverter SN to view power station data as instructed below.

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 add microinverter via "Auto Search" or typing in the microinverter ID or scanning the ID.



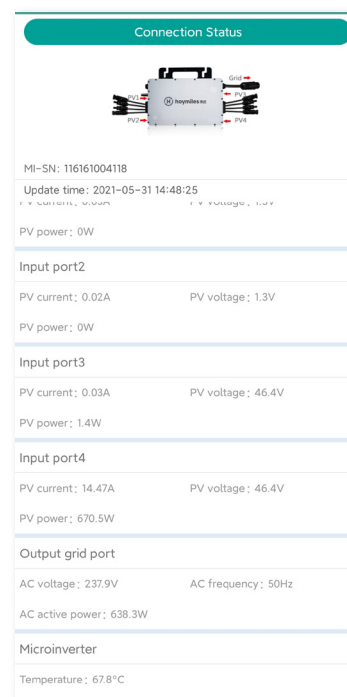
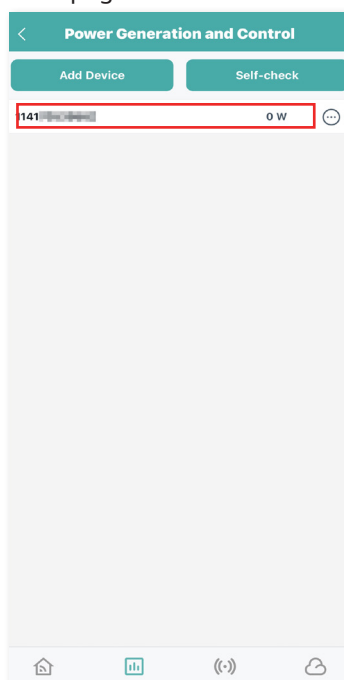
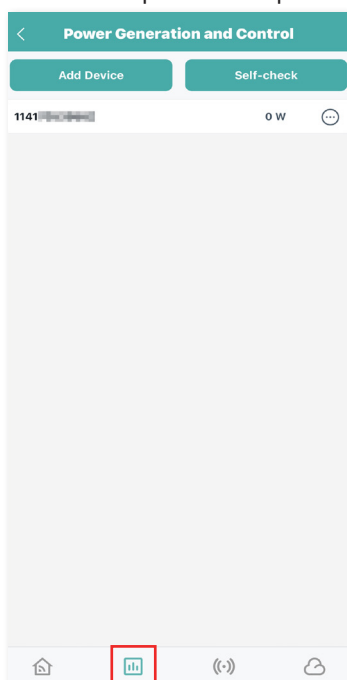


3. Confirm that the microinverter ID in the list is correct, and tap save.



### 7.3.2 View Microinverter Data

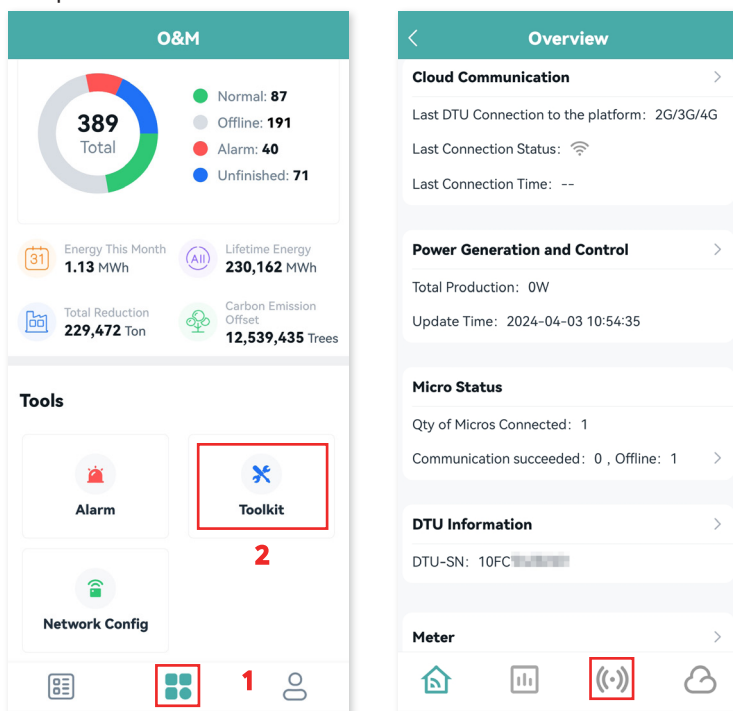
1. Click "Power Generation". You can see the list of the microinverter and PV power of each microinverter.
2. If you want to see more details of one microinverter, just click the serial number, then you can check the input and output data on the page shown as below.



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

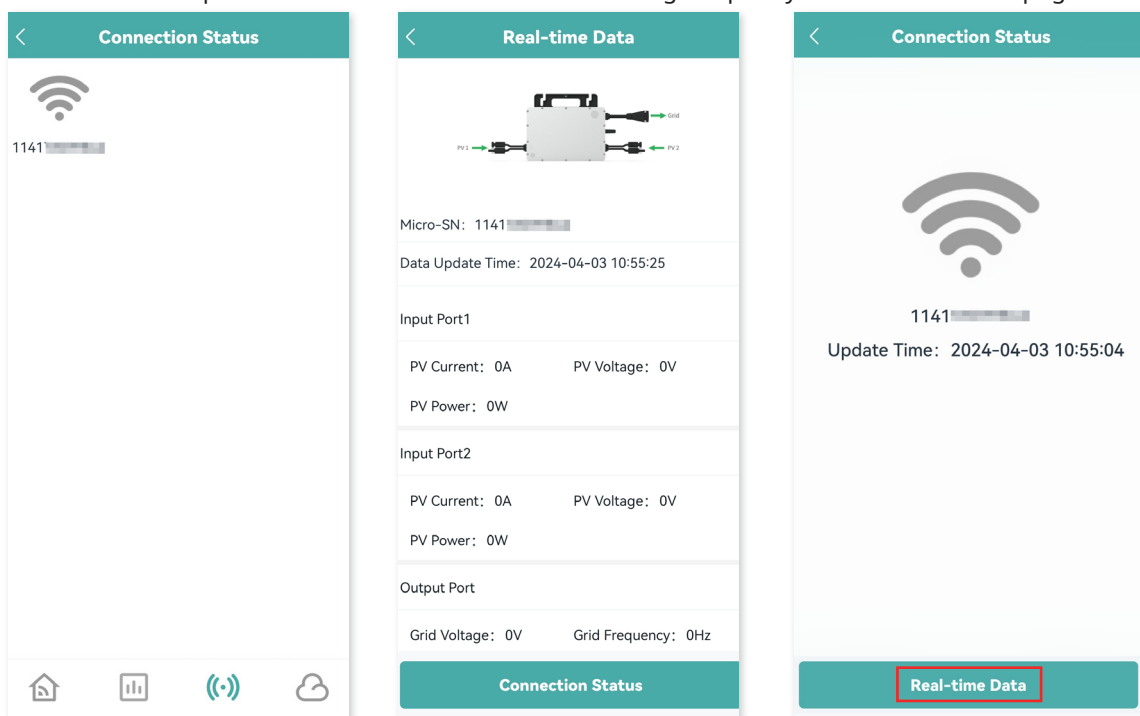
### 7.3.3 View Communication Status with Microinverter

1. Tap O&M < Toolkit > 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 refreshing).

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



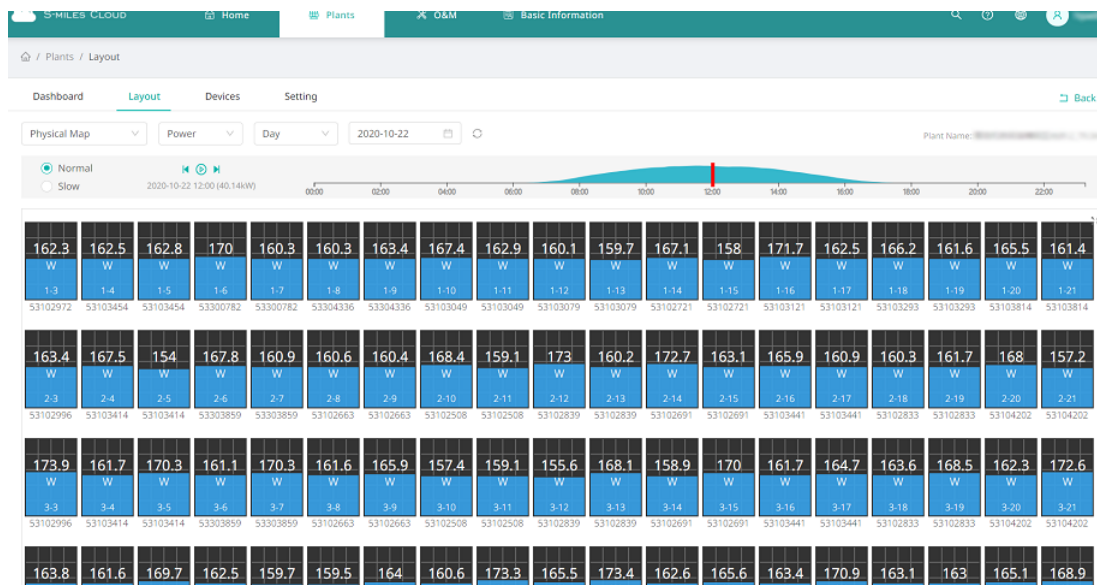
Note: If the microinverter has no signal, please check whether the microinverter is powered on or refer to the microinverter user manual for troubleshooting.

## 8. Customer Login

- Download the End User App. Search “Hoymiles” at App Store (iOS) or Google Play (Android).
- Log in with the password and username that have been set up by installer in the previous step (Section 6 Step B), and press “Login”.
- Customers will be able to view all details once the data starts to upload. Normally it will take around 30 minutes for the first data to come through.
- Customers can also view the microinverter generating details by accessing the S-Miles Cloud (Hoymiles Monitoring Platform) website at <https://world.hoymiles.com>.

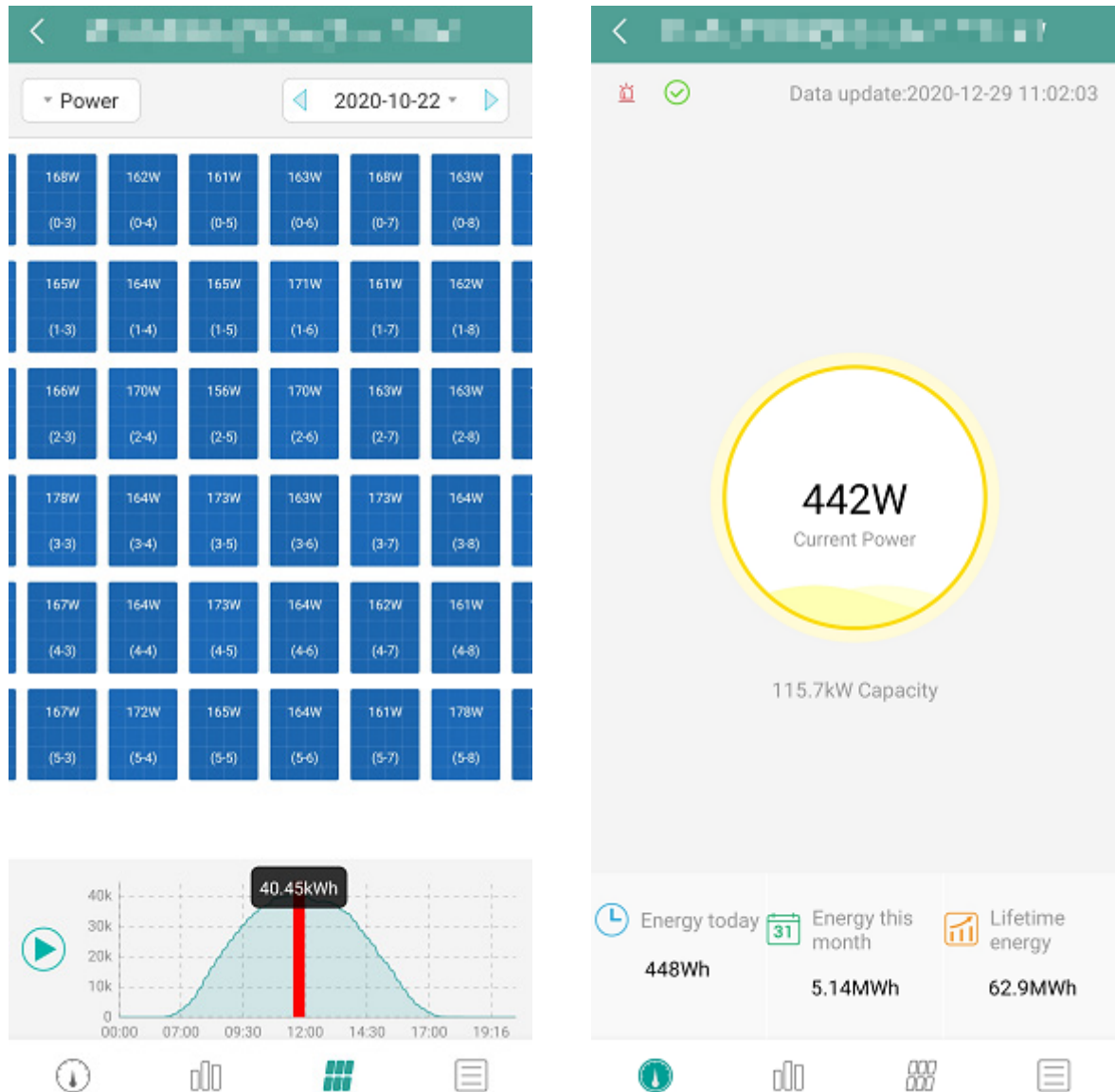
## 9. Browse the Web-Based Plant

Log in to your account and browse the web-based plant.










## 10. View Phone App

Download mobile phone app and view plant information.

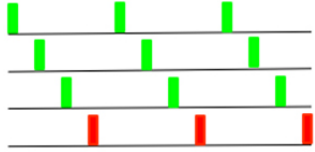



















## 11.LED Indicators

The system status can be viewed on the Hoymiles local app or via the LED indicators.

LED Mark	LED Color	Explanation
		DTU power on or power off
		Network communication
		Microinverter communication
		Fault state

### LED States

LED Indicator	Status	Description
All		Firmware upgrading
		Starting up
		DTU power on
		DTU power off
		DTU is communicating with the S-Miles Cloud (Hoymiles Monitoring Platform)
		Internet disconnected
		Internet connected, server disconnected
		Local app connected
		Microinverters are communicating
		Microinverter SNs incomplete
		No Microinverter SN (perform networking)
		Normal
		DTU alarm occurred
		Microinverter alarm occurred
		Meter alarm occurred

## 12. Technical Data

Model	DTU-Pro (Wi-Fi Version)	DTU-Pro (GPRS Version)	DTU-Pro (4G Version)
Communication to Microinverter			
Signal	2.4GHz Proprietary RF (Nordic)		
Maximum distance (open space)	200 m		
Monitoring data limit from solar panels	99 <sup>1</sup>		
Communication to S-Miles Cloud			
Ethernet	RJ45 × 1, 100Mbps		
Wireless <sup>2</sup>	Wi-Fi: 802.11b/g/n	2G: GSM/GPRS	4G: TDD-LTE, FDD-LTE 3G: SCDMA 2G: GSM/GPRS
Sample rate	Per 15 minutes		
Communication to Peripherals			
RS485	COM × 1, 9600bps, Modbus-RTU		
Ethernet	RJ45 × 1, Modbus-TCP		
DRM (For AU/NZ only)	RJ45 × 1, DRM0/5/6/7/8		
Interaction			
LED	LED Indicator × 4 – RUN, Cloud, MI, ALM		
APP	S-Miles Toolkit		
Power Supply (Adapter)			
Type	External adapter		
Adapter input voltage/frequency	100 to 240 V AC / 50 or 60 Hz		
Adapter output voltage/current	5V/2A		
Power consumption	Typ. 1.5W / Max. 3.0W	Typ. 2.5W / Max. 5.0W	
Mechanical Data			
Ambient temperature (°C)	-20 to 55		
Dimensions (W × H × D mm)	200 × 101 × 29 (without antennas)		
Weight (kg)	0.20		
Installation method	Wall mounting / Desktop mounting		
Environmental rating	Indoor-IP20		
Compliance			
Certificates	CE, FCC, IC, RCM, Anatel		
Microinverter Compatibility			
Microinverter model	HM series, MI series		