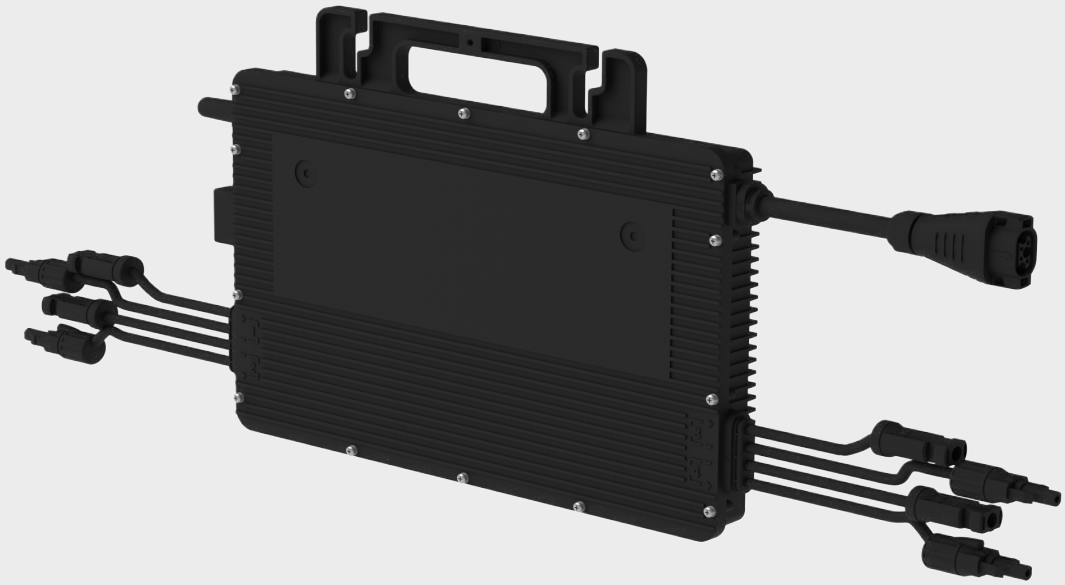
Open Energy for All



Single-phase Microinverter

# USER MANUAL

HMS-1600-4WB
HMS-1800-4WB
HMS-2000-4WB

## Legal Notice

Hoymiles has made every effort to ensure the accuracy and completeness of this manual. However, this manual may be changed and revised due to product enhancements or user feedback.

Hoymiles reserves the right to modify this manual without prior notice at any given time. The latest version of this manual can be found by visiting the Hoymiles official website (www.hoymiles.com) or scanning the QR Code below.

## Emission Compliance

This equipment has been tested and found to comply with the limits applied by the local regulations. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

** Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.*

## Warranty

Follow the installation instructions in this manual to ensure warranty compliance and reliability. The current warranty conditions can be accessed at www.hoymiles.com.

## Contact Us

If you have technical queries or any questions concerning our products, please contact our support through the Hoymiles service portal:

**Germany**
service.de@hoymiles.com

**Spain**
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**France**
service.fr@hoymiles.com

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# Using This Manual

## Symbols

| | |
|---|---|
| • | List (first level) |
| ▷ | List (second level) |
| Step 1, Step 2, ... | Installation steps in a defined order (first level) |
| A), B), C) ... | Installation steps in a defined order (second level) |

## Abbreviations

| Abbreviation | Meaning | Abbreviation | Meaning |
|---|---|---|---|
| AC | Alternating Current | PE | Protective Earthing |
| DC | Direct Current | PPE | Personal Protective Equipment |
| DTU | Data Transfer Unit | PV | Photovoltaic |
| MPPT | Maximum Power Point Tracking | SN | Serial Number |
| O&M | Operations and Maintenance | | |

** Unless otherwise stated, the devices mentioned in this manual are referred to using the abbreviations defined above.*

## Revision History

| Version | Date | Page | Description |
|---|---|---|---|
| REV 1.1 | 20251011 | - | The initial official release. |

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# 1 About This Manual

## 1.1 Purpose

This manual provides information on the installation, electrical connections, operation, and maintenance of the HiFlow Pro series microinverters.

Please consider the following before installation:

- Carefully read this manual before operation.
- Keep this manual for reference.

## 1.2 Audience

This manual is intended for use by qualified persons only. Qualified persons must have the following skills:

- Understanding of microinverter operations and related functionalities.
- Knowledge of microinverter installation, use, and maintenance.
- Competence in handling risks occurring in microinverter installation, use, and maintenance.
- Familiarity with local electrical codes and regulations.

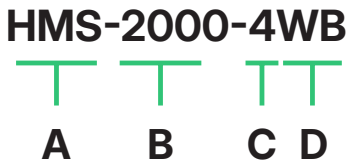
## 1.3 Validity

This manual is valid for:

| Model | Output Power (VA) |
|---|---|
| HMS-1600-4WB | 1600 |
| HMS-1800-4WB | 1800 |
| HMS-2000-4WB | 2000 |

**NOTE**

Model identifier:




[A]: Series Name

[B]: Output Power Level

[C]: Number of Inputs

[D]: Features (built-in **W**i-Fi and **B**luetooth module)

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# 2 Safety Instructions

## 2.1 Safety Symbols

Safety symbols are used in this manual as follows:

| Symbol | Description |
|---|---|
| DANGER | This symbol indicates potential risks that, if not avoided, may lead to death or serious physical injury. |
| WARNING | This symbol indicates potential risks that, if not avoided, may lead to personal injury or device damage. |
| CAUTION | This symbol indicates potential risks that, if not avoided, may lead to device malfunctions or financial losses. |
| NOTICE | This symbol indicates potential risks that, if not avoided, may lead to minor injury or damage to the equipment. |
| NOTE | This symbol indicates an important step or tip that leads to the best results but is not safety or damage-related. |

## 2.2 Additional Symbols

The product label contains the following symbols with their meanings described below:

| Icon | Explanation |
|---|---|
| | **Treatment**<br>Electrical equipment that has reached the end of life must be collected separately and returned to an approved recycling facility to comply with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation as national law. Return any devices you no longer need to an authorized dealer or an approved collection and recycling facility. |
| 5mins | **Caution**<br>Risk of electrical shock. Wait at least 5 minutes after the microinverter is disconnected from all external power supplies before starting maintenance. |
| | **High Voltage**<br>Microinverters may contain high voltages, causing a risk of death. |
| | **Hot Surface**<br>The microinverter may become hot during operation. Do not touch metal surfaces. |
| CE | **CE mark**<br>The microinverter conforms to the Low Voltage Directive of the European Union. |
| | **Read the manual first**<br>Read this manual carefully before performing any installation, operation, or maintenance. |

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## 2.3 Safety Instructions

The HiFlow Pro series microinverters have been designed and tested in compliance with international safety standards and thus require careful installation and operation. Installers must carefully read and strictly follow the safety instructions in this section. Failure to do so may result in:

- Injury or death to the installer or operator
- Damage to the microinverter

**⚠ DANGER**

### General

- All installation, start-up, troubleshooting, maintenance, and all other operations must be performed by a licensed electrician and follow local wiring codes.
- Always use personal protective equipment (PPE), like gloves and goggles, during installation.
- The microinverter should only be used when all technical parameters are observed and applied correctly. (You can refer to 8 Technical Data for more details.) Improper use of the microinverter will void the warranty.

### Installation

- Do not use microinverters in a manner not specified by the manufacturer.
- Do not install the equipment in flammable, explosive, corrosive, extreme heat/cold, or humid environments.
- Each microinverter input should only be connected to a single PV module. Do not connect batteries or other power supply sources. These unsupported devices have different output characteristics that differ from standard PV modules, potentially damaging the microinverters and posing safety hazards.
- Do not use the equipment in environments where safety devices are not working properly.
- Do not use the equipment if any unusual operations are detected.
- Check and ensure that all AC and DC wiring is correctly installed and free from any tangles, shorts, or damage.
- Hoymiles shall not be liable for any damages caused by incorrect or improper operations.
- Ensure that none of the DC conductors or DC connectors are exposed.

### Maintenance

- Do not attempt to repair the product as it contains no user-serviceable parts. If it malfunctions, contact Hoymiles Support to obtain a return merchandise authorization number and start the replacement process. Tampering with or opening the microinverter will void the warranty.
- Always de-energize the whole system before any maintenance. Do not disconnect the AC and DC connectors under load.
- Maintain extreme caution even if the microinverter is disconnected from the grid. Hazardous voltages may still be present in some components.

**⚠ WARNING**

### General

- Disconnect the microinverter from all power supplies before making or modifying any device connections.
- Only authorized maintenance personnel from Hoymiles can install or replace this product.

### Installation

- Make sure to obtain all necessary approvals from electrical network operators before connecting the microinverter to the power grid or energizing the AC circuits.
- Install the microinverter beneath the PV module. Avoid exposing the AC and DC connectors to rain or moisture before the connectors are engaged to protect them from rain, UV, and adverse weather conditions.

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**⚠ WARNING**

- Use the Hoymiles Compatibility Calculator to verify the electrical compatibility of PV modules with microinverters. To maintain the Hoymiles warranty, only use Hoymiles microinverters with the compatible PV modules shown on the Hoymiles Compatibility Calculator.
- Make sure that the PV module's maximum open circuit voltage falls within the maximum DC input voltage of the microinverter. (You can refer to 8 Technical Data for more details.)
- Improper use, incorrect installation, or unauthorized removal of necessary protections may result in damage to the equipment or serious safety and electric shock hazards.
- Microinverter surfaces can reach high temperatures during operation and within a short time after powering off the whole system. Avoid direct contact with these surfaces.
- Do not expose the cables or cable connectors to continuous immersion.
- Prevent any contaminants or debris from entering the connector.

### Maintenance

- Equipment maintenance should only be performed by the Hoymiles Service Team, a repair team authorized by Hoymiles, or by authorized personnel familiar with all warnings and operating procedures contained in this manual.
- The surface of the microinverter may become hot during operation or shortly after power-off. To reduce the risk of burns, use caution when working with the microinverter.

**⚠ CAUTION**

### Installation

- Before installation, inspect for transportation damages compromising insulation integrity and safety clearances.
- Do not remove or cover any warning labels or nameplates on the microinverter.
- Lift the microinverter carefully. Take the weight of the microinverter into account.
- Follow the wiring safety instructions to ensure proper polarity and secure connections.
- Inspect the microinverter system for functionality and performance after installation. Double-check the electrical connections, communication status, and monitoring features.

### Maintenance

- The microinverter packaging has been intentionally designed to be reusable. Retain the packaging for future use.
- Do not clean the equipment with filamentary or corrosive material-based rags to prevent corrosion and electrostatic charges.

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# 3 Product Information

## 3.1 Overview

### Functions

Microinverters are module-level power electronics that convert direct current (DC) into alternating current (AC). Hoymiles microinverters use a sophisticated maximum power point tracking (MPPT) algorithm to optimize the performance of each PV module. This ensures that even if one PV module under performs, it will not drag down the overall performance of the other PV modules in the row.

The HiFlow Pro series microinverter is a single-phase device with built-in Wi-Fi and Bluetooth modules. It connects to the S-Miles Cloud without needing a DTU (Data Transmission Unit).

### Features

- Maximum output power up to 1600/1800/2000 VA
- Independent Maximum Power Point Tracking (MPPT) on each input to maximize solar energy harvest
- Built-in Wi-Fi & Bluetooth module supporting device management without App registration
- Plug-and-play design for quick and simple installation
- Maximum efficiency up to 96.7%
- 12-year warranty period
- Compliant with GDPR and RED-EN 18031
- Enhanced safety with rapid shutdown compliance and an isolated transformer

### Applications

The HiFlow Pro 4-in-1 series microinverter is designed for small residential solar installations, including balcony solar systems and DIY solar setups. Its flexible and convenient installation makes it suitable for various locations such as balconies, gardens, and front lawns.

Depending on your power needs and available space, the system supports two configurations:

- Single Microinverter System: One microinverter connected to up to four PV modules.
- Dual Microinverter System: Two microinverters, each supporting up to four PV modules.

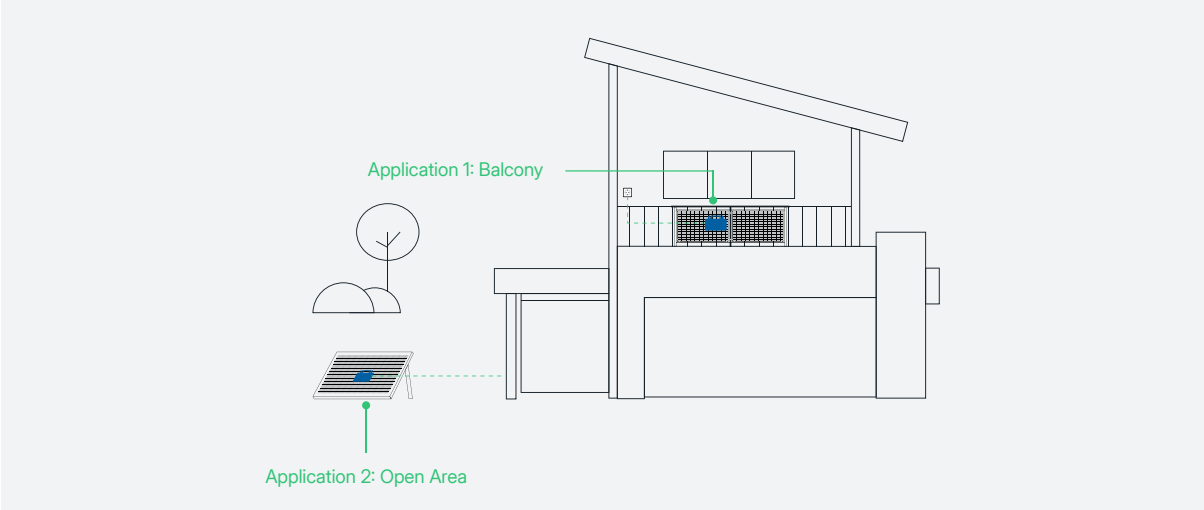


Figure 1-1 HiFlow Pro 4-in-1 Series Microinverter System Application

**⚠ CAUTION**

Given the complexity of balcony installations, ensure that your installation adheres to the required environmental and safety standards. Seek professional advice if necessary.

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## How the Hoymiles Microinverters System Works

In a typical microinverter system, a few parts team up to turn sunlight into power you can use.

- **PV modules**

The PV modules capture sunlight and change it into DC electricity.

- **Microinverters**

Microinverters are small inverters installed directly on PV modules or nearby. They convert DC electricity from the PV modules into AC electricity, which can power homes or be fed back into the grid.

- **S-Miles Cloud**

The S-Miles Cloud is a comprehensive monitoring and analysis platform. It watches over the microinverter system from afar, providing real-time insights into the whole system's performance and enabling you to keep track of your microinverter system's status. The S-Miles Cloud also enables remote monitoring, module-level monitoring, as well as efficient operations and maintenance (O&M).

## What's New in the HiFlow Pro 4-in-1 Series Microinverter

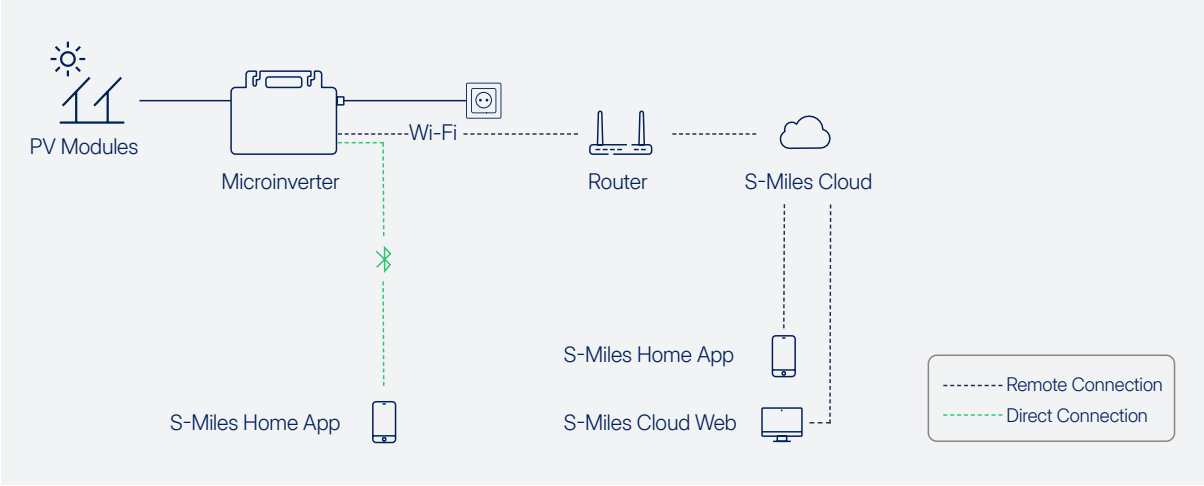
The HiFlow Pro 4-in-1 Series Microinverter introduces two ways to track, manage, and optimize your solar system:

- **Remote Connection**

In this mode, one or multiple microinverters communicate with the S-Miles Cloud via Wi-Fi. You can monitor all connected microinverters from anywhere by logging into your Hoymiles account and setting up an online power system. This requires connecting the microinverter to a Wi-Fi router for cloud access.

- **Direct Connection**

This method allows you to monitor the microinverter without signing up or setting up an online account. Using the S-Miles Home app, you can connect directly to the microinverter via its built-in Bluetooth. This provides real-time data access and local control without internet dependency.

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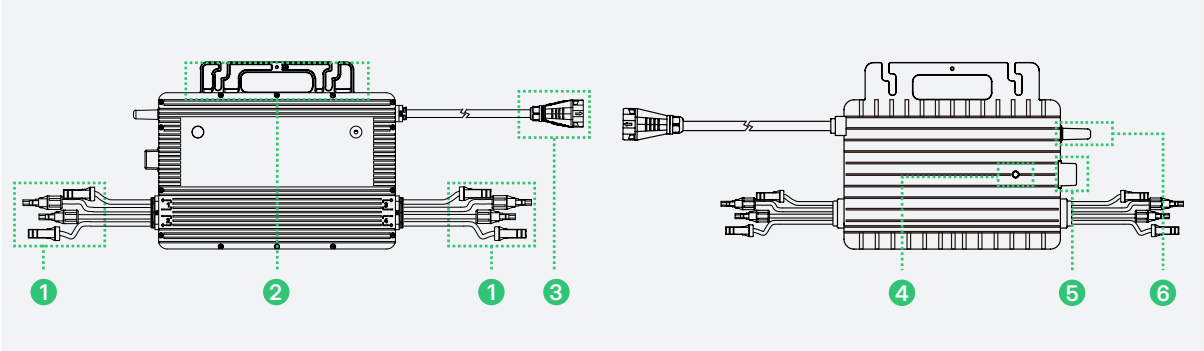
## 3.2 Appearance and Dimensions

**NOTE**

The appearance and dimensions shown here are for reference only. The actual product you receive may differ.

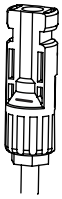
### Appearance




| No. | Name | No. | Name |
|---|---|---|---|
| 1 | DC Connectors* (connect to PV modules) | 4 | LED Indicator |
| 2 | Bracket (used to secure the microinverter) | 5 | Built-in Bluetooth Module |
| 3 | AC Connector (connects to the Flex-S3 Plug and Play Cable-CEE/7/7) | 6 | Wi-Fi Antenna |

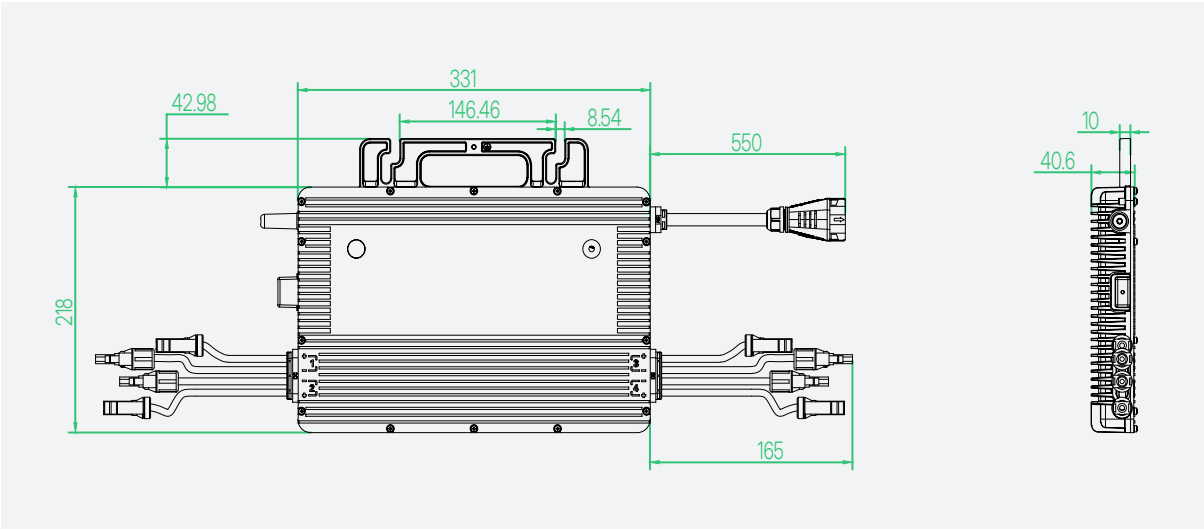
**NOTE**

DC Connector (Male)



DC Connector (Female)

### Dimensions (mm)

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## Nameplate

| No. | Label | Meaning | When you need it? |
|---|---|---|---|
| 1 | PIN Code: 123456 | PIN Code Label | When you connect to the microinverter via Bluetooth, you may be asked to enter this PIN. |
| 2 | S/N: 1610XXXXXXXXX | Serial Number (SN) Label | The SN is part of the microinverter's Bluetooth name, which helps you identify the microinverter when connecting.<br>It is also used to find and manage the microinverter on the monitoring platform. |

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# 4 Installation

## 4.1 Preparation

### Unpacking the Box

The microinverter has been thoroughly tested and was subject to a strict inspection before delivery. However, damage may still occur during shipping.

Conduct a detailed inspection after unpacking the microinverter:

- Check for any external damage
- Check and confirm that all items have been included

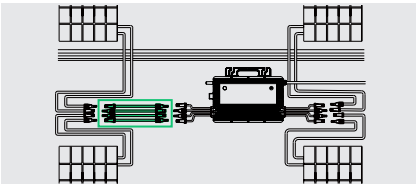
| Packing List | | |
|---|---|---|
| **Item** | **Quantity** | **Remarks** |
| Microinverter | 1 | Immediately contact your supplier or distributor upon noticing any damaged or missing parts. |
| Flex-S3 Plug and Play Cable-CEE7/7 | 1 | |
| Disconnect Tool | 1 | |
| Installation Guide | 1 | |

### Selecting Installation Site

- To avoid communication interference, the installation site should be free of metal obstacles or large obstructions.
- The installation site does not have any corrosive, flammable, or explosive material.
- The Installation site's environmental conditions should meet microinverter requirements specified in 8 Technical Data, including protection level, temperature, humidity, altitude, and more.
- The installation site should be inaccessible to children or pets.
- The installation site should provide a minimum clearance of 2 cm around the microinverter enclosure to ensure proper ventilation and heat dissipation.

### Measuring the Distance

Measure the distance between the PV modules and the microinverters. Each microinverter has 165 mm DC cables. If the combined length of the microinverter's DC cables and the PV module's cables is not enough to cover the distance, you will need additional DC extension cables. You can purchase extension cables from your distributor/dealer.



### Checking the Tools

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site.

| Item | Quantity | Function | Source |
|---|---|---|---|
| M8 Screws | 2 | Securing the microinverter | Not Included |
| Electric Screwdriver (2 to 9 N•m) | 1 | Tightening screws | |
| Cable Ties | As needed | Secure the whole system to prevent it from falling. | |
| Steel Tape | 1 | Measuring distance | |
| Marker | 1 | Marking installation site | |

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## 4.2 Installation Steps

A balcony solar system is used as an example of a single microinverter setup.

You can visit our YouTube channel or scan the QR code to watch the tutorial videos.

**DANGER**

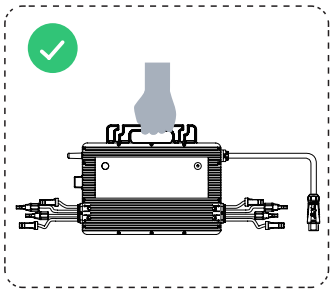
- Make sure there is no electrical connection before proceeding with the installation.
- During installation, secure the whole microinverter system to prevent it from falling.

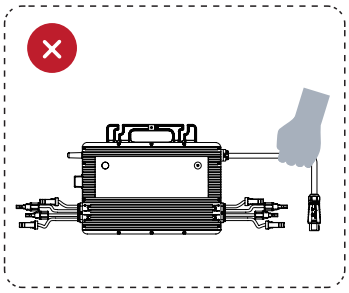
**WARNING**

- Ensure that your installation adheres to the required environmental and safety standards. Seek professional advice if necessary.
- The microinverter can connect to up to four PV modules, but the exact number of connections depends on the maximum power required by local regulations.
- Check the balcony railing for stability, weight capacity, and a smooth, level surface for bracket attachment.

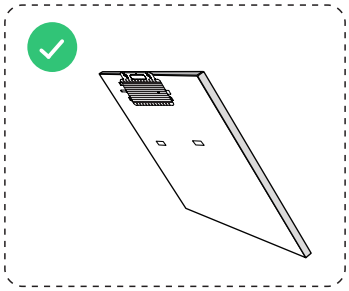
**NOTICE**

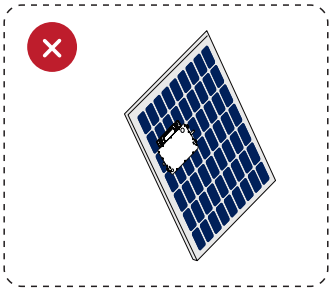
- Hold the microinverter by its bracket, do not hold its cables.





- Install the microinverter under the PV modules, do not install it on the PV modules.





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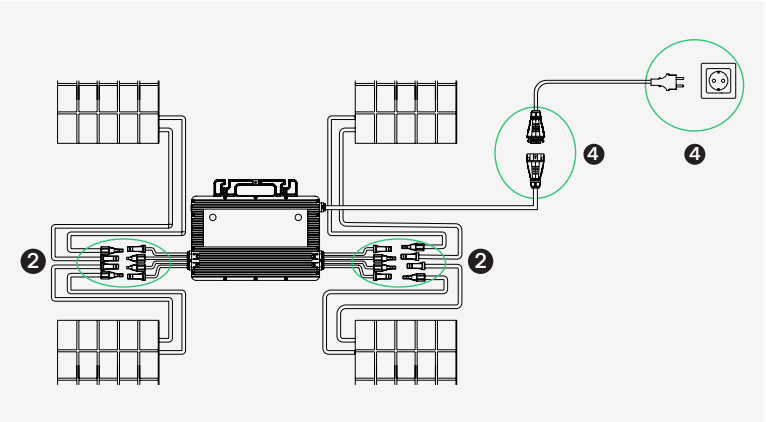
## Overview




### Step 1 Attach the microinverter

A) Follow the manufacturer's instructions to assemble the PV module mounting bracket.

B) Attach the microinverter to the bracket.

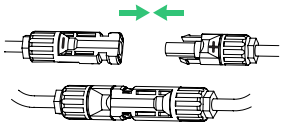
> **NOTE**
>
> For ventilation and heat dissipation, the silver side should face the PV module.

C) Secure the microinverter to the bracket with M8 screws (torque: 9 N·m). Do not over-torque.

### Step 2 Connect the PV modules

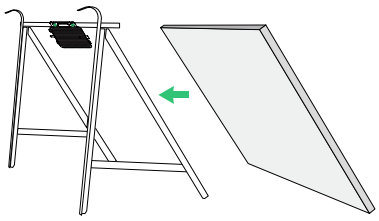
A) Connect the microinverter's positive (female MC4 connector with a "-" sign) to the PV module's positive terminals (male MC4 connector).

B) Connect the microinverter's negative (male MC4 connector with a "+" sign) to the PV module's negative terminals (female MC4 connector).



C) Record the microinverter's SN.

D) Mount the PV modules above the microinverters.

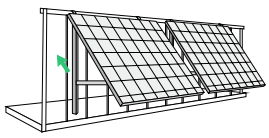


### Step 3 Attach the bracket

A) Follow the manufacturer's instructions to securely attach the bracket to the balcony railing.

B) Verify the bracket is aligned correctly, level, and stable.

C) Use cable ties to fasten the system to the railing.



### Step 4 Power on the microinverter system

A) Connect one end of the Flex-S3 Plug and Play Cable-CEE7/7 to the microinverter, and the other end to the socket.

B) Wait five minutes for the system to start generating power.

C) Check the LED status.

- Flashing Green: System operating normally.
- Solid Red or NO LED: Fault. Refer to 6.2 LED Indicator Status for troubleshooting.

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# 5 Setting Up and Activating Monitoring

**NOTICE**

Each microinverter has a unique bluetooth name (HiFlow Pro + the serial number) and a default pairing password: 123456. The pairing password is printed on a non-removable label next to the antenna on the silver cover of the microinverter. **For security, when you connect to the device for the first time, you will be prompted to change the default pairing password.**

**NOTE**

- The screenshots provided here are for reference only. The actual screens may vary.
- In the app, pairing password, PIN code, and Bluetooth password refer to the same thing.
- Ensure Bluetooth is enabled on your phone before operation.
- Refer to S-Miles Home's User Manual for more details.
  On S-Miles Home App, you can tap **Profile** > **Help Center** to find the user manual.

This section guides you through connecting to the S-Miles Home, setting up your power system, adding devices, and configuring system settings.

## 5.1 Downloading the Application

Download the S-Miles Home application. To download,

- Scan the QR code located on the right side, or,
- Search for "S-Miles Home" on the App Store or Google Play Store

S-Miles Home

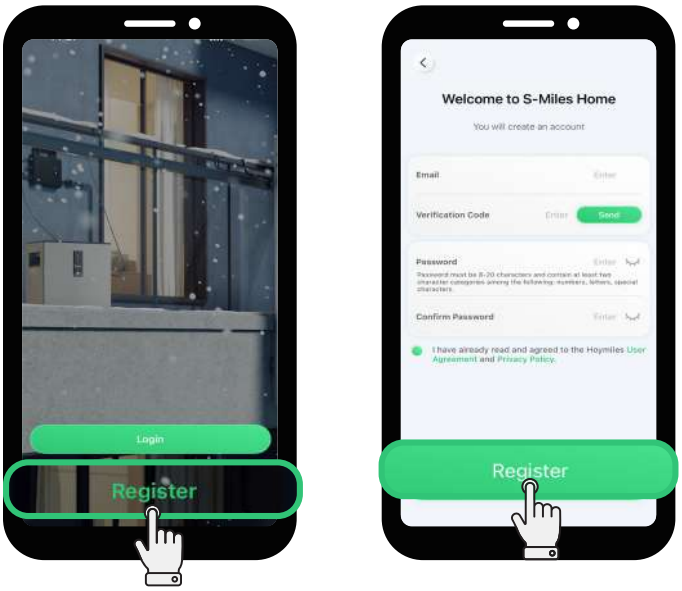
## 5.2 Connecting to the Device

### 5.2.1 Remote Connection

#### Step 1 Register an account

A) Open the app and tap **Register**.

B) Fill out the registration form. Then tap **Register**.




A) B)

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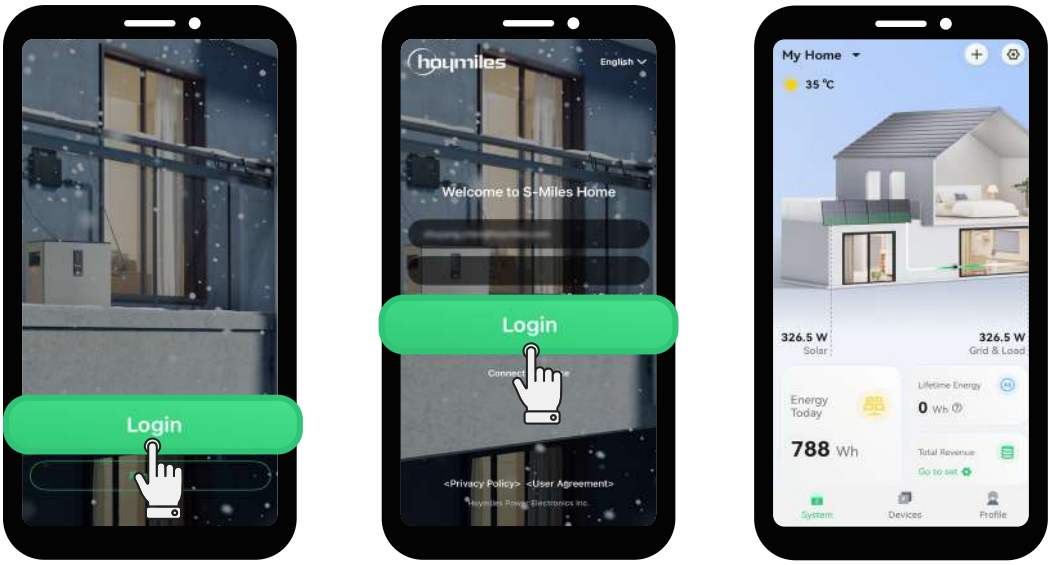
## Step 2 Log In

A) Open the app and tap **Login**.

B) Enter your account name and password, then tap **Login.**

C) After logging in, you will be directed to the **System** by default.




A) B) C)

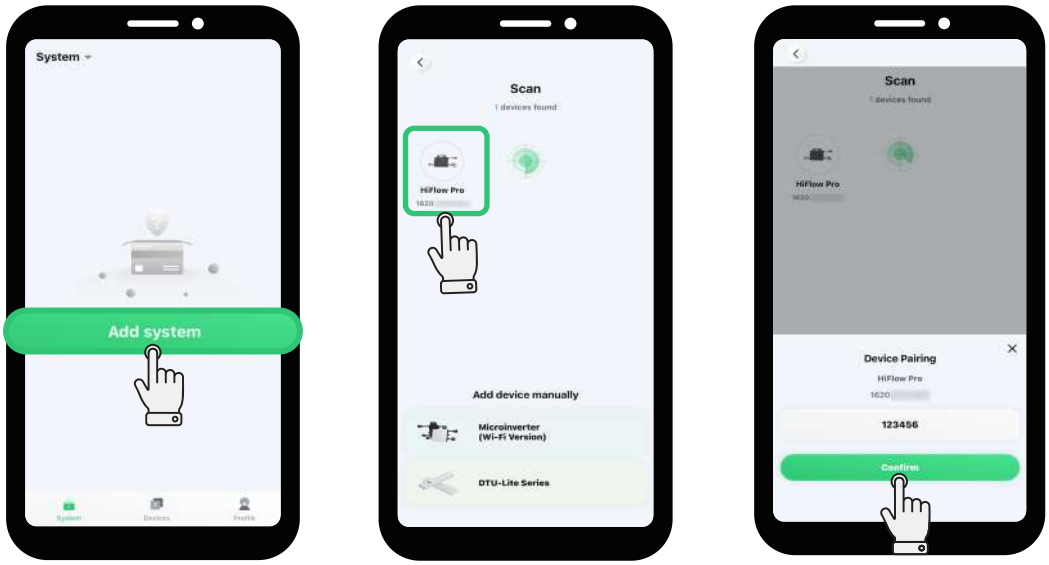
## Step 3 Create a System

A) On the System screen, tap **Add System**.

B) Tap the microinverter icon.

C) Enter the pairing password (default: 123456) and tap **Confirm**.

> ⓘ **NOTE**
>
> For security, if this is your first time connecting the device, you will be prompted to change the default pairing password.




A) B) C)

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D) Follow the on-screen instructions to set a new pairing password.

E) Select or enter your router's Wi-Fi and enter the password.

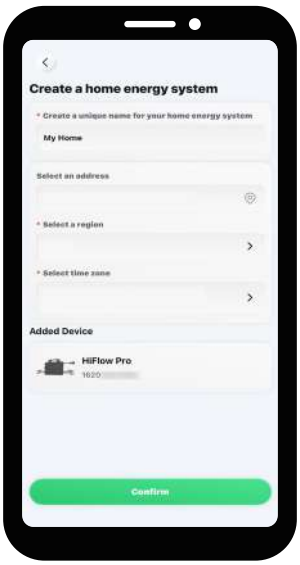
F) Fill in the system information form and tap **Confirm**.

G) When prompted, you can choose to add more devices:

- Tap **Continue Adding** and repeat steps B to D to add more devices.
- Tap **Finish** to complete setup and go to your system homepage.

D)

E)




F)

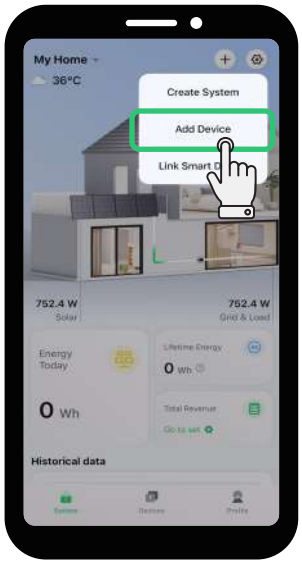
## Step 4 Add other devices to your system

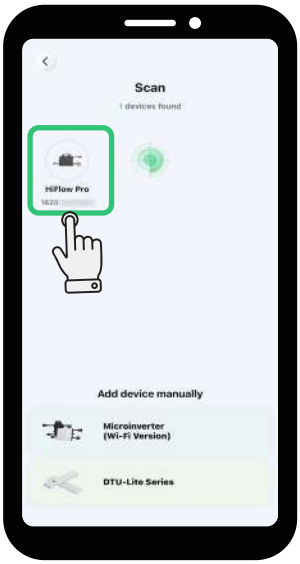
**NOTE**

- All devices in your system must be connected to the same local area network (LAN).
- Supported third-party devices: Shelly smart meters and Shelly smart sockets (version 1.0 or later).

### Adding Other Hoymiles Devices

Tap **System** > + > **Add Device**, and then follow the on-screen instructions.

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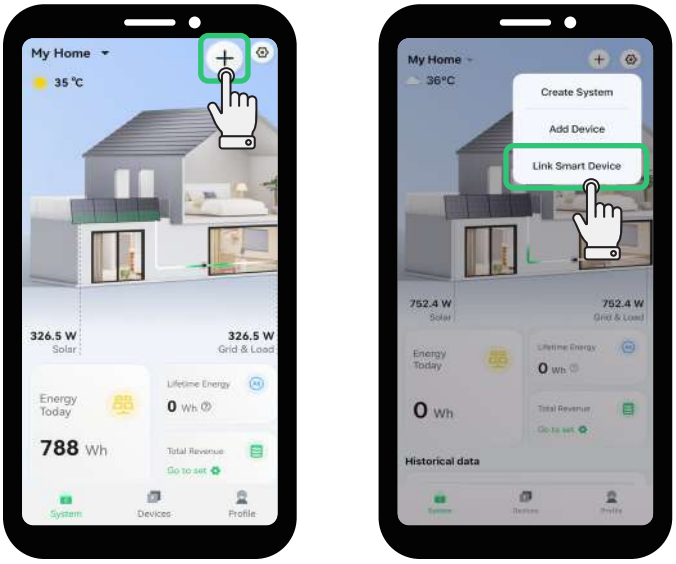
### Adding Third-Party Devices

Tap **System** > + > **Link Smart Device**, and then follow the on-screen instructions.




## 5.2.2 Direct Connection

**NOTICE**

Place the device as close as possible to your phone or tablet. For best performance, keep the distance within 3 meters.

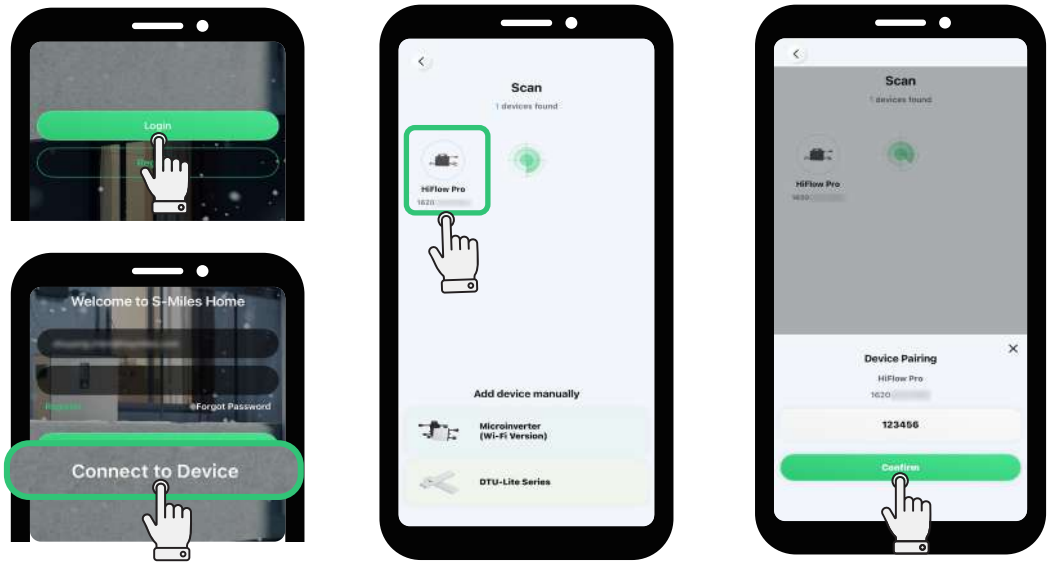
**ⓘ NOTE**

For security, if this is your first time connecting the device, you will be prompted to change the default pairing password.

- **Not logged in:**

  A) Open the app and tap **Login** > **Connect to Device**.

  B) Tap the microinverter icon and enter the pairing password (default: 123456).




A) B)-1 B)-2

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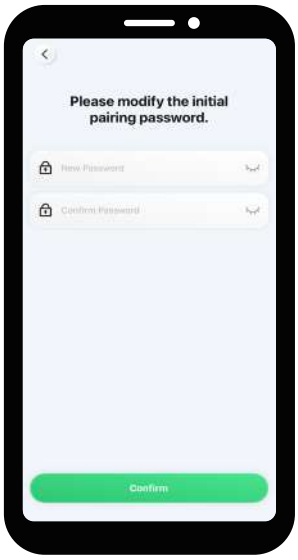
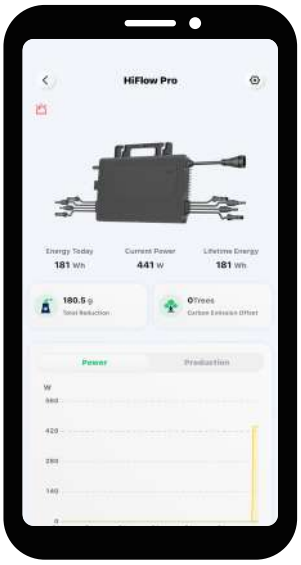
C) Modify the pairing password as prompted.

D) You will then be directed to the device homepage.




C)




D)

- **Logged in:**

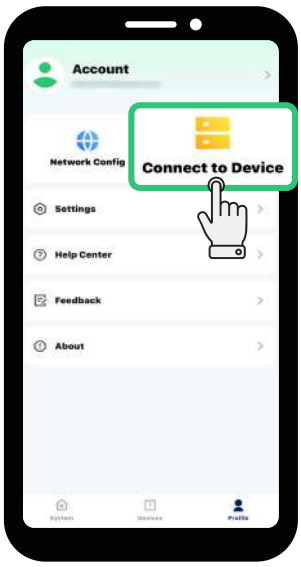
A) Open the app and tap **Login**, then sign in with your account credentials.

B) Tap Profile > **Connect to Device**.

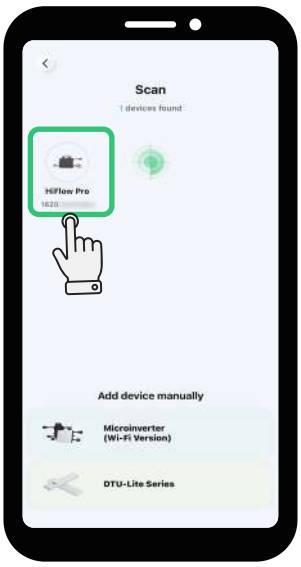
C) Tap the microinverter icon and enter the pairing password (default: 123456).

D) Modify the pairing password as prompted.

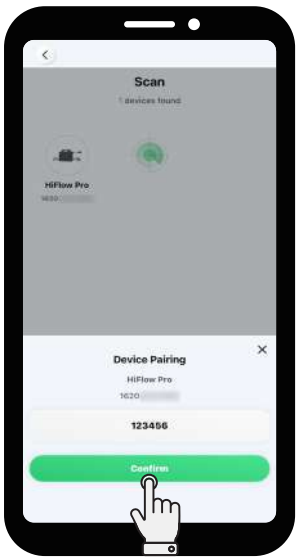
E) You will then be directed to the device homepage.




B)




C)-1




C)-2

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# 5.3 Setting the System

## 5.3.1 System Homepage Overview

System name. Tap it to switch between systems.

Tap it to create new systems or add devices to current system.

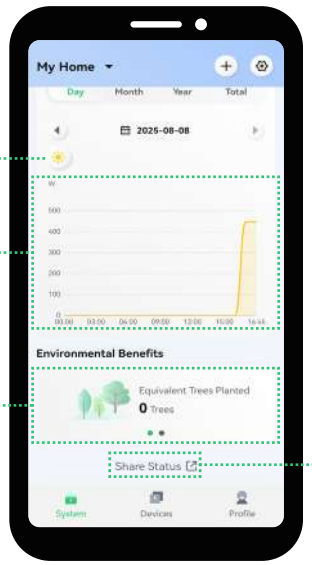
Tap it to manage the system.

Visualization of real-time system performance
- Green waves on the PV modules: Power production level
- Green stream: Power flow

Real-time power production (updated every three seconds)
** When global MPPT is enabled, there will be short-term fluctuations in the data during global MPPT scanning, which is normal.*

Real-time power is fed into the grid or supplied to your home electrical devices (load) (updated every three seconds)

Tap it to set the electricity price. Then, you can view revenue here.




Tap it to hide/show the chart below.

Visualized power production on a selected day/month/year, or in total (updated every five minutes).
- To view data for a specific time, tap or drag on it.
- To reduce the time interval, pinch to zoom.

Swipe left to view $CO_2$ emission reduction.

Tap it to save a screenshot of this tab and share it with others.

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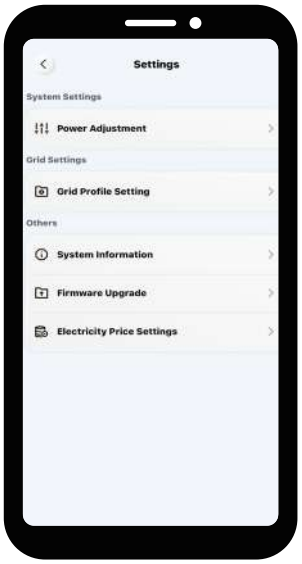
## 5.3.2 Managing Your System

Tap ⚙ to enter the system settings screen.




| Item | Description |
|---|---|
| Power Adjustment | Set the inverter's active output power limit by entering a percentage or dragging the slider.<br>Use this to meet local regulations, prevent overload, or reduce grid export.<br>The setting works even if there's no meter connected to the system. |
| Grid Profile Setting | Update the device's grid profile to ensure the system uses the latest grid settings that meet local requirements. |
| System Information | View or edit system name, region, etc. |
| Firmware Upgrade | Update all devices in the system to the latest firmware version. |
| Electricity Price Settings | Set the unit electricity price and currency. After completing this setting, you can view the system's power generation revenue on the system homepage. |

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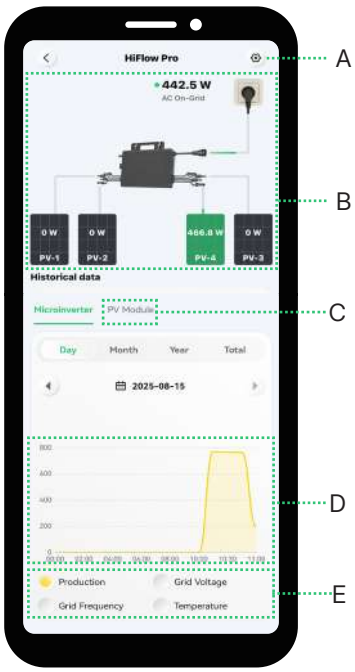
# 5.4 Setting the Device

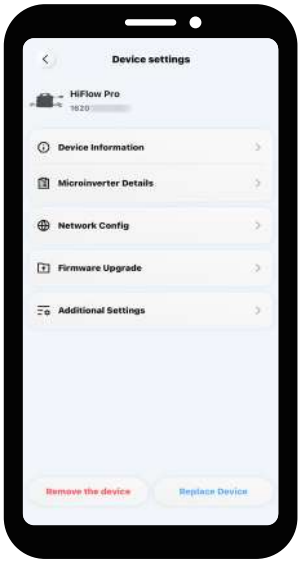
## 5.4.1 Managing under Remote Connection

Tap **Devices**, and tap the device picture to enter the overview screen.




| No. | Description |
|---|---|
| A | Navigates to the **Device settings Screen**. |
| B | • Green area on the PV modules: Module power level<br>• Green stream: Power flow<br>• AC On-Grid: Power fed into the grid or supplied to your home electrical devices (load) |
| C | Tap it to view detailed PV module performance. |
| D | • To view data for a specific time, tap or drag on it.<br>• To reduce the time interval, pinch to zoom. |
| E | Tap the buttons to hide/show respective data. |

Tap to enter the device settings screen.




| Item | Description |
|---|---|
| Device Information | View hardware version, software version, etc. |
| Microinverter Details | View production, grid voltage, grid frequency, temperature, etc. |
| Network Config | If the device is offline, you can reconnect it to your home Wi-Fi or connect it to another Wi-Fi. |
| Firmware Upgrade | Update the device to the latest version. |
| Additional Settings | Turn on, turn off, restart, or restore the device. |

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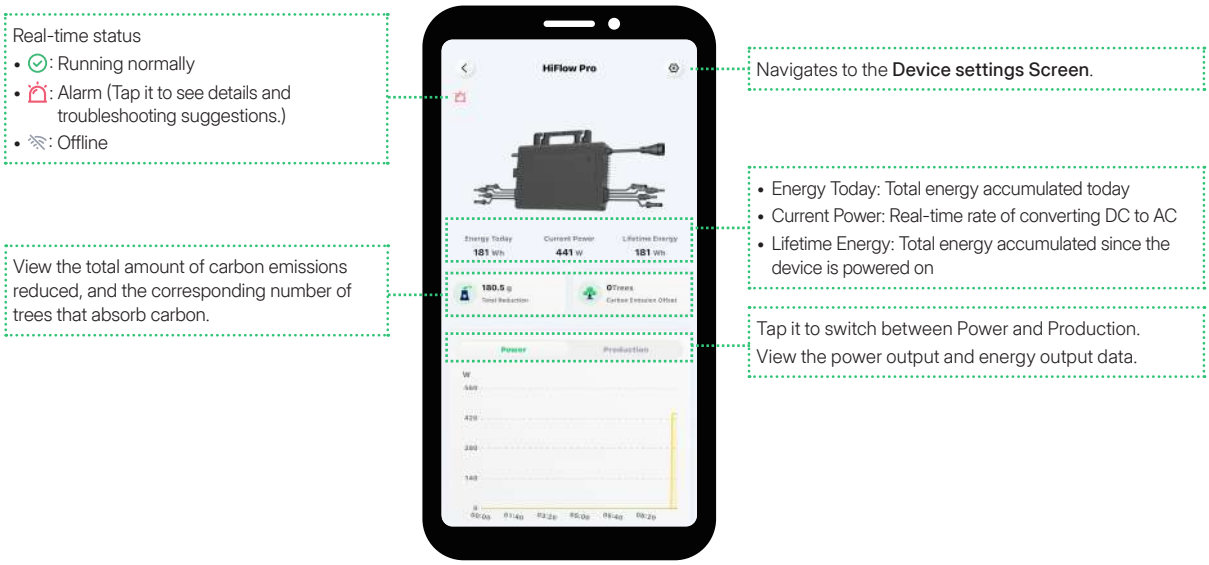
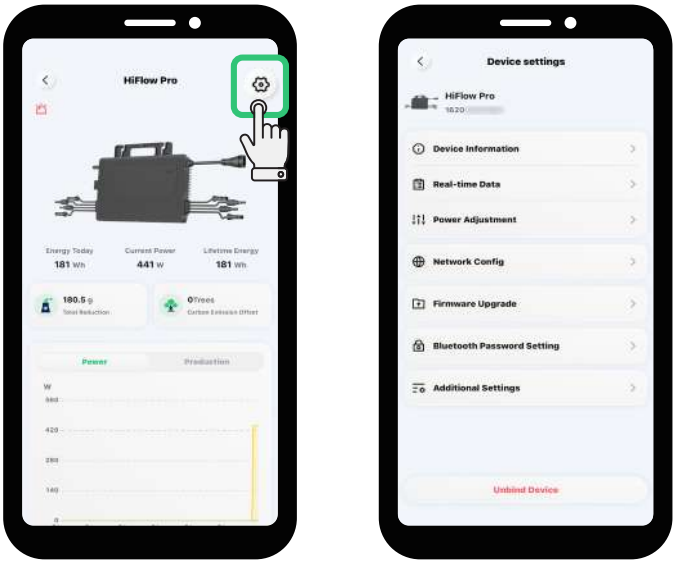
## 5.4.2 Managing under Direct Connection

Once connected, you will be directed to the overview screen.




Tap ⚙ to enter the device settings screen.




| Item | | Description |
|---|---|---|
| | Device Information | View hardware version, software version, etc. |
| | Real-time Data | View PV voltage, grid voltage, etc. |
| | Power Adjustment | You can enter the active output power in percentage to comply with local regulations, to prevent system overload, or to minimize grid export. This setting works even if there's no meter connected to the system. |
| | Network Config | If your router has changed, use this function to reconnect the inverter to your new home Wi-Fi. |
| | Bluetooth Password Setting | Set a new pairing password for the inverter.<br>You must know the current pairing password to set a new one. |
| | Firmware Upgrade | Update the device to the latest version. |
| | Additional Settings | Turn on, turn off, restart, or restore the device. |

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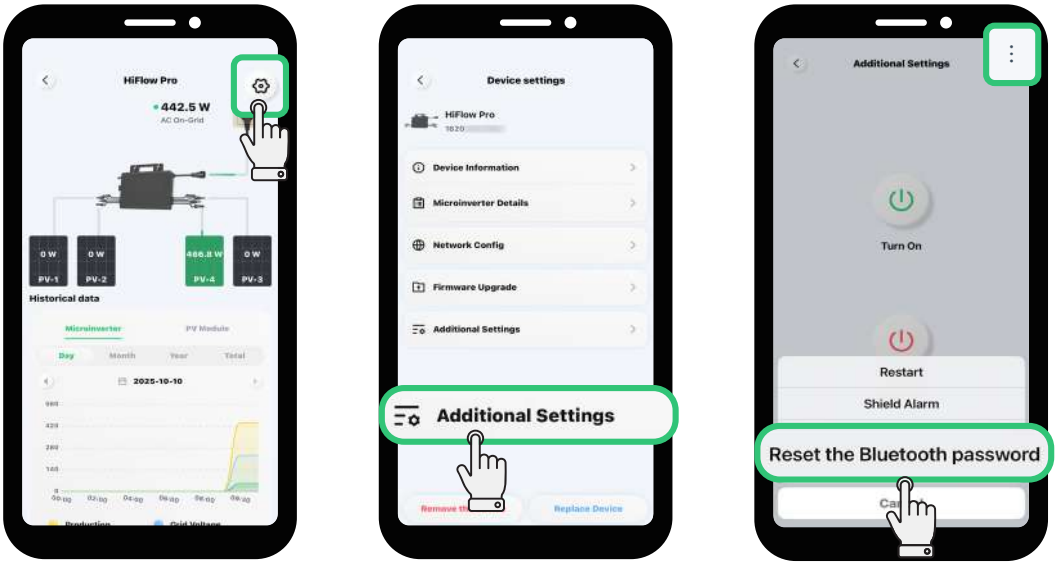
## 5.4.3 Setting Bluetooth Password

There are two ways to set the Bluetooth pairing password:

- **Using the inverter directly (without the app):** You can reset the Bluetooth password to the default value 123456 by plugging and unplugging the inverter's AC connector. For detailed steps, see 6.3 Bluetooth PIN Code Troubleshooting.
- **Using the app:** Under Remote Connection, you can only reset the pairing password to the default 123456. This option is useful if you forgot your current password. Under Direct Connection, you can set a new password as you like, but you must know the current password.

### Reset to Default (123456)--Remote Connection

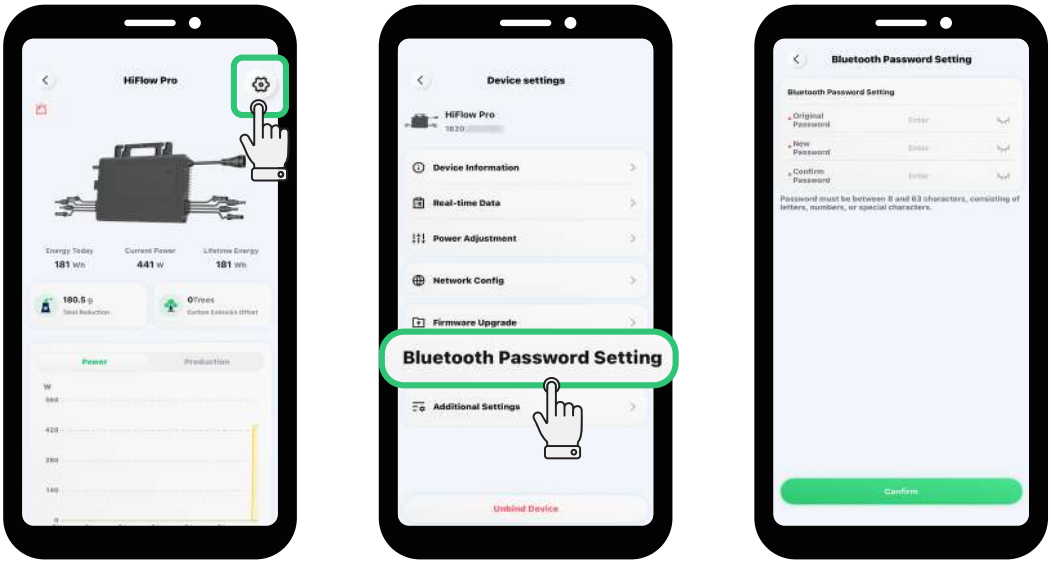
Tap ⚙ > **Additional Settings** > ⋮ > **Reset the Bluetooth password**.




### Set a New Bluetooth Password--Direct Connection

A) On the device homepage, tap ⚙ > **Bluetooth Password Setting**.

B) Enter the original password and new password, and tap **Confirm**.




A) B)-1 B)-2

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## 5.4.4 Upgrading Device Firmware

A) Find the device that you want to edit.

B) On the device overview screen, tap ⚙ > **Firmware Upgrade**.

C) Tap **Update Now**.

B)-1

B)-2

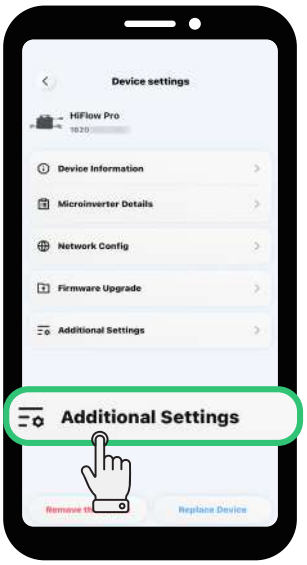
C)

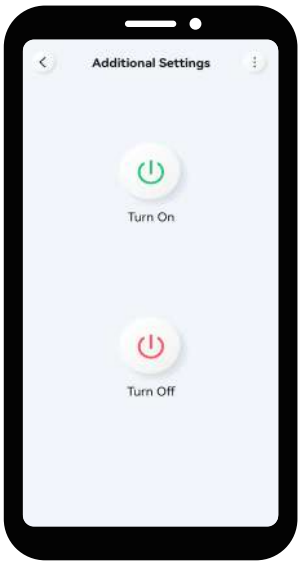
## 5.4.5 Turning On/Turning Off/Restarting/Restoring the Device

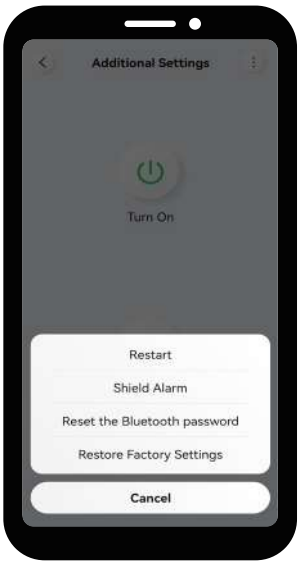
Tap ⚙ > **Additional Settings** > **Turn On** or **Turn Off** to control the device's power.

Tap ⚙ > **Additional Settings** > ⋮ > **Restart** to reboot the device.

Tap ⚙ > **Additional Settings** > ⋮ > **Restore Factory Settings** to reset the device to its original settings.

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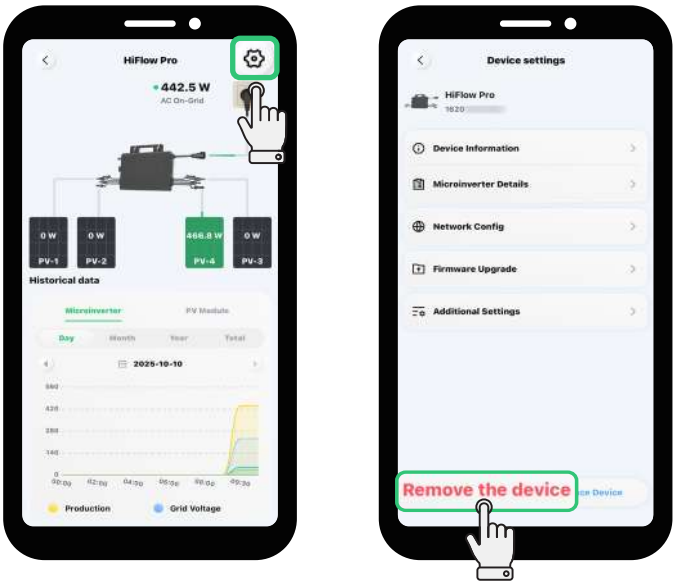
## 5.4.6 Removing/Unbinding the Device

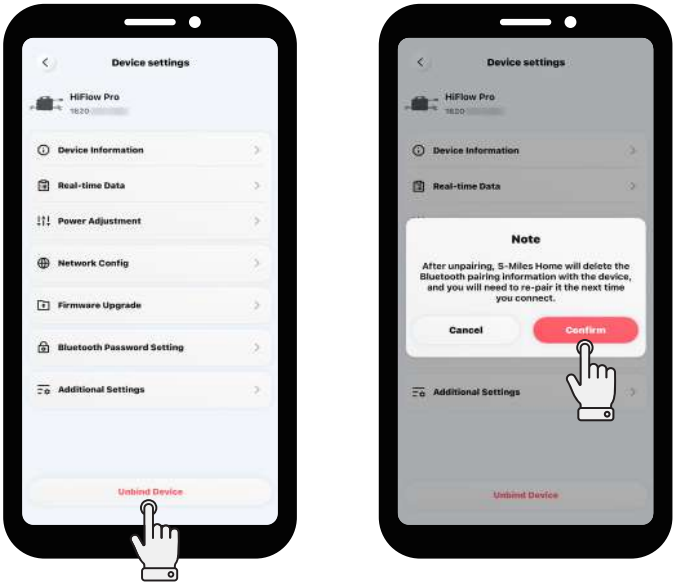
### Removing the Device under Remote Connection

Tap ⚙ > **Remove the device** > **Confirm** to delete the device.




### Unbinding the Device under Direct Connection

Tap ⚙ > **Unbind Device** > **Confirm** to delete the device.

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# 6 Troubleshooting

## 6.1 Troubleshooting List

| Code | Alarm range | Alarm status | Resolutions |
|---|---|---|---|
| 121 | CU | Over temperature protection | 1. Ensure the microinverter installation site is properly ventilated and at a suitable ambient temperature.<br>2. Improve airflow and heat dissipation if necessary.<br>3. Please contact your dealer or Hoymiles technical support team if airflow and ambient temperature meet the requirements. |
| 125 | CU | Grid configuration parameter error | 1. Ensure grid configuration parameters are correct and attempt the upgrade again.<br>2. Please contact your dealer or Hoymiles technical support team if the issue persists. |
| 126 | CU | Software error code 126 | 1. No further action is necessary if the alarm is accidentally triggered but the microinverter continues to function normally.<br>2. Please contact your dealer or Hoymiles technical support team if the alarm recurs frequently and does not reset. |
| 127 | CU | Firmware error | 1. Check for the correct firmware and re-attempt the upgrade.<br>2. Check and ensure the DTU, Hoymiles monitoring system, and microinverter are all connected and communicating with each other. Retry if needed.<br>3. Please contact your dealer or Hoymiles technical support team if the issue persists. |
| 128 | CU | Hardware configuration error | 1. No special action is required if the alarm is accidental and the microinverter continues to function correctly.<br>2. Please contact your dealer or Hoymiles technical support team if the alarm recurs frequently and does not reset. |
| 129 | CU | Abnormal bias | 1. No further action is necessary if the alarm is accidentally triggered but the microinverter continues to function normally.<br>2. Please contact your dealer or Hoymiles technical support team if the alarm recurs frequently and does not reset. |
| 130 | cu | Offline | 1. Please ensure the microinverter is functioning correctly.<br>2. Check the communication status between the DTU and Hoymiles monitoring system, or between the DTU and microinverter, and make the necessary improvements if the communication appears poor.<br>3. Please contact your dealer or Hoymiles technical support team if the alarm recurs frequently and does not reset. |
| 141 | Grid | Grid overvoltage | 1. Sudden, accidental activation of the alarm might be the result of a temporary irregularity in grid voltage. The microinverter will recover automatically once the grid voltage stabilizes.<br>2. Check whether the grid voltage is in the acceptable range in the event of recurring alarm activation.<br>3. Contact your local power operator or adjust the grid overvoltage protection limit through the S-Miles Cloud Platform with consent from the local power operator if the grid voltage is not within acceptable limits. |
| 142 | Grid | 10 min value grid overvoltage | |
| 143 | Grid | Grid undervoltage | |
| 144 | Grid | Grid over-frequency | |
| 145 | Grid | Grid under-frequency | |

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| | | | |
|---|---|---|---|
| 146 | Grid | Rapid grid frequency change rate | 1. Sudden, accidental activation of the alarm might be the result of a temporary irregularity in grid voltage. The microinverter will recover automatically once the grid voltage stabilizes.<br>2. Check whether grid voltage is in the acceptable range in the event of recurring alarm activation.<br>3. Contact your local power operator or adjust the grid overvoltage protection limit through the S-Miles Cloud Platform with consent from the local power operator if the grid voltage is not within acceptable limits. |
| 147 | Grid | Power grid outage | Check whether a power grid outage occurred. |
| 148 | Grid | Grid disconnection | Check the condition of the AC switch or AC wiring for issues. |
| 149 | Grid | Island detected | 1. Sudden, accidental activation of the alarm might be the result of a temporary irregularity in grid voltage. The microinverter will recover automatically once the grid voltage stabilizes.<br>2. If all the microinverters in your station frequently trigger alarms, reach out to the local power operator to investigate potential grid islands.<br>3. If the alarms do not stop, please contact your dealer or Hoymiles technical support team. |
| 209 | PV-1 | PV-1 No input | 1. Confirm that the port is connected to the PV module.<br>2. If the PV module is indeed connected, examine the DC cable connection between this port and the PV module. |
| 210 | PV-2 | PV-2 No input | |
| 211 | PV-3 | PV-3 No input | |
| 212 | PV-4 | PV-4 No input | |
| 215 | PV-1 | Input Overvoltage | 1. Ensure the PV module's open-circuit voltage is less than or equal to the maximum input voltage.<br>2. If it is within the normal range, contact your dealer or Hoymiles technical support team. |
| 217 | PV-2 | | |
| 219 | PV-3 | | |
| 221 | PV-4 | | |
| 216 | PV-1 | Input Undervoltage<br>Input Undervoltage | 1. Ensure the PV module's open-circuit voltage is not lower than the minimum input voltage.<br>2. If it is within the normal range, contact your dealer or Hoymiles technical support team. |
| 218 | PV-2 | | |
| 220 | PV-3 | | |
| 222 | PV-4 | | |
| 301 - 311 | - | Hardware Error Code | 1. No further action is necessary if the alarm is accidentally triggered but the microinverter continues to function normally.<br>2. Please contact your dealer or Hoymiles technical support team if the alarm recurs frequently and does not reset. |
| 324 | CU | Arcing Lock-up | 1. Check whether the wiring between the PV module and the microinverter is correct.<br>2. If the wiring is correct, issue the [Troubleshoot and Reconnect] command.<br>3. Please contact your dealer or Hoymiles technical support team if the issue persists. |

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## 6.2 LED Indicator Status

The LED indicator on the microinverter indicates various statuses. The following table details the possible LED statuses and what they mean.

### Start-up

| LED | Time Gap | Pattern | Indication |
|---|---|---|---|
| Flashing green | 0.3s, 5 times | | Start-up Success |
| Flashing red | 0.3s, 5 times | | Start-up Failure, Microinverter Failure |
| Alternating red and green flashing | 1s | | Firmware Failure |

### Operation

| LED | Time Gap | Pattern | Indication |
|---|---|---|---|
| Flashing green | 1s | | Normal Power Production |
| Flashing green | 2s | | The microinverter is generating power, but one input is abnormal. |
| Flashing red | 0.5s | | Control Unit Failure |
| Flashing red | 1s | | AC Grid Failure |
| Solid red | - | | Hardware Failure |

**NOTE**

- The microinverter is powered by the DC side. If the LED indicator is not illuminated, check the DC side connection. If the connection and input voltage are normal, contact your dealer or Hoymiles technical support team for further assistance. (For details, see Contact Us.)
- Ensure the grid connection is normal.

## 6.3 Bluetooth PIN Code Troubleshooting

If you reset the microinverter's PIN code and later forget it, you can revert to the initial PIN code using the following method.

**NOTICE**

- This process has a time limit of 20 minutes, and it must be completed within that timeframe.
- The initial PIN code is 123456 (by default).

Step 1 Ensure the grid connection status is normal.

Step 2 Unplug the plug and disconnect the grid voltage for 5 to 10s.

Step 3 Plug in the plug and allow the grid voltage to continue for at least 5 to 10s.

Step 4 Unplug the plug and disconnect the grid voltage for 5 to 10s.

Step 5 Plug in the plug and allow the grid voltage to continue normally for at least 5s.

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## 6.4 Wireless Network Troubleshooting

There are two potential indicators of a Wi-Fi connection problem:

- Low signal bars on the microinverter or plant homepage.
- No data is displayed on the S-Miles Cloud platform.

To troubleshoot this problem, please follow the procedure listed below.

**Step 1: Restart Microinverter**

A) Restart the microinverter using the S-Miles Cloud platform or the S-Miles Home application.

B) If the Wi-Fi signal remains weak, proceed to step 2.

**Step 2: Check Router Configuration**

A) Access your router's settings.

B) Find the Wi-Fi settings.

C) Change the frequency from 5GHz to 2.4GHz.

D) If the issue persists, move to step 3.

**Step 3: Check the Router Signal Strength**

A) Connect other devices to the router to check the signal strength.

| Signal Strength (dBm) | Qualifier |
|---|---|
| > -30 | Excellent |
| -30 to -65 | Good |
| < -65 | Bad |

B)
- If the signal is strong, restart the router.
- If the signal is weak, proceed to step 4.

**Step 4: Analyze Wireless Environment**

A) Use Wi-Fi scanning software to check the wireless environment of the PV plant.

B) If the signal is weak, relocate the router closer to the microinverters.

C) If the issue persists, investigate for potential interference from nearby wireless networks.

D) If the signal is weak, proceed to step 5.

**Step 5: Address Interference**

A) Adjust the router to a different Wi-Fi channel to mitigate interference.

B) If the signal is weak, proceed to step 6.

**Step 6: Contact the network operator to inquire about network problems.**

**Step 7: Consider adding a Wi-Fi booster to the network if the signal remains weak.**

**Step 8: If the problem persists, contact the installer for further assistance.**

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## 6.5 On-Site Inspection and Maintenance Instructions (Only for Qualified Technicians)

**⚠ DANGER**

- Always wear personal protective equipment while performing inspection and maintenance.
- Shut down the microinverter and disconnect it from all power sources before beginning maintenance.
- The microinverter still contains lethal voltages after disconnecting from the power sources. Wait at least five minutes before proceeding with maintenance.

**⚠ WARNING**

Maintenance operations are strictly limited to authorized personnel, who are then responsible for reporting any discrepancies.

### On-Site Inspection

Most microinverter faults can be diagnosed and resolved using the following troubleshooting steps.

| Check Item | Method |
|---|---|
| Ambient Temperature | Check the temperature of the microinverter for overheating (see 8 Technical Data). |
| Electrical Parameters | Verify the PV modules' DC voltage, the grid voltage, and the grid frequency are within the allowable range (see 8 Technical Data). |
| DC Connections | Check and make sure the DC connection between the PV module and the microinverter is tight and secure.<br>**Check steps:**<br>A) Disconnect the AC power first to de-energize the microinverter.<br>B) Disconnect the DC connections.<br>C) Re-connect the PV module and microinverter.<br>D) If the DC connection is normal, the LED indicator will flash red. |
| AC Connections | Check and make sure the AC connection between the grid and the microinverter is tight and secure. If DC connections and AC connections are functioning properly, the LED indicator will flash green.<br>**Check steps:**<br>A) Disconnect the AC power first to de-energize the microinverter.<br>B) Disconnect the DC connections.<br>C) Re-connect the PV module and microinverter.<br>D) If the DC connection is normal, the LED indicator will flash red.<br>E) Reconnect the AC power.<br>F) If DC and AC connections are normal, the LED indicator will flash green five times.<br>G) If the problem persists, contact the Hoymiles Technical Support Team at service@ hoymiles.com. |

### Maintenance

Regular inverter maintenance is essential for ensuring longevity and optimal performance assets. The checklist provides specific tasks for the maintenance process.

| Check Item | Acceptance Criteria |
|---|---|
| Ventilation | • Verify the installation location has sufficient free space for ventilation and heat dissipation.<br>• Keep all components free and clear of debris, especially around the heat sink. Clean the microinverter regularly using a soft brush or vacuum cleaner. |
| Electrical Connection | • Check the wiring connections for any loose or damaged wires. If needed, tighten any loose connections. |
| Microinverter Status | • Check the microinverter for any sign of corrosion or physical damage. Broken parts should be addressed immediately.<br>• Regularly updating the firmware and software of the microinverters. |
| Environment | • Check and ensure the environmental conditions remain within the specified operating range. (see 8 Technical Data) |

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# 7 Decommission

This section introduces how to safely remove, replace, store, and recycle microinverters at the end of their lifespan.

**⚠ DANGER**

- Never disconnect a DC connector when PV modules are in the sun. Cover the PV modules before disconnecting.
- Potentially dangerous voltage may still be present inside disconnected microinverters.

## 7.1 Removing the Microinverter

Step 1: Power off the whole system and wait about five minutes.

Step 2: Use an electric meter or current clamp to ensure there is no voltage and current.

Step 3: Use the Disconnect Tool to disconnect all AC connections and wait about five minutes.

Step 4: Use the Disconnect Tool to disconnect all DC cable connections.

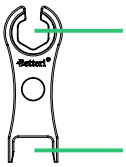
**ⓘ NOTE**

To use the Flex-S3 Disconnect Tool,

A) Align the Flex-S3 Disconnect Tool's notches with the released tabs on the connectors.

B) Squeeze the tool firmly to apply pressure to the release tabs.

C) Gently pull the connectors apart to disconnect them.




Step 5: Remove the PV modules from their mounts and cover them.

Step 6: Remove protective earthing connections (if needed).

Step 7: Unscrew the fixing screws on the microinverter and remove the microinverter from the mounting rack.

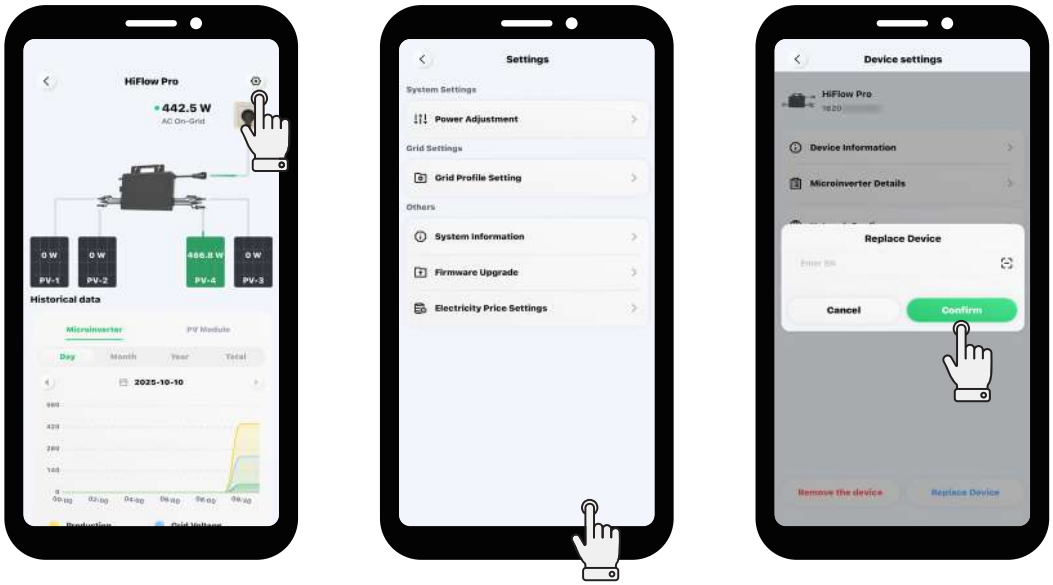
## 7.2 Replacing the Microinverter

Step 1: Record the new microinverter's SN.

Step 2: Power **OFF** the whole system and wait about five minutes.

Step 3: Install the new microinverter. (For details, see 4.2 Installation Steps.)

Step 4: Replace the microinverter on the monitoring platform.

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## 7.3 Storing and Transporting the Microinverter

The following requirements should be met if the microinverter is not put into use directly.

- Pack the microinverter in the original packaging. If the original packaging is unavailable, use the packaging that is suitable for the weight and dimensions of the microinverter.
- Maintain a storage temperature of -40°C to 85°C, and a relative humidity between 0% to 90%.
- Store the equipment indoors in a well-ventilated area.
- Protect the microinverter from physical shocks or vibrations during transportation and storage.
- Prevent sudden impacts or movements during transportation.
- Follow general transportation regulations for the mode of transport and ensure compliance with all local regulations.
- Conduct a thorough inspection before restarting the equipment after prolonged non-operation.
- Do not exceed the stacking limit marked on the outer side of the packaging.

## 7.4 Disposing of the Microinverter

**⚠ DANGER**

Disposal of the microinverter must comply with the related local regulations to avoid pollution. The microinverter must not be disposed of with normal waste.

Step 1: Pack the microinverter in the original packaging. If the original packaging is unavailable, use the packaging that is suitable for the weight and dimensions of the microinverter.

Step 2: Properly seal the package using adhesive tape.

Step 3: Discard the packaging in accordance with local regulations.

# 8 Technical Data

**⚠ WARNING**

Make sure that the maximum open circuit voltage of the PV module is within the microinverter's operating voltage range.

| Model | HMS-1600-4WB | HMS-1800-4WB | HMS-2000-4WB |
|---|---|---|---|
| **Input Data (DC)** | | | |
| Commonly used module power (W) | 320 to 540+ | 360 to 600+ | 400 to 670+ |
| Maximum input voltage (V) | 65 | | |
| MPPT voltage range (V) | 16 to 60 | | |
| Min./Max. start voltage (V) | 22/60 | | |
| Maximum input current (A) | 4 × 14 | 4 × 15 | 4 × 16 |
| Maximum input short circuit current (A) | 4 × 25 | | |
| Number of MPPTs | 4 | | |
| Number of inputs per MPPT | 1 | | |
| **Output Data (AC)** | | | |
| Rated output power (VA) | 1600 | 1800 | 2000 |
| Rated output current (A) | 6.96 | 7.83 | 8.70 |
| Nominal output voltage/range (V)* | 230/180 to 275 | | |
| Nominal frequency/range (Hz)* | 50/45 to 55 | | |
| Adjustable power factor (@Rated power) | >0.99 default<br>0.8 leading ... 0.8 lagging | | |
| Total harmonic distortion (@Rated power) | <3% | | |
| **Flex-S3 Plug and Play Cable-CEE7/7** | | | |
| Connector type | Flex-S3 Field Connector | | |
| Cable size ($mm^2$) | 1.5 | | |
| Cable length (m) | 5 (customizable) | | |
| Plug type | Schuko | | |
| **Efficiency** | | | |
| Peak efficiency | 96.70% | 96.50% | 96.50% |
| Nominal MPPT efficiency | 99.80% | | |
| Night power consumption (mW) | < 50 | | |
| **Mechanical Data** | | | |
| Ambient temperature range (°C) | -40 to +65 | | |
| Storage temperature range (°C) | -40 to +85 | | |
| Dimensions (W × H × D [mm]) | 331 × 218 × 40.6 | | |
| Weight (kg) | 5.6 | | |
| Enclosure rating | Outdoor - IP67 | | |
| Cooling | Natural convection – No fans | | |
| **Features** | | | |
| Communication with cloud | 2.4G Wi-Fi | | |
| Communication with local app | Bluetooth | | |
| Topology | Galvanically Isolated HF Transformer | | |
| Interface | LED & App | | |
| Compliance | VDE-AR-N 4105: 2018, EN 50549-1: 2019, VFR 2019,<br>IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 61000-3-2/-3 | | |

* : Nominal voltage/frequency range can vary depending on local requirements.

# 9 Appendix: Regulatory Compliance Statement

## Communication Interfaces

This product supports three types of connections:

- Bluetooth – Connects the microinverter to the S-Miles Cloud app for local monitoring. Use Bluetooth to check real-time performance, adjust settings, and change operating modes.
- Wi-Fi – Connects the microinverter to the S-Miles Cloud through a home router. The microinverter uploads performance data every five minutes, allowing remote monitoring and maintenance.
- Microinverter Network – Enables communication between multiple microinverters in a local network. This allows them to share operating data and settings.

Note: This product is not a standalone network device. It connects to a router and relies on the router's security features to protect against network threats, such as DoS attacks.

## CE Declaration of Conformity

Hoymiles Microinverter (model: HMS-1600/1800/2000-4WB) is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. OPERATING FREQUENCY (the maximum output power): 2.4 to 2.48 GHz, ERP≤20 dBm

## EU Declaration of Conformity

Hoymiles Microinverter (model: HMS-1600/1800/2000-4WB) is in compliance with the essential requirements and other relevant provisions of directives 2014/53/EU, 2009/125/EC, 2011/65/EU and (EU)2015/863.

The original EU Declaration of Conformity may be found at https://www.hoymiles.com/resources/download/?_sft_document_ type=declaration.

## RF Exposure Information

- This device meets the EU requirements (2014/53/EU Article 3.1a) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.
- The device complies with RF specifications when it is used 20 cm from your body.

## FCC compliance information statement

Hoymiles Microinverter (model: HMS-1600/1800/2000-4WB) has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.