HANCHU ESS

Version 03

# User Manual

iESS-M1/M3/M5

***Smart Energy,***
***Sustainable Solutions***

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**Version 01(2024-12-18)**
First release.

**Version 02(2025-5-29)**
Second release.

**Version 03(2025-7-15)**
Third release.

# Contents

# 1 About this manual

This manual is an integral part of iESS-M1/M3/M5 smart meter. It mainly introduces the assembly, installation, electrical connection, debugging of the products. The products, services or features purchased are subject to the commercial contracts and terms of manufacturer All or part of the products, services or features described in this document may not be within the scope of purchase. This document serves only as a guide to use, and all statements information and recommendations in this document do not constitute any express or implied guarantee.

## 1.1 How To Use This Manual

Before installing and using meters, please read this manual carefully, understand the safety information and be familiar with the functions and characteristics of inverters.
The manual content of subsequent versions of the inverter may be subject to change. The latest manual can be found at manufacturer.

## 1.2 Target Groups

This manual is applicable to the electrical installers with professional qualifications and end-users, who should have the following skills:
① Training for installation and commissioning of electrical system, as well as dealing with hazards.
② Knowledge of the manual and other related documents.
③ Knowledge of the local regulations and directives.

# 2 Safety Instructions

## 2.1 Safety Notes

① Before installation, please read this manual carefully and follow the instructions in this manual strictly.
② Installers need to undergo professional training or obtain electrical related professional qualification certificates.
③ Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.
④ All electrical installations must conform to local electrical safety standards.
⑤ If the meter needs maintenance, please contact the local designated personnel for system installation and maintenance.

## 2.2 Statement

Under any of the following circumstances, it has the right not to bear the quality assurance:
① Damages caused by improper transportation.
② Damages caused by incorrect storage, installation or use.
③ Damages caused by installation and use of equipment by non-professionals or untrained personnel.
④ Damages caused by failure to comply with the instructions and safety warnings in this document.
⑤ Damages of running in an environment that does not meet the requirements stated in this document.
⑥ Damages caused by operation beyond the parameters specified in applicable technical specifications.
⑦ Damages caused by unauthorized disassembly, alteration of products modification of software codes.
⑧ Damages caused by abnormal natural environment (force majeure, such as lightning, earthquake, fire, storm, etc.).
⑨ Any damages caused by the process of installation and operation which don't follow the local standards and regulations.
⑩ Products beyond the warranty period.

# 3 Product Description

## 3.1 System Introduction

iESS-M1/M5 are smart meters and support different voltage levels and power grid. The iESS-M1/M5 can collect the data in real time, including grid voltage, current, power and energy yield. By cooperating with monitoring system, iESS-M1/M3/M5 can realize real-time monitoring of load consumption.

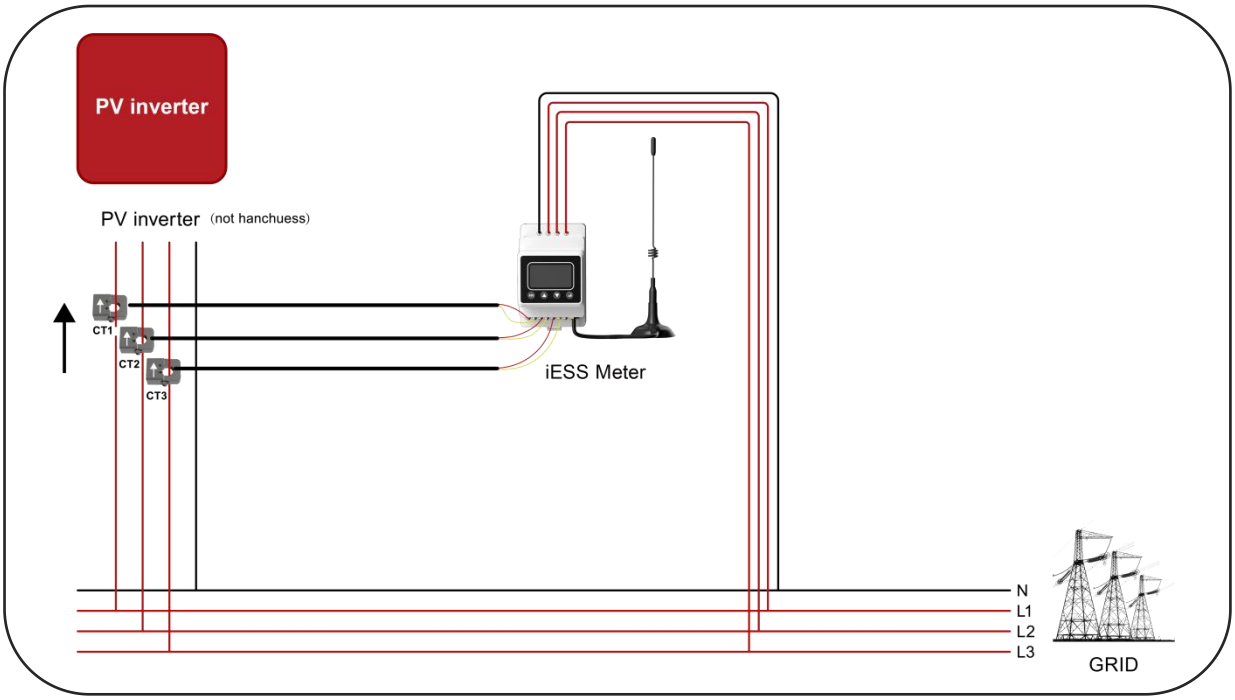



**Figure 1 Wiring diagram**

| | |
|---|---|
| **NOTE** | More application scenarios of iESS-M1/M3/M5 are still under development, please contact us for details. |

## 3.2 Product Appearance

**Smart meter appearance:**

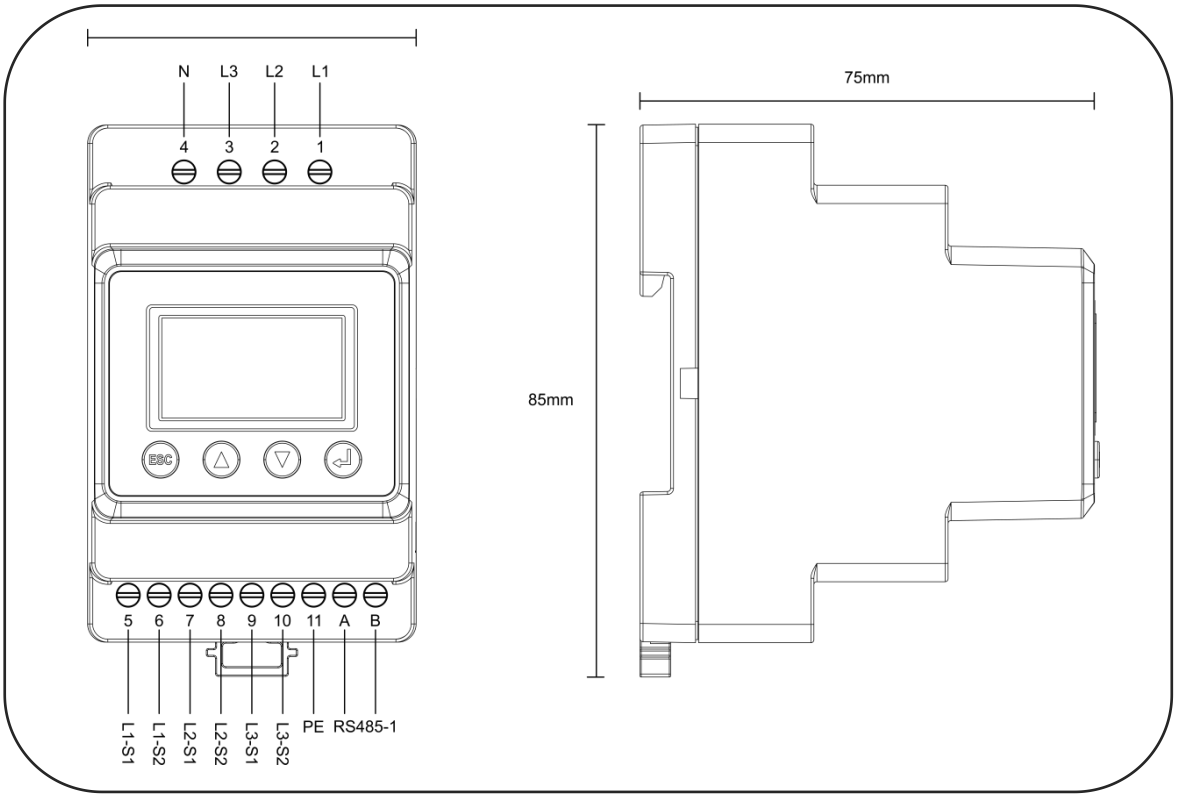



**Figure 2 Smart meter appearance**

**iESS-M1/M3 CT appearance:**

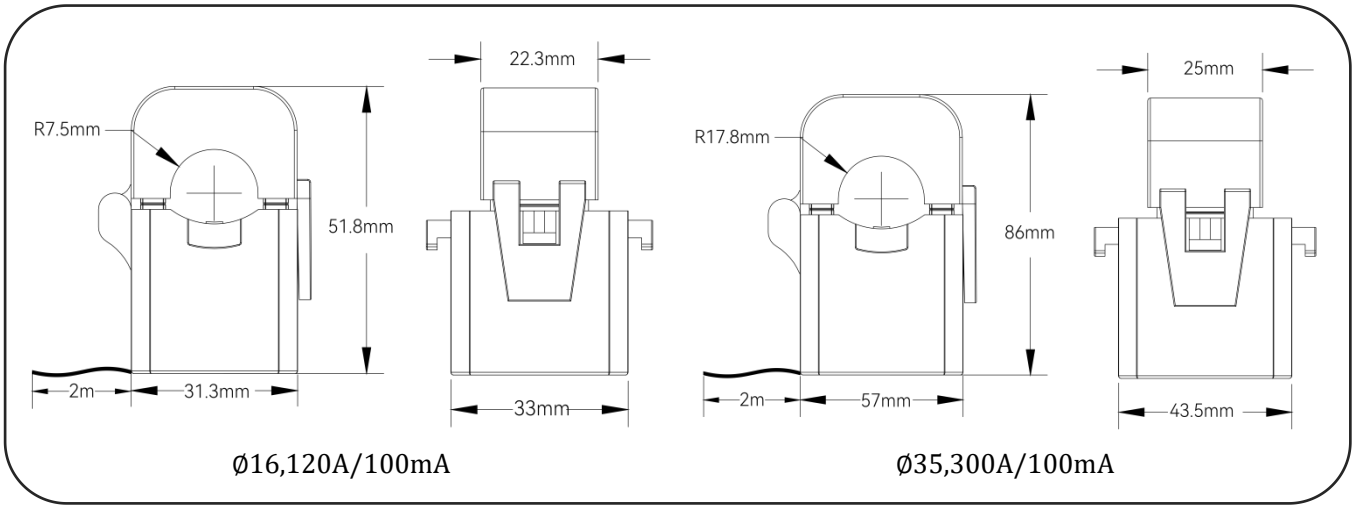



**Figure 3 CT appearance**

| | |
|---|---|
| **NOTE** | If choose the iESS-M5 meter, customers need to purchase their own CTs.<br>The iESS-M5 meter can support up to 5000A/5A CTs. |

Wiring terminals as shown in the table below.

| No. | Definition | Function |
|---|---|---|
| 1 | L1 | L1/L2/L3/N connect to grid to detect power grid voltage. |
| 2 | L2 | |
| 3 | L3 | |
| 4 | N | |
| 5 | L1-S1 | To detect the CT current and direction. |
| 6 | L1-S2 | |
| 7 | L2-S1 | |
| 8 | L2-S2 | |
| 9 | L3-S1 | |
| 10 | L3-S2 | |
| 11 | PE | Ground Connection |
| ANT | | WiFi antenna port. |
| LAN | | LAN communication port. |
| Type-C | | Specified Debug Interface. Do not use it by non-professionals. |

| | |
|---|---|
| **NOTICE** | This meter can only be matched with the CT shipped with the meter, and manufacturer will not be responsible for malfunctions if not use the CT shipped with the meter. |

| | |
|---|---|
| **NOTE** | The iESS-M1/M3 will be delivered with matched CT(s) supplied are calibrated and tested to be used with the device in this package. These CT(s) cannot be interchanged within the same device and cannot be used for other devices from other packaging. |

| | |
|---|---|
| **NOTE** | The iESS-M5 is not delivered with CT. Customers are required to purchase qualified standard CT with secondary side output of 1A or 5A, CT accuracy of 0.5, and maximum CT conversion ratio of 5000:5. |

## 3.3 Packing List

| Item | Name | Quantity | Note |
|---|---|---|---|
| 1 | Smart meter | 1pcs | / |
| 2 | CT | 1-3pcs | Only iESS-M1/M3 Version |
| 3 | WiFi ANT | 1pcs | / |
| 4 | Cord and terminal | 12pcs | / |

## 3.4 Storage

① Do not dispose of the original packing case. It is recommended to store the device in the original packing case when the device is decommissioned.

② The storage temperature and humidity should be in the range of -30℃~+ 60℃, and less than 90%, respectively.

# 4 Installation

iESS-M1/M3/M5 series is IP20 and can be installed indoors only.

## 4.1 Smart Meter

① Pull to release the retaining clip.
② Mount the meter on the track and push the Retaining clip up (a click sound indicates it is installed well).

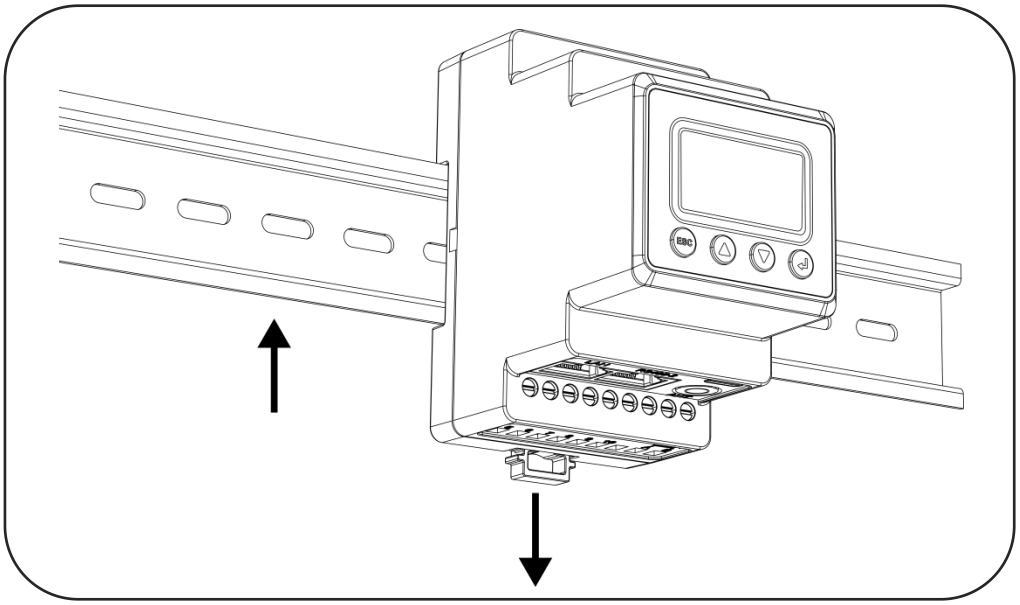


**Figure 4 Smart Meter**

## 4.2 Current Transformer

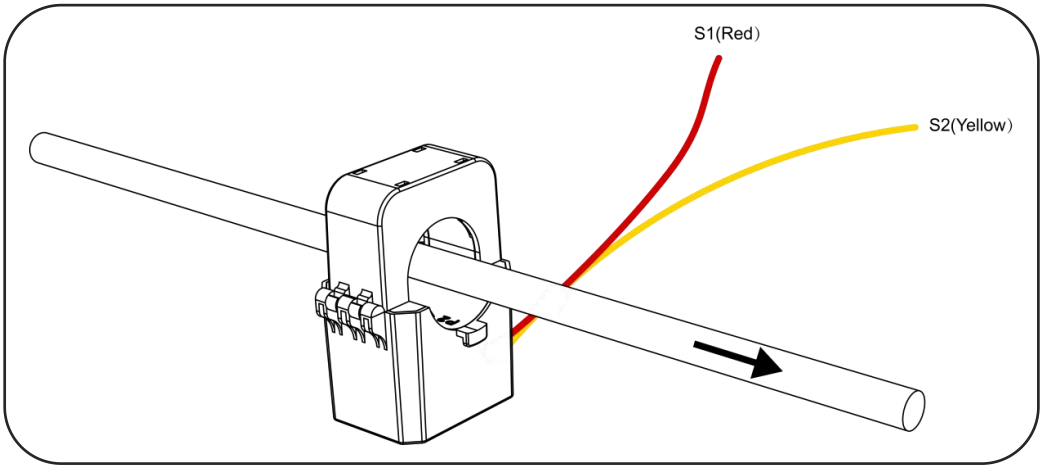



**Figure 5 CT**

| | |
|---|---|
| **NOTE** | The installation direction of the CT varies according to the application scenario. Please follow the directions of the CT as shown in 3.1 System Introduction<br>Incorrect connection or direction will cause incorrect data. |

# 5 Operating Instruction

## 5.1 Screen Introduction

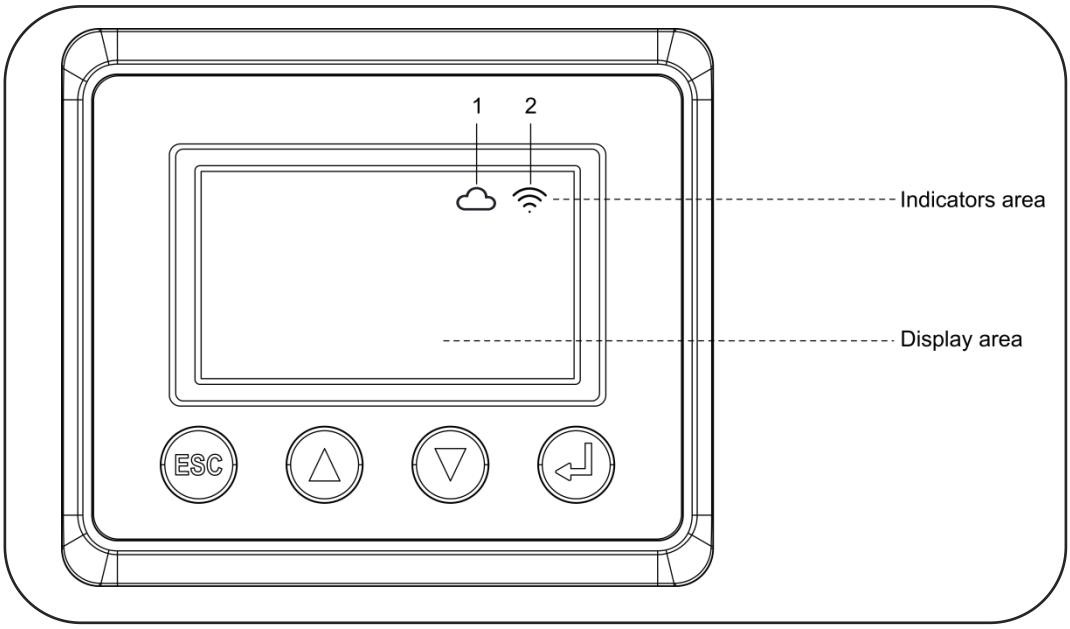


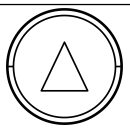
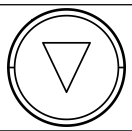
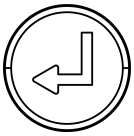

**Figure 6 Meter screen**

| Item | Indicator | | Status | Description |
|---|---|---|---|---|
| 1 | | Network status | Slow flashing | Connecting to the Cloud. |
| | | | Always On | Connected to the cloud. |
| | | | Off | No network. |
| 2 | | LAN | Slow flashing | Connecting to the router via LAN. |
| | | | Always On | Connected to the router via LAN. |
| | | | Off | No network cable plugged in. |
| | | WiFi | Slow flashing | Connecting to router via WiFi. |
| | | | Always On | Connected to router via WiFi. |
| | | | Off | No network or using LAN port. |

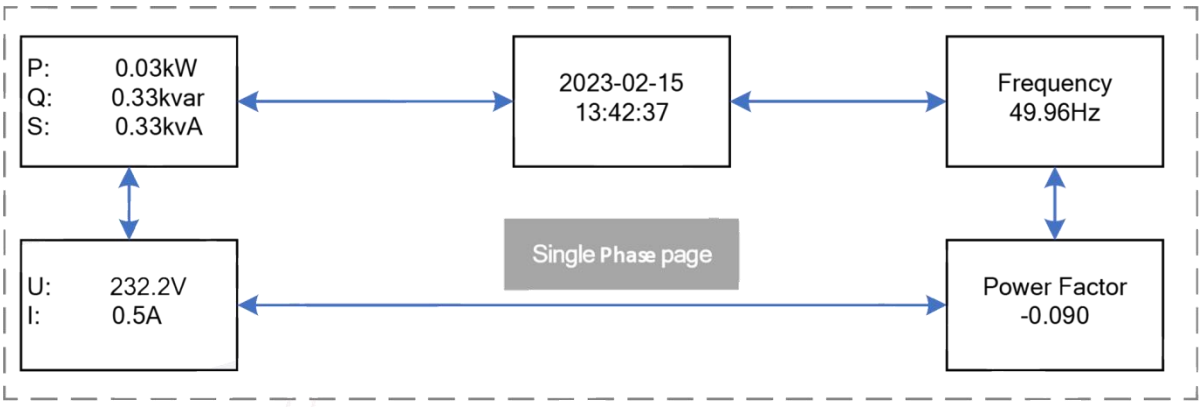
Tips: When the cable is plugged in, WiFi is automatically turned off.

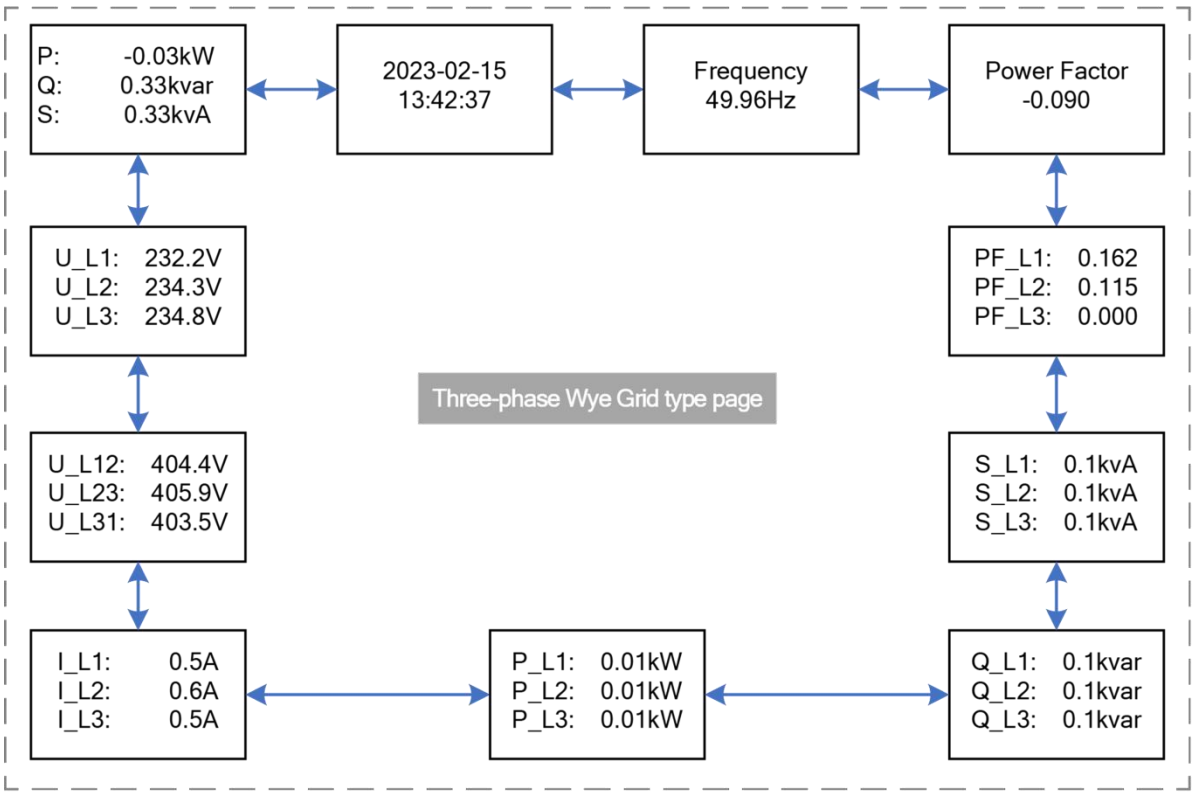
## 5.2 Key Instructions

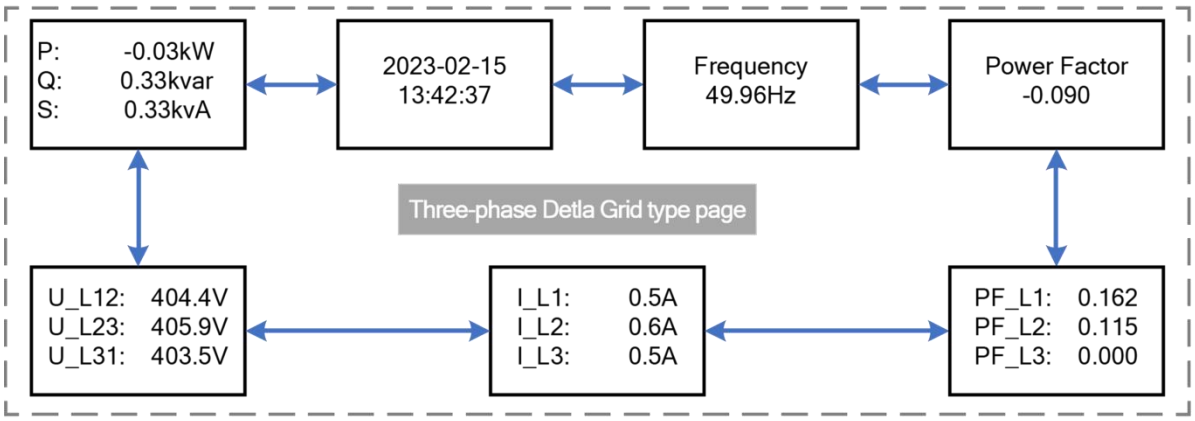

key key key key

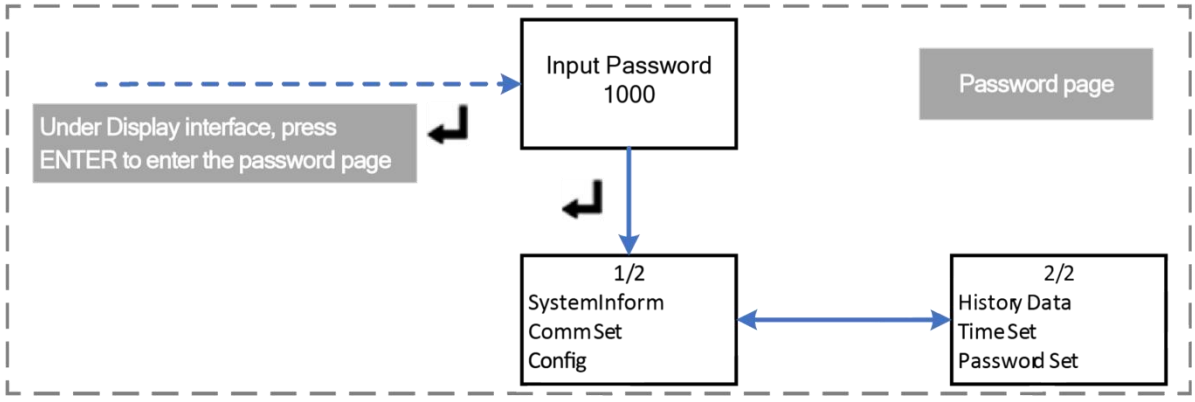
| Key | Function |
|---|---|
|   | Under the setting page, press this key to return to the upper menu. |
|  | Under Display interface, press this key to move the cursor to the upper part;<br>Under Setting interface, press this key to toggle level menus or increase the value. |
|  | Under Display interface, press this key to move the cursor to the down part;<br>Under Setting interface, press this key to toggle level menus or decrease the value. |
|  | Under Display interface, press this key to enter the password page for parameters setting;<br>Under Setting interface, press this key to confirm the selection of the items and modification of parameters. |

## 5.3 Display Interface

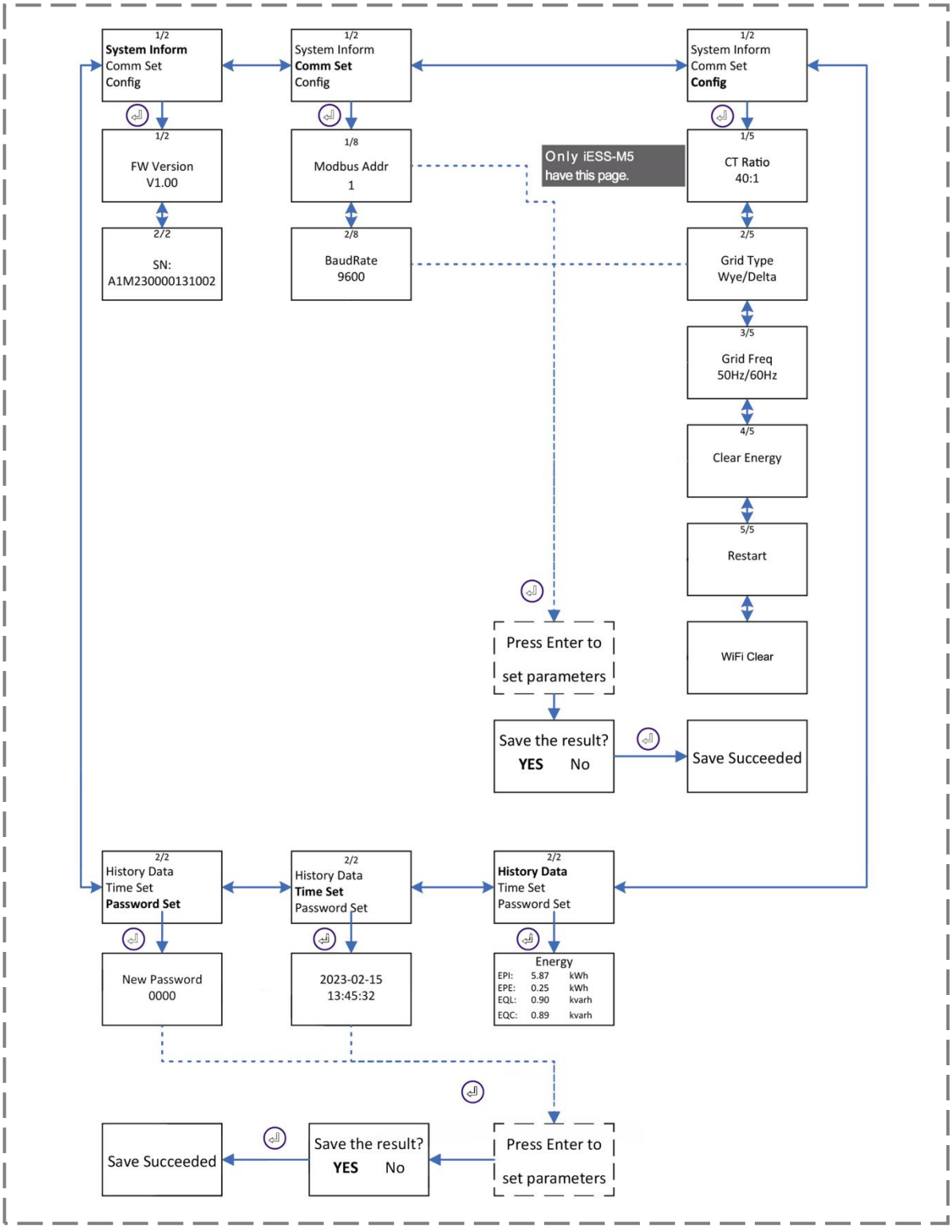



P: -0.03kW
Q: 0.33kvar
S: 0.33kvA
2023-02-15
13:42:37
Frequency
49.96Hz
Power Factor
-0.090
U_L1: 232.2V
U_L2: 234.3V
U_L3: 234.8V
PF_L1: 0.162
PF_L2: 0.115
PF_L3: 0.000
Three-phase Wye Grid type page
U_L12: 404.4V
U_L23: 405.9V
U_L31: 403.5V
S_L1: 0.1kvA
S_L2: 0.1kvA
S_L3: 0.1kvA
I_L1: 0.5A
I_L2: 0.6A
I_L3: 0.5A
P_L1: 0.01kW
P_L2: 0.01kW
P_L3: 0.01kW
Q_L1: 0.1kvar
Q_L2: 0.1kvar
Q_L3: 0.1kvar


P: -0.03kW
Q: 0.33kvar
S: 0.33kvA
2023-02-15
13:42:37
Frequency
49.96Hz
Power Factor
-0.090
Three-phase Detla Grid type page
U_L12: 404.4V
U_L23: 405.9V
U_L31: 403.5V
I_L1: 0.5A
I_L2: 0.6A
I_L3: 0.5A
PF_L1: 0.162
PF_L2: 0.115
PF_L3: 0.000


Input Password
1000
Password page
Under Display interface, press
ENTER to enter the password page
1/2
SystemInform
Comm Set
Config
2/2
History Data
Time Set
Password Set

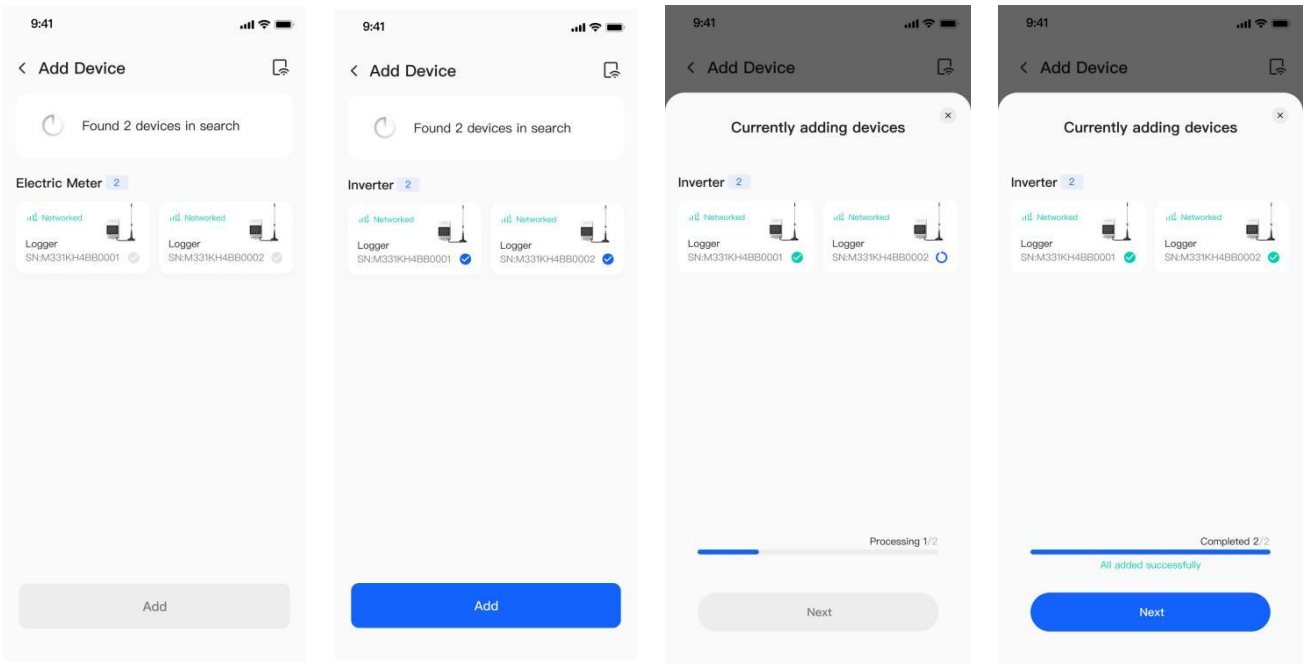
## 5.4 Settings



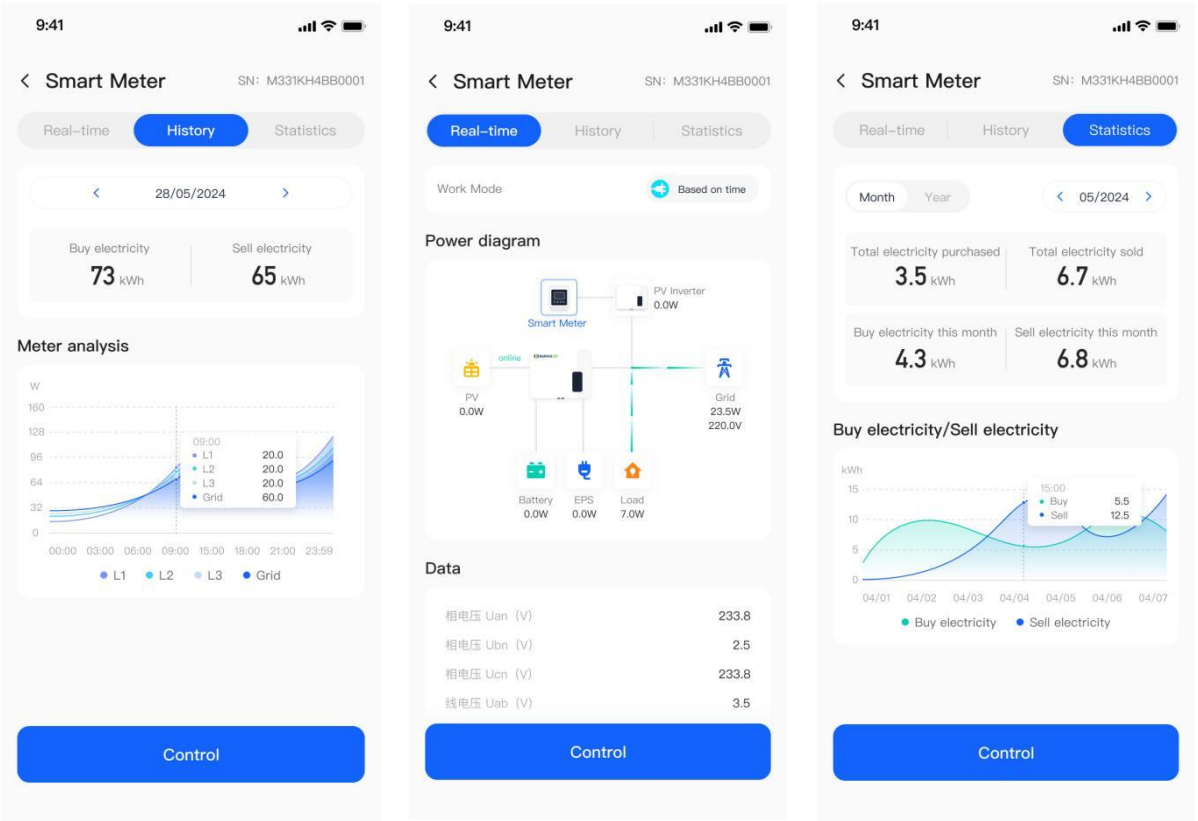

| | |
|---|---|
| **NOTE** | If your CT is 200A/1A then set the ratio to 200:1.<br>If your CT is 800A/5A then set the ratio to 160:1.<br>If your CT is 1500A/5A then the ratio is set to 300:1.<br>And so on, the largest CT supported is 5000A/5A which is 1000:1. |

## 5.5 iESS-M1/M3/M5 WiFi Configuration

Please download the HNAHCU ESS app by scanning the QR code or from the APP Store.
Step 1: Select the home WiFi network you want to connect to (not 5G WiFi) and enter your WiFi password.
Step 2: Turn on your phone's Bluetooth, then select the devices you want to bind. Tap "Add" to add the devices to your station.




Step 3: After the devices are connected to the network and bound successfully, you will see the page shown in Figure.



# 6 Appendix

## 6.1 Technical Parameters

| Model | iESS-M1 | iESS-M3 | iESS-M5 |
|---|---|---|---|
| **Single and power input** | | | |
| **Voltage** | 230/400V, 3~ | | |
| **Frequency** | 50~60Hz | | |
| **Current** | 120A/100mA | 300A/100mA | 5A~5000A/5A |
| **Current overload** | Continue: 1.2 times; instantaneous: 2 times/10 | | |
| **Voltage input impedance** | >1MΩ | | |
| **Accuracy** | | | |
| **Current/Voltage** | 0.5% | | |
| **Frequency** | ±0.01Hz | | |
| **Active Power** | Class 0.5S | | |
| **Reactive Power** | Class 0.5S | | |
| **Energy** | Class 0.5S | | |
| **General data** | | | |
| **Over voltage category** | Ⅲ | | |
| **Dielectric strength** | Resistance from signal, power supply and output terminal to shell > 100MΩ | | |
| **Withstand voltage** | Input and power supply >1.5kV | | |
| **Communication** | WiFi/LAN/BLE | | |
| **Display** | OLED | | |
| **Terminal capacity** | 0.5~4mm$^2$ | | |
| **Size (L*W*H)** | 85*54*75mm | | |
| **Weight** | 150g | | |
| **Protection class** | IP20 (for indoor use) | | |
| **Installation method** | 35mm DIN Rail | | |
| **Operating temperature** | -30~+60℃ | | |
| **Operating humidity** | <95%, No Condensation | | |
| **Operating altitude** | <3000m | | |

## 6.2 Contact Information

Should you have any question about this product, please contact us. We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Date of the device
- Fault code/name
- Brief description of the problem

Android APP

iOS APP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