hoymiles

DTU

User Manual

DTU-MI

Version D-3-1.0 @2019.1

Contents

1. Important Safety Information

1.1 Read this First

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

1.2 Safety Instructions

Symbol	Usage
	**Indicate a hazardous situation that can result in deadly electric shock hazards, other serious physical injuries, or fire hazards.**
	**Indicate directions that must be fully understood and followed entirely to avoid potential safety hazards including equipment damage or personal injury.**
	**Indicate 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 can install or replace DTU.
- Do not try to repair DTU without Hoymiles' approval. If DTU is damaged, please send the DTU back to your installer for repairing/replacing. Disassembling DTU without Hoymiles' approval will invalidate remaining of the warranty period.
- Please read all instructions and warnings on the technical specifications carefully.
- Do not use Hoymiles products in a way that is not suggested by manufacture. If doing so, it may cause death or injury to persons or damage to equipment.

1.3 User

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

1.4 Support and Contact Information

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

- www.hoymiles.com
- Hoymiles' customer service center: service@hoymiles.com

1.5 Other Information

Product information is subject to change without notice. The user manual will be updated frequently; please refer to Hoymiles official website at www.hoymiles.com for the latest version.

2. Hoymiles Microinverter System

2.1 Microinverter

It converts the DC output of solar modules into grid-compliant AC power. It sends the output information of PV panels and the operation data of the microinverters to the DTU, which is the hardware basis of the panel-level monitoring.

With conversion efficiency up to 96.7% and MPPT efficiency up to 99.9%, Hoymiles microinverters rank into the first class of the world's Microinverter industry.

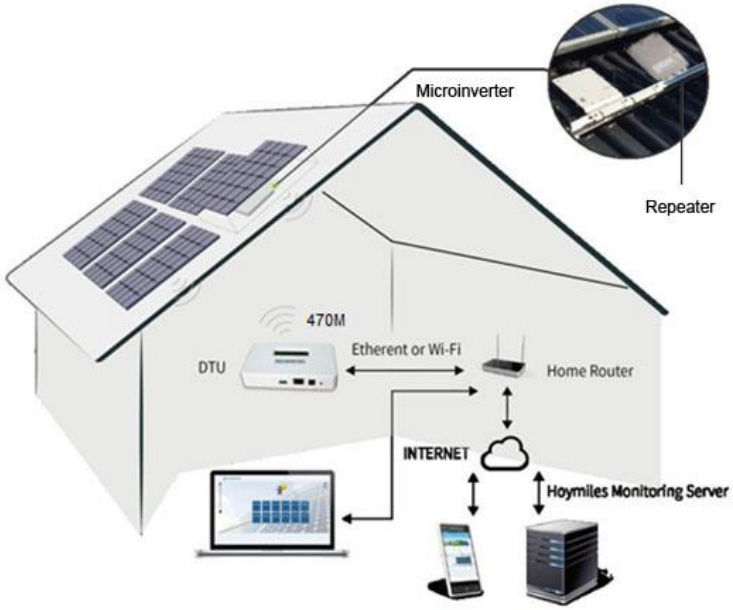
2.2 DTU

The DTU is the key component in Hoymiles microinverter system. It works as the communication gateway, which operates between the Hoymiles microinverters and the Hoymiles Monitoring Server. The DTU communicates with the microinverter wirelessly via 2.4G RF, collecting the operation data of the system. Meanwhile, the DTU connects to the Internet via router and communicates with Hoymiles Monitoring Server. The microinverter system operation data will be uploaded to Hoymiles Monitoring Server via DTU.

2.3 Hoymiles Monitoring Server

It collects the operation data and status of the microinverters in the system and provides the panel-level monitoring for the users and maintenance staff.

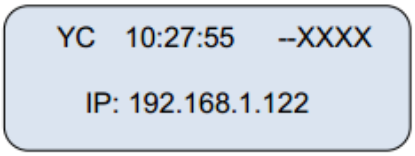
The following diagram shows the Hoymiles Microinverter system.



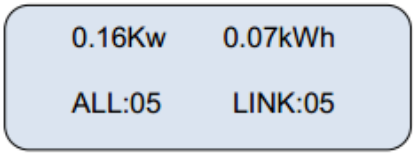
3. Introduction to DTU Interface

3.1 DTU Screens

When the DTU completes the start-up process and obtains the IP address, the DTU will start to operate. During operating, the LCD displays the basic system operation status and indicates two different pages of info alternately shown below (screens 1 and 2 will appear once Internet configuration completed).



(1)



(2)

The data indicates:

Page 1:

(1) Web connection information: “YC”, which means the DTU is connected to the Internet. If it is “NC”, the DTU is not connected to the Internet.

(2) Time, e.g. 10:27:55.

(3) --XXXX indicates the ID of the current search.

(4) Local IP address, e.g.192.168.1. XXX.

Page 2:

(5) Data on the real-time output power in kilowatts, e.g. 0.16kW.

(6) Data on today’s output energy of the system in kWh, e.g. 0.07kWh.

(7) The total number of microinverters in this system, e.g. ALL: 05.

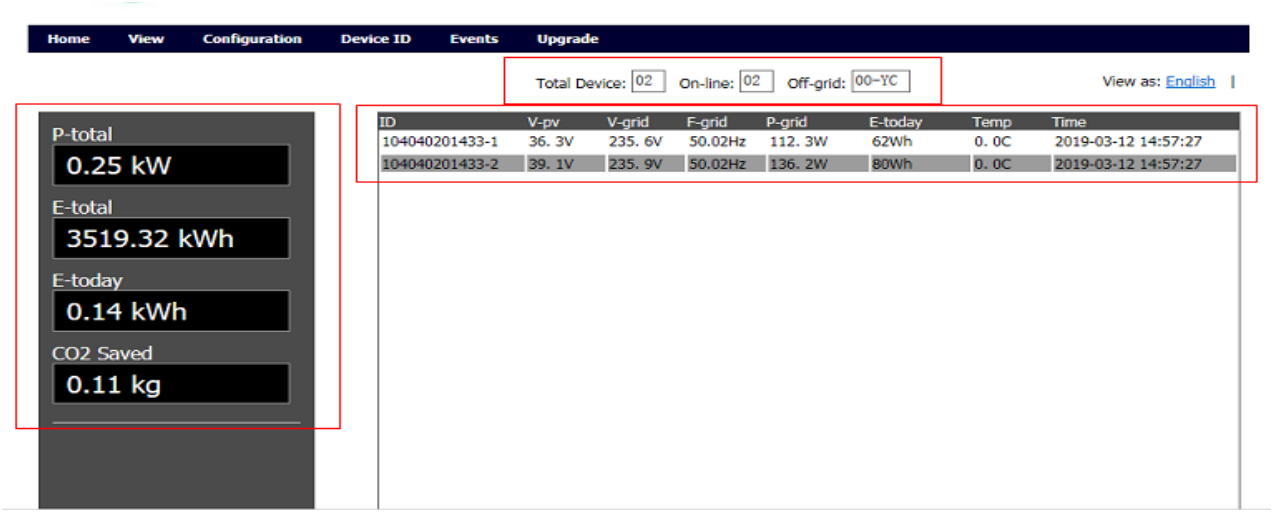
(8) The number of microinverters normally communicating with DTU, e.g. LINK: 01.

3.2 DTU Local Interface

The DTU-MI has an embedded web server, which enables you to view the operation data, status, and manage the devices and clear fault via browser locally. A computer will be needed to connect with the same network with DTU, then open the DTU local interface in the browser by entering the IP address shown on the LCD screen.

3.3 DTU Home Interface

The home interface will be shown as the picture below once input the IP address into the browser address bar. In the home interface, the left side displays the basic information of the system, including Total Output Power, Total Energy, Today Energy, and CO2 Saved. On the right side shows the operation data of each microinverter, including PV Voltage, Grid Voltage, Grid Frequency, Grid Power, Today Energy and Internal Temperature. The upper side of the page displays the total number of microinverters, the number of connected microinverters and the number of unconnected microinverters.



3.4 DTU View Interface

There are three options under “View” bottom: DTU Information; System Inventory; RF information.

(1) DTU Information: access to the DTU basic information interface, which contains the following information:

a. DTU Information, including software version, hardware id code, manufacturing date, and default data uploading time (900s). The uploading time intervals can be changed according to the requirements within the range between 300-900s.

b. Network Information is mainly contented with the configuration information related to the network port, includes static IP and dynamic IP settings. “Enable DHCP” will need to be ticked if you choose to use the router connection.

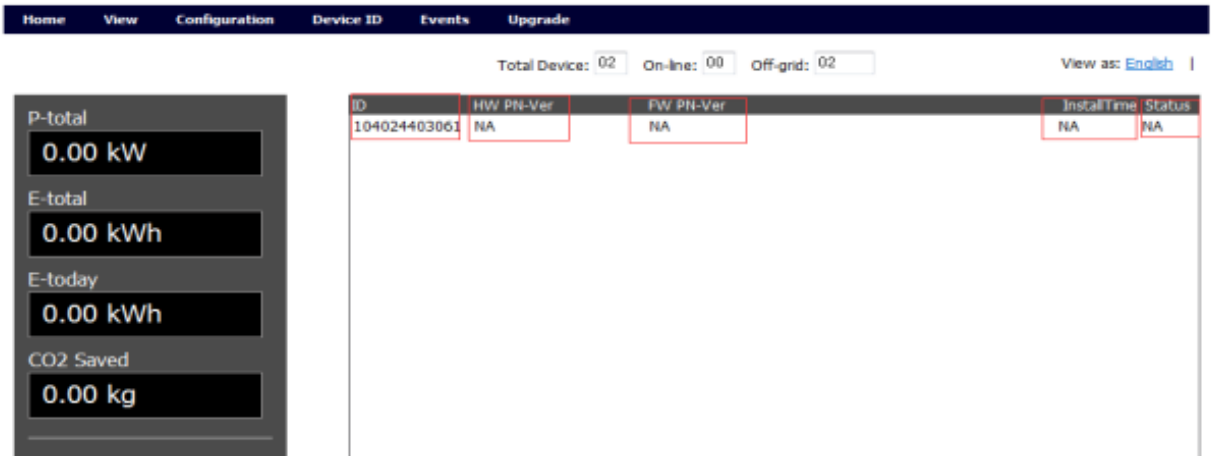
***Note**: The System channel can be amended on the “Configure System” under the “Configure” function on the top functional bar. The setting range is 0~25. If there is more than one DTU in the same installation area, please set different channel numbers for different DTU.*

c. Client Set item include:

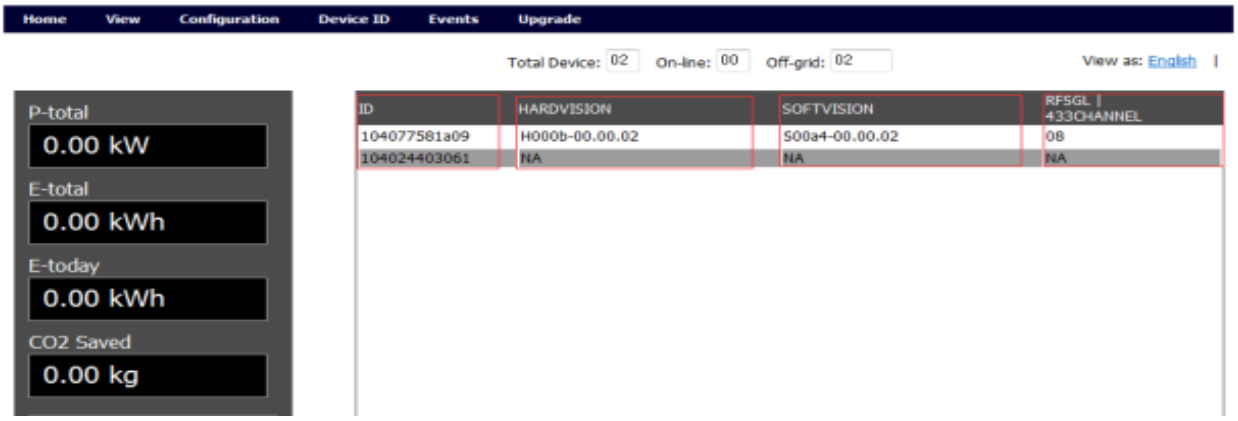
- Server address: data4.hoymiles.com, Factory settings
- Server IP: 1.1.0.0, Factory settings
- Dest Port: 10017, Factory settings

Online mode selection: please select the GPRS/ROUTER box when using the GPRS. If not, please un-select the GPRS/ROUTER box.

(2) System Inventory: indicate system microinverter software and hardware version, microinverter ID, and installation time and status.



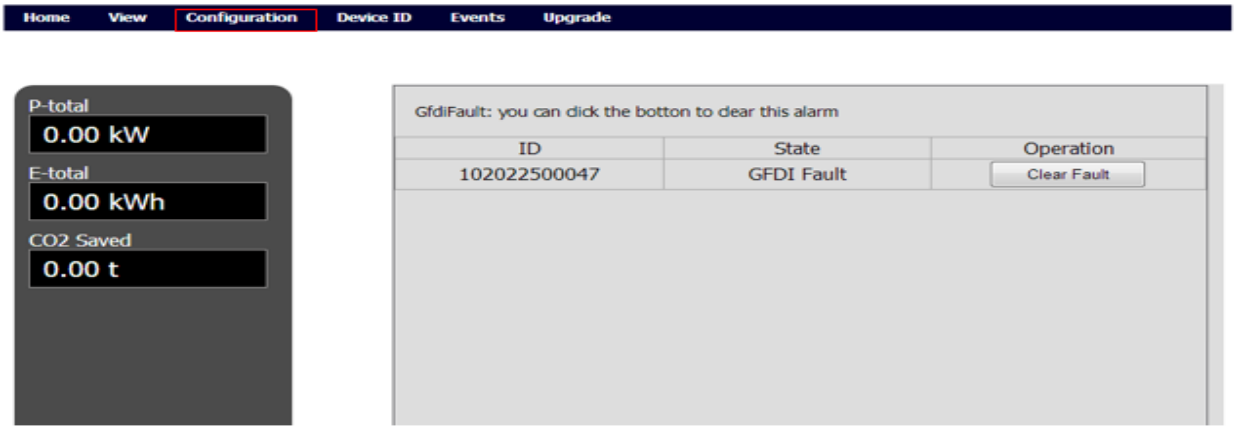
(3) RF Information: indicate the basic information of the DTU communication module including software and hardware version of the DTU module in the system, as well as the module ID and status.



3.5 Configuration Interface

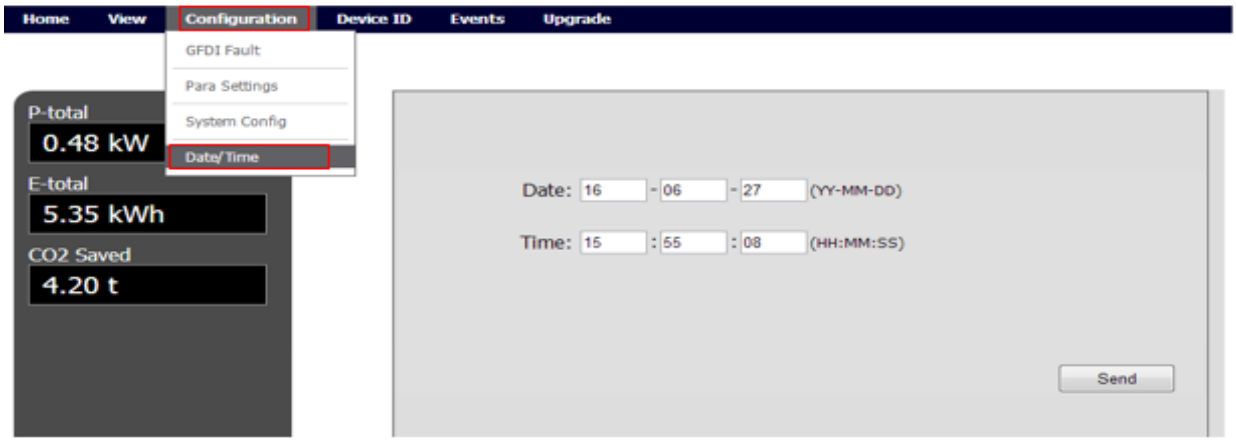
(1) Ground Fault Reset

Click the “GFDI Fault” under the “Configuration” to open the ground fault manage interface. If there is a ground fault, it will list on this page (as the picture shows below). It can be cleared by clicking the “Clear Fault” bottom. If the problem persists, please contact Hoymiles technical support team.



(2) Date/Time Setting

Click the “Date/Time” from the “Configuration” to open the times setting interface. You can enter your local date/time in the corresponding box and click the “Send” to save.

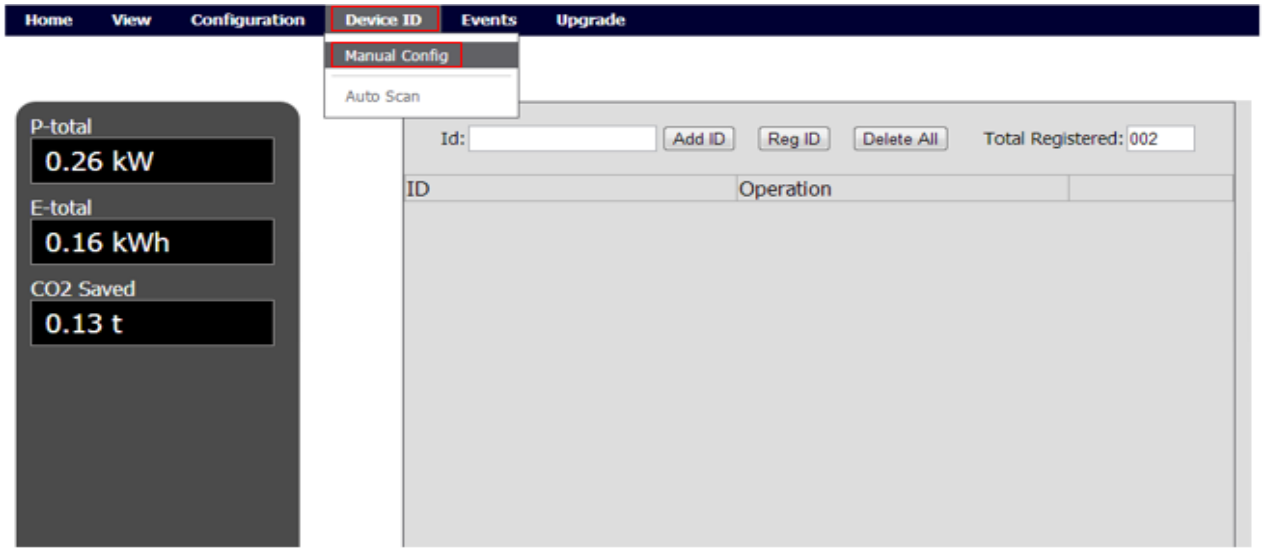


3.6 Device ID Interface

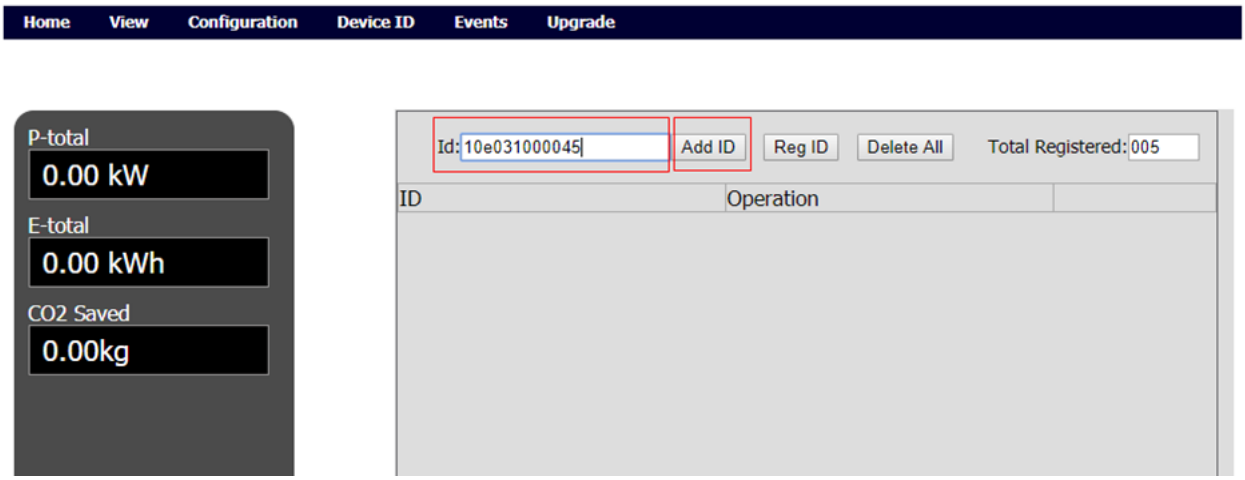
During the initial installation or further system maintenance, it might require to add or delete the microinverters' IDs to maintain the system performance.

(1) Manual Config

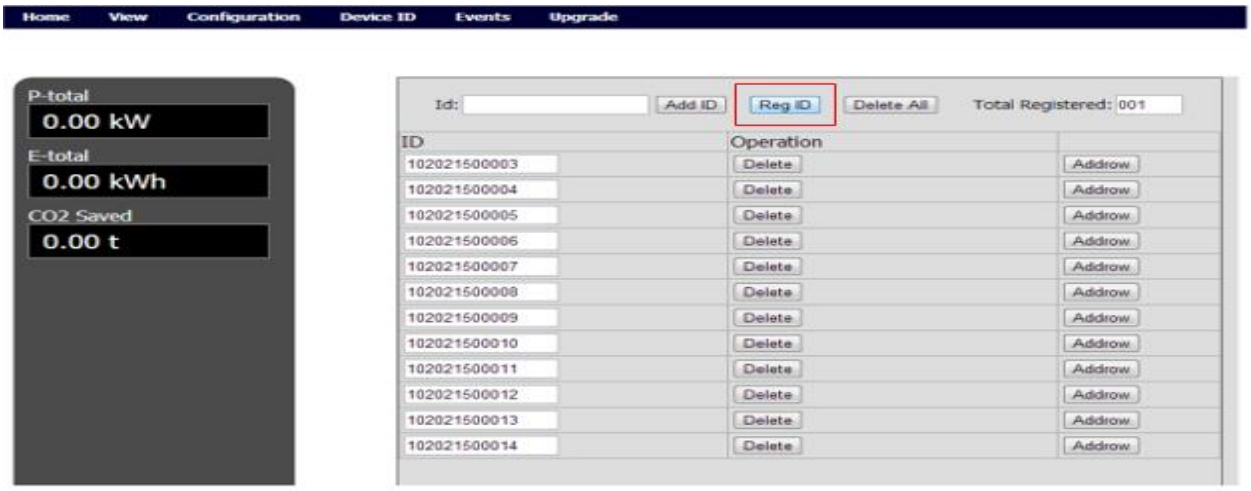
Click the "Manual Config" under "Device ID" to open a manual ID manage interface.



You need to add the repeater IDs firstly and then add microinverter's ID into the blank box shown below manually, and then click "Add ID".



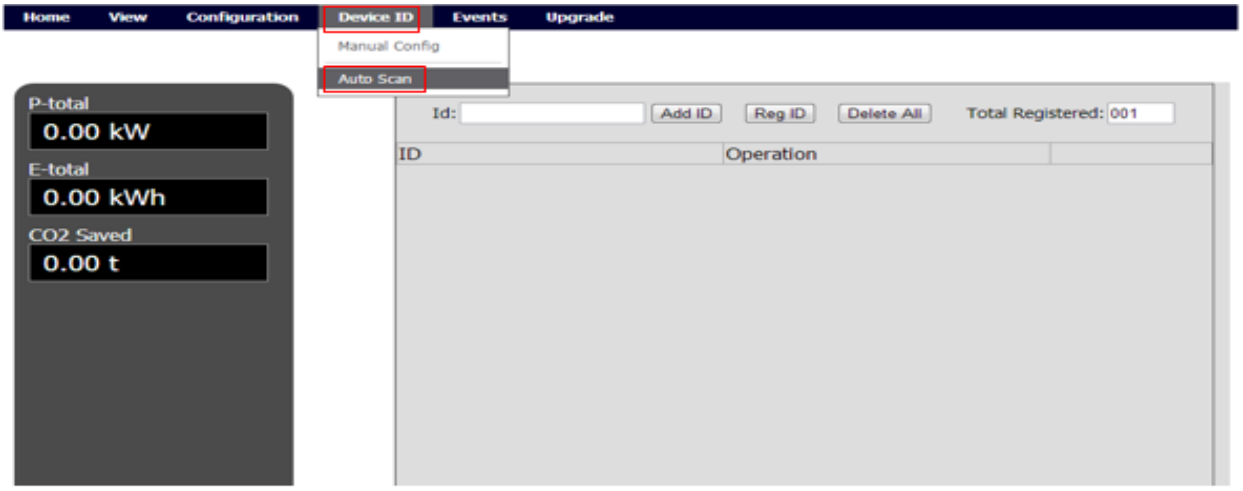
After inputting all of the microinverters' IDs and repeater's ID, please click the "Reg ID" to finish registration. All details system operating information will be listed on the Home interface.



In case there is any defected microinverter need to be replaced, please “Delete” the related microinverter ID.

(2) Auto Scan

Click the “Device ID” under the “Auto Scan” to open the auto-ID management interface.



Click “Scan ID” to start an auto search for nearby microinverters. When the DTU detects all the microinverters’ IDs, please click “Reg ID” to finish registration. If the DTU cannot detect all the microinverters in the system over 30 minutes, please use “Manual Config” to input those missing IDs.

4. DTU Installation

4.1 System Capacity

The DTU is capable of monitoring up to 99 MI-250/MI-300/MI350 microinverters or 49 MI-500/MI-600/MI-700 microinverters or 24 MI-1000/M-1200/MI-1500.

Note: Max. monitoring quantity is for open space installation condition, and the distance between Microinverter and 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:

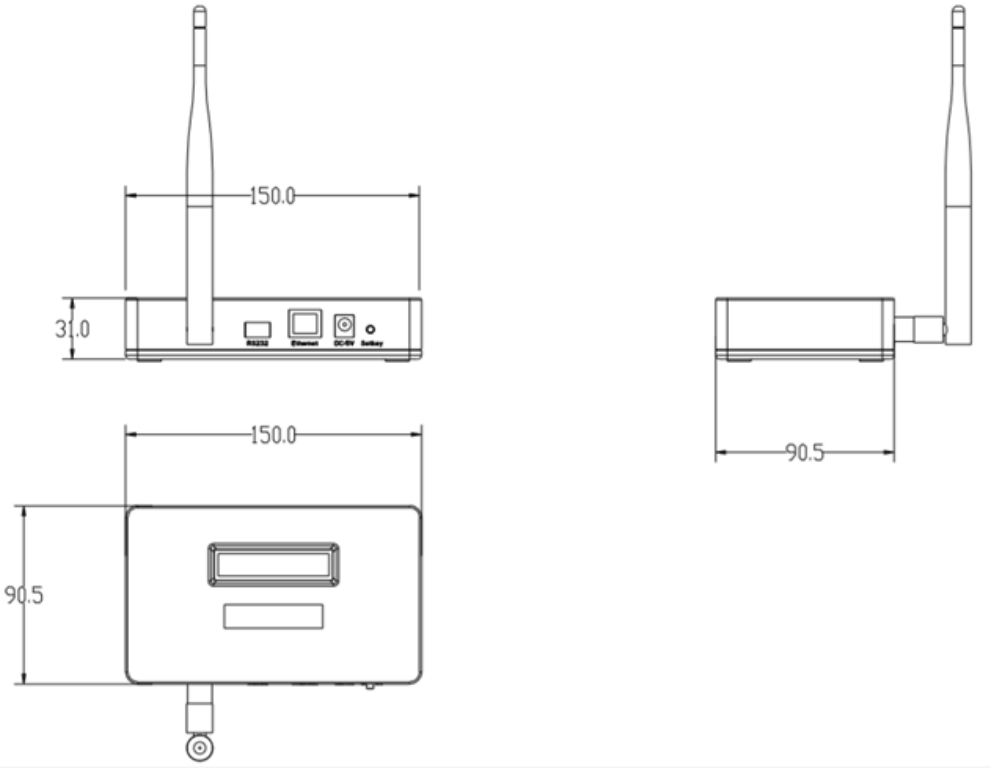
- Standard 220 VAC power outlet.
- Stable broadband internet connection.
- Router with Ethernet port.

The environmental requirements for DTU installation:

- Away from dust, liquid, acidic, or corrosive gas.
- The temperature should be between -20ºC and 55ºC.

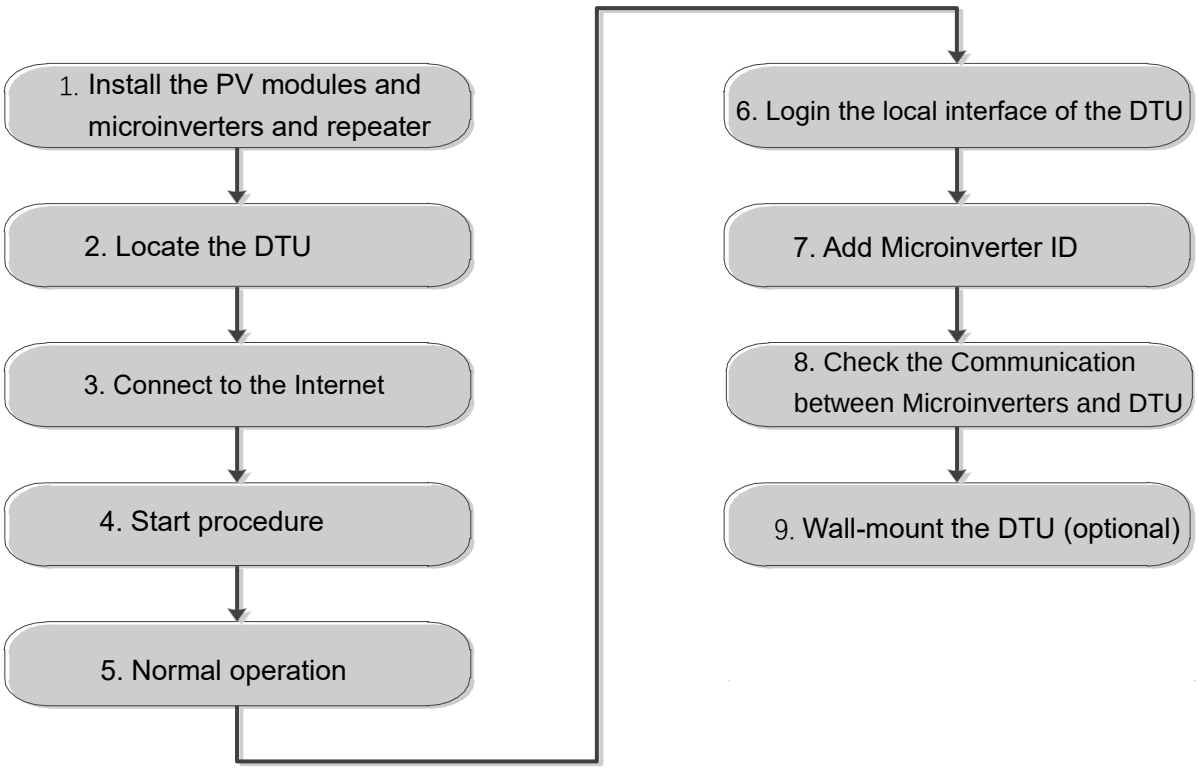
If you plan to install the DTU on the wall, two #8 (4.166mm diameter) screws and a screwdriver shall be prepared in advance.

4.3 Dimensions



(Unit: mm)

4.4 System Installation Sequence



4.5 Install the DTU

4.51 Install the PV Modules and microinverters

Please follow the related manual to install the PV modules and the microinverters.

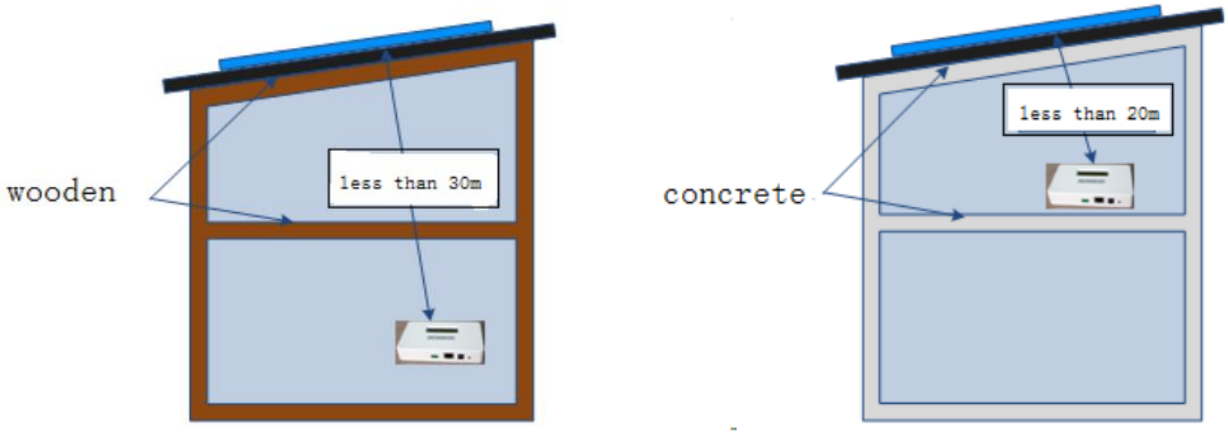
4.52 Locate the DTU

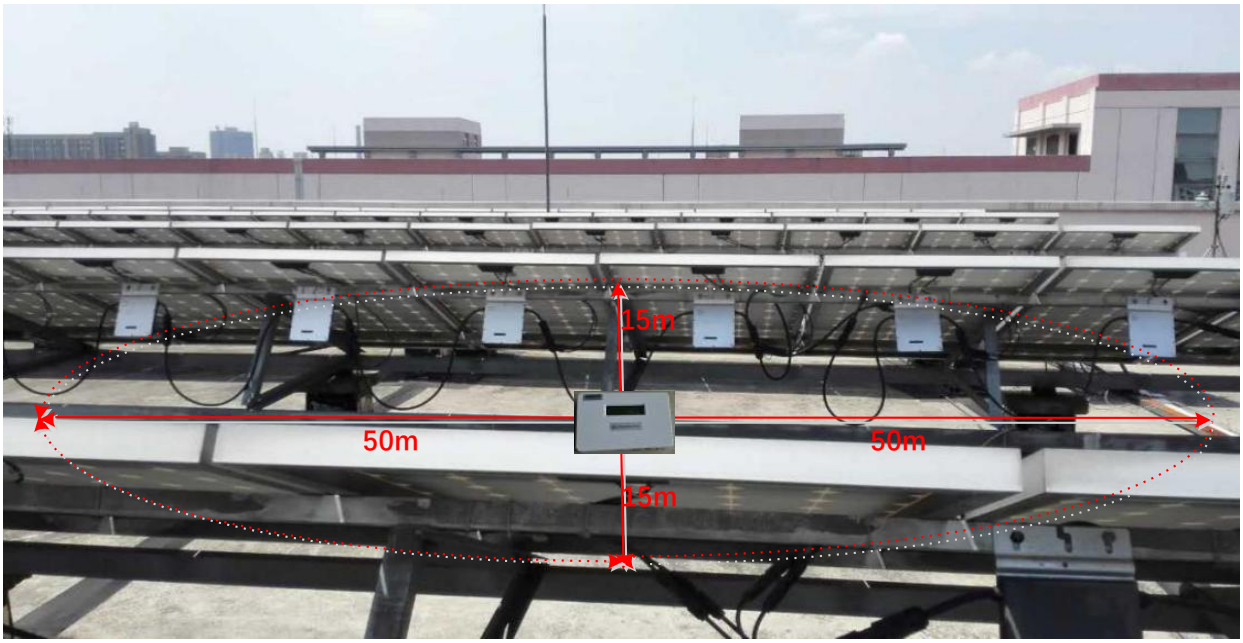
The communication distance of Hoymiles DTU is 150m in the open space. However, in the real installation, the environment may be more complex. It may have some obstacles like walls or roofs, which will reduce the communication distance.

The range of signal reduction for possible obstacles at the site has been shown below:

Material	**Relative signal range reductions**
Wood/Glass	0-10%
Stone/Pressed cardboard	10%-40%
Reinforced concrete (reduction increases with the amount of reinforcement)	10%-90%
Metal	Up to 100%

Please install the DTU as close to the microinverters as possible during the installation to ensure better communication between DTU and microinverters.
Below shows the typical installation positions of the DTU. In the real installation, please refer to these scenarios.





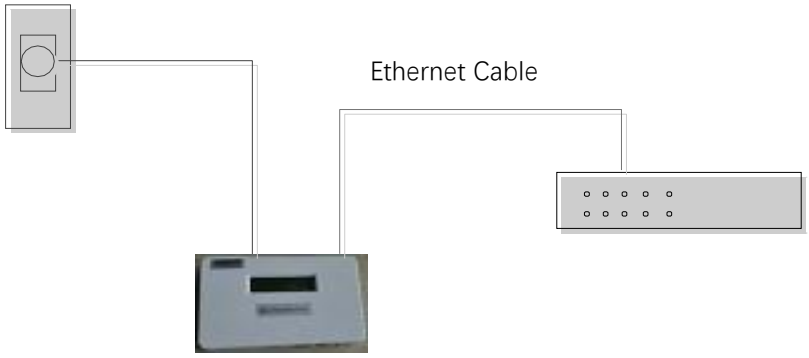
Ground Mounting Commercial Solar System

4.53 Connect to the Internet

The following tool is required to connect DTU to a broadband router:

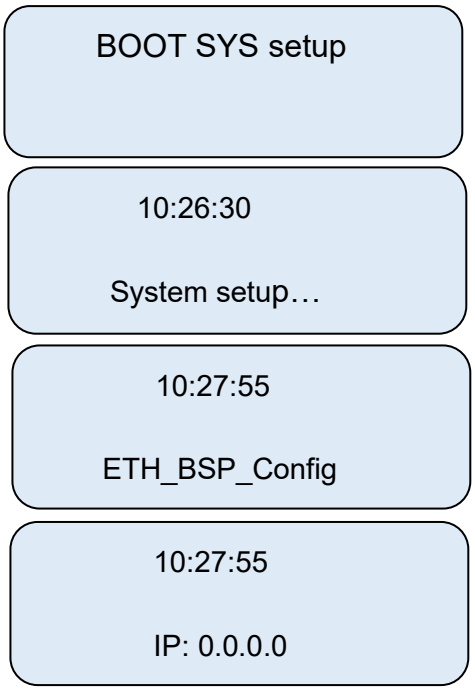
(1) Ethernet Cable

a. Plug the Ethernet cable into the DTU RJ-45 port.
b. Plug the other end of the cable into a spare port on the broadband router.
c. Plug one end of the DTU power adapter into the socket and the other end into the DTU power interface.



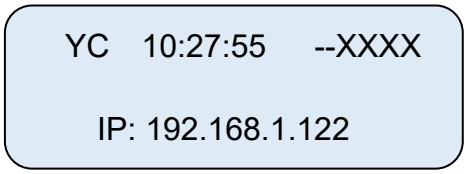
4.54 Start Process

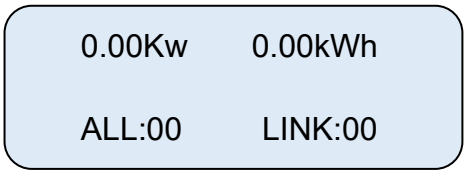
When the DTU is powered on, it goes through the initial boot sequence. During this sequence, the DTU LCD screen displays start-up progress as shown:



4.55 Normal Operation

Once the DTU completes the start procedure and obtains the IP address (e.g., 192.168.1.122), it will start to operate. During the operation, the LCD screen displays the basic system operation status. The below two pages will display alternately (screens 1 and 2 will appear once the Internet access has been configured).



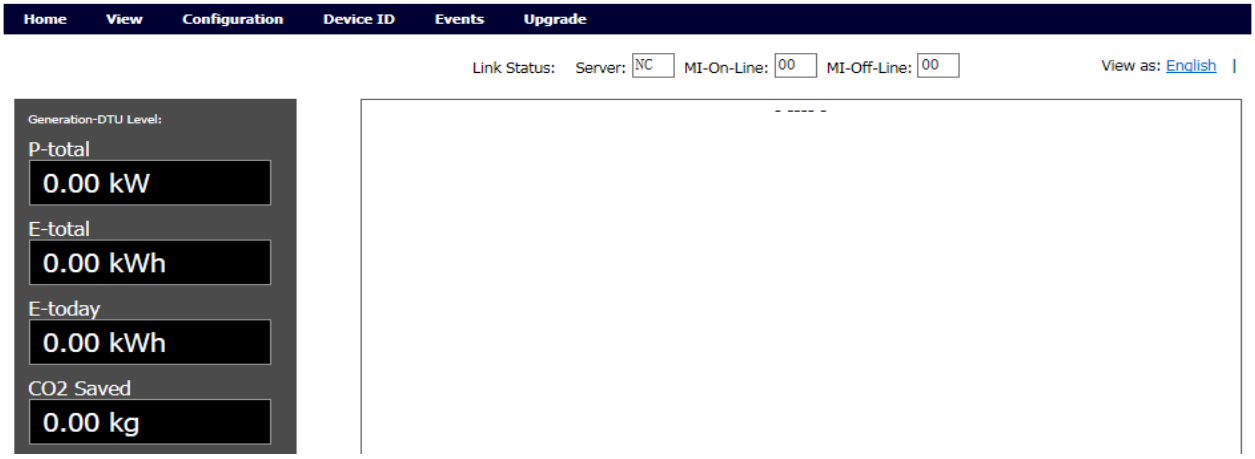


Note:

- “YC” indicates that DTU communicates with the Internet.
- If it still shows “NC” minutes after connecting to the broadband router, please refer to “Troubleshooting” on page 20.

4.56 Login the local interface of the DTU

1) Connect both DTU and laptop to the local house network.
2) Open the browser on your laptop and enter the IP address displayed on the DTU in the address bar, press the enter button. Display interface as follows.



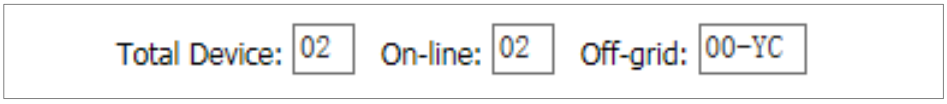
4.57 Add Microinverter ID

Add all microinverters’ IDs by auto mode or manual mode, referring to “Devices ID Interface” on page 9-11.

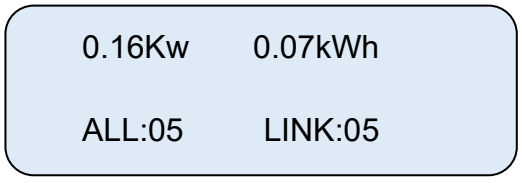
4.58 Check the Communication between Microinverters and DTU

a. There are two methods to check the communication between microinverters and DTU:

- Open the main local interface. If the number of “total device” is as same as the number of “on-line”, it indicates that all microinverters communicate well with DTU.



- Look for the LCD screen display. If the number of microinverters linked to the DTU (LINK) is the same as the installed(ALL), it indicates that all microinverters communicate well with DTU.

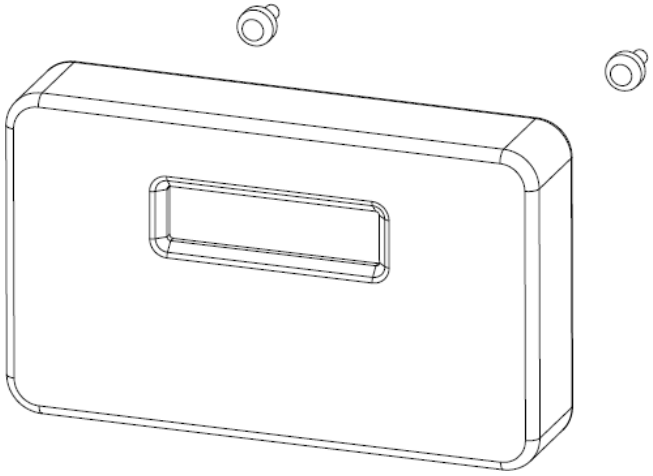


b. If the number of microinverters linked is less than the number of all microinverters installed, see “Troubleshooting” on page 20.

4.59 Wall Mounting (optional)

After the DTU has detected all microinverters in the system, please mount the DTU on a wall near the site.

- Step 1. Mount the DTU in a cool and dry location and avoid heat-generating devices (oven, warmer).
- Step 2. Use two drywall screws or wall anchors to affix the DTU to the wall-mounted at the dimensions about 100mm. The maximum screw head diameter is 0.35”, a #8 screw is recommended.
- Step 3. Slide the DTU onto the mounting screws, aligning the DTU screw holes with the screws installed in step 2.

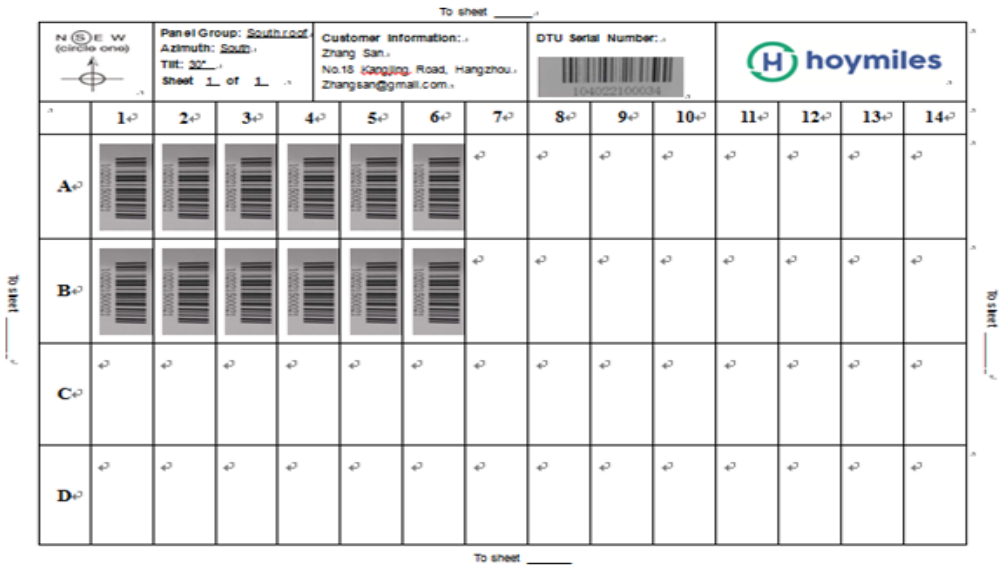


5. Complete Installation Map

When the system is energized, and the DTU detects the microinverters, you need to complete the installation map.

a. Peel the serial number label from the DTU and place it on the installation map.

b. Complete system information of the installation map shown as follows.



6. Site Creation on HMP

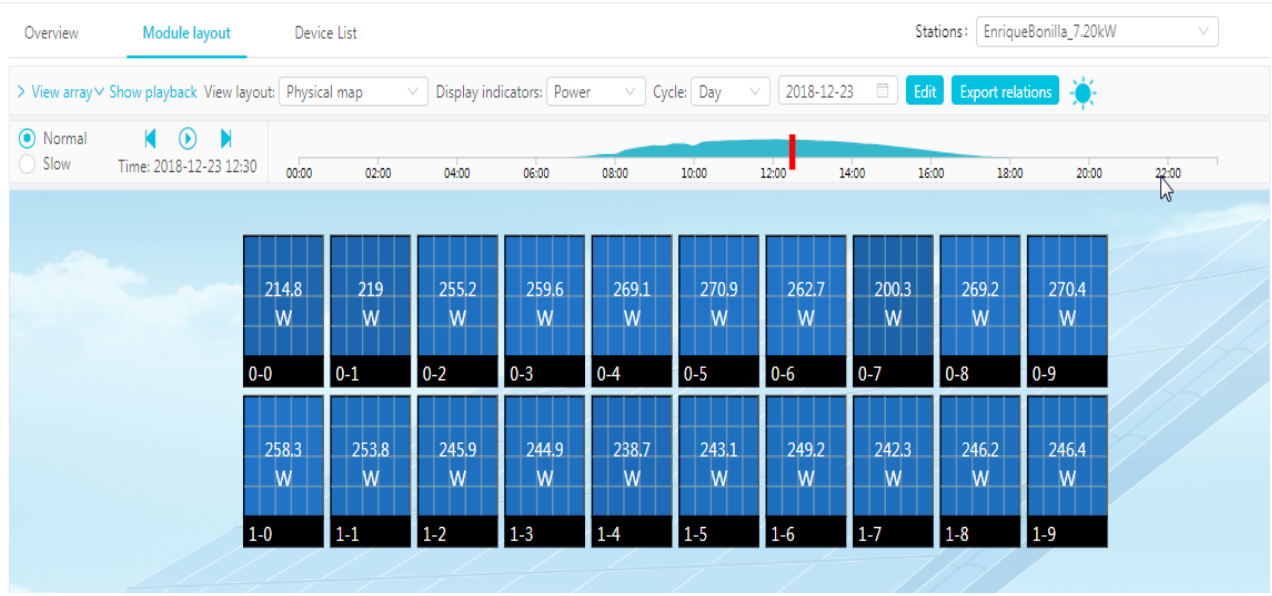
a. Install Hoymiles Installer APP by searching “Hoymiles” at the App Store (IOS) or Play Store (Android).
b. Open the APP and login in with your installer account name and password. If you are a new installer with Hoymiles, please apply an Installer account from Hoymiles Technical and Service Support Team at service@hoymiles.com in advance.
c. Add Station, select the “Station” tab on the bottom, then select “⊕” on the right top side of the page.
d. Select “Quick” for Single-DTU and “Profession” for Multi-DTU.
e. Please fill in the station details accordingly, and press “Next” after completed.
f. Press “Add DTU ID”, scan the DTU ID (or you can manually input ID) and press “Next” after complete.
g. Click “Start binding” and choose the angle and tilt base on the installation.
h. Scan the Microinverter ID (or you can manually input the ID) and click the tick after complete each ID input. Press “Finish” once all Microinverter ID has been input.
i. Disable the Scan function on the top of the right-hand side and design the Layout base on the installation. Click the tick box on the top of the right-hand side, and then select “Next” after complete the design.
j. Upload a picture of the site and select “Finish” to complete the site creation.
k. The new site will appear on the Station list from the Installer account.
l. Please click the “Networking” button after the power station is created.
m. Please wait about 30 minutes, the station will show online, and all the MI-IDs are found.

7. Customer Login

a. Please download the End User App. You can search “Hoymiles” at the App Store (IOS) or Play Store (Android).
b. Log in with the Password and User name that has been set up by Installer on the previous step (Section 6 step e), and press “Login”.
c. Customers will able to view all details once the data start to upload, normally it will need around 30 mins for the first data coming through.
d. Customer can also view the Microinverter generating details via accessing the HMP monitoring platform website at https://world.hoymiles.com

8. Browse the Web Station

Log in your account and browse the web station.



9. View Phone APP

Download mobile phone APP and view station information.

10. Troubleshooting

A. LCD Screen Displays “NC”

It means that the DTU has no connection to the internet.

- Check network connectivity to the router.
- Check if the router can connect to the Internet successfully.

B. The Link Number is less than Total Number of Microinverters

“LINK: XX” indicated the number of connected microinverters. If this number is less than the total microinverters number in the system means some of the units do not communicate with the DTU. Please follow the below instruction to resolve the problem:

- Relocate the DTU to ensure that the DTU reception range can cover all microinverters in the system.
- If this problem occurs only on the cloudy day, try again during the better weather condition.

11. Datasheet

Model	DTU-MI
Communication to Microinverter	
Type	2.4G RF
Sample rate	5-15 minutes
Maximum distance (open space)	150m
Maximum number of panels connected	99 ID
Communication to Router	
RJ45 Ethernet	10M/100M
Power Supply	
Type	External plug-in adapter
Adapter input voltage/frequency	100 to 240 V AC / 50 or 60Hz
Adapter output voltage/current	5V / 1A
Power consumption	2.5W (typical), 5W (maximum)
Mechanical Data	
Ambient temperature(℃)	-20°C to 55°C
Dimensions(W×H×D)	149mm×90mm×31mm
Weight	0.22 kG
Mounting system	Wall mounting
Display	16 Characters x 2 lines LCD
Features	
Compliance	IEC60950 IEC61000-6-2 FCC Part15 Class B / Class C