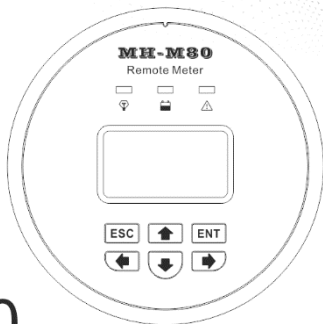


Remote Meter



MH-M80

Installation And Operation Manual

Manufacturer Information

Sigineer Power Limited

Email: info@sigineer.com

TEL: +86 769 82817616

US Warehouse: 4415 S 32nd St, Phoenix,

AZ 85040

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Important safety instructions

Please keep this manual for future reference.

This manual contains the safety, installation and operation instructions of the product.

General safety information

- When receiving the product, please check whether the goods are damaged during transportation. If you find any problems, please contact our company or transportation company.
- Please read the instructions and precautions in the manual before installation to ensure that the product can work normally.
- Do not place this product in the environment of rain, exposure, corrosion and strong electromagnetic interference.
- Avoid water entering the product.
- Do not open the shell of this product for self repair.

1. BASIC INFORMATION

1.1 Product features

The controller remote monitoring display unit is a product developed according to the controller communication protocol and voltage technical standards. This product has many excellent characteristics:

- ▣ Automatically identify and display relevant parameters of connected equipment.
- ▣ OLED real-time display of operation data and working status.
- ▣ Six navigation function keys for intuitive, convenient and fast operation.
- ▣ Directly supply power to the display unit through the controller without additional external power supply.
- ▣ Support real-time data monitoring, remote load switch, data browsing and modification of equipment parameters / charging control parameters / load control parameters, etc.

▀ Based on RS485 communication bus, the communication distance is long.

1.2 Main functions

Through liquid crystal display and function key operation, real-time monitoring of operation data and working status of a single on-line controller, presentation of columnar trend chart of power generation data, browsing and modification of charge and discharge control parameters, setting of equipment parameters/ load control parameters, time correction, and restoration of factory default parameters.

1.3 Specifications and parameters

| Mechanical | Value |
|-------------------|----------------------------|
| Dimension | 80mm diameter, 17.5mm high |
| Mounting hole | 3mm |

| | |
|-------------------------|--------------------------|
| Installation Method | Magnetic suction + screw |
| Communication interface | RJ45 |
| Electrical | Value |
| Supply voltage | 4.8V~5.5V |
| Power Consumption | ≤0.5W |
| Power supply | Connect to controller |
| Communication | RS485 bus |

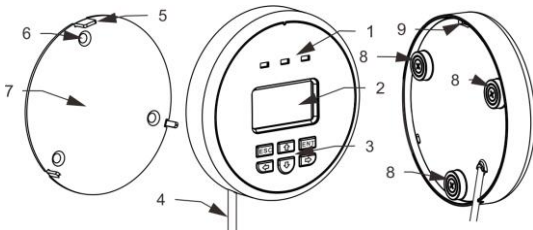
☛ please do not install this equipment in an environment with strong electromagnetic interference.

1.4 Packing list

| | | | |
|-------------------------|-------|-------------------------------------|-------|
| Monitoring display unit | 1 pcs | M3 stainless steel countersunk head | 3 pcs |
| Install the backplane | 1 pcs | M3 countersunk head tapping screw | 3 pcs |

| | | | |
|--------------|-------|------------------------------|-------|
| Instructions | 1 pcs | Expanded colloidal particles | 3 pcs |
|--------------|-------|------------------------------|-------|

1.5 Product features



| | |
|---|-----------------|
| 1 | indicator light |
| 2 | display window |

| | |
|---|-----------------------------------|
| 3 | Operation buttons |
| 4 | Connecting cable |
| 5 | Metal hanging plate limit detent |
| 6 | Metal hanging plate mounting hole |
| 7 | Metal hanging plate assembly |
| 8 | Magnet buckle |
| 9 | Limit slot |

2. INSTALLATION INSTRUCTIONS

2.1 Installation method

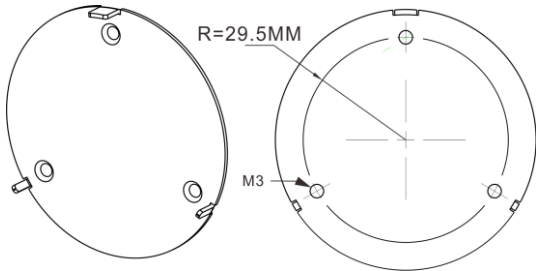
There are two installation methods for this product, which are applicable to different application scenarios.

Application 1: when the MPPT controller is an iron shell or installed on an iron plate, mh-m80 can be directly adsorbed on the controller shell or iron plate through the magnet buckle on the back;

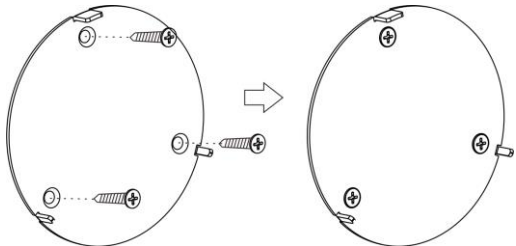
Application 2: when the installation position cannot be magnetically absorbed, it can be installed and fixed through the iron installation hanging plate of the accessories.

2.2 Installation steps of accessory hanging plate

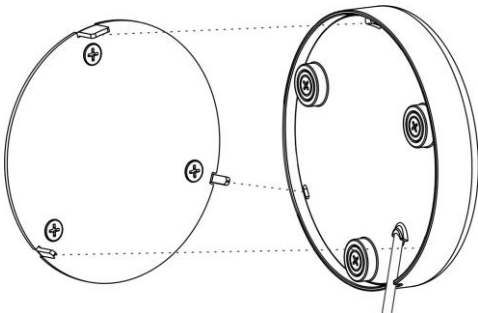
Step 1: place the hanging plate assembly at the position to be installed, mark the hole position on the installation wall, drill 3 holes positions at the marked position, and fill the plastic expansion rubber sleeve (or make 3 M3 screw holes at the marked position).



Step 2: fix the hanging plate assembly on the hole position made in step 1 with counter sunk 3mm self tapping screw or M3 screw.



Step 3: align the limit slot hole on the back of the monitoring unit with the limit snap pin of the hanging plate, to make the monitoring unit adsorb on the hanging plate.






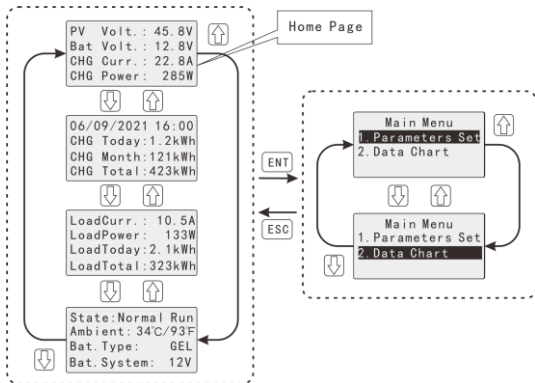
Step 4: connect the RJ45 plug of the connecting cable of the monitoring unit to the RJ45 communication port of the controller. When the display screen is normally on, it indicates that the installation is successful.

3. OPERATING INSTRUCTIONS





- ▀ The default communication address of the monitoring unit is 1. In order to ensure normal communication between the controller and the monitoring unit, please give priority to ensuring that the controller address is consistent with the monitoring unit.
- ▀ In order to synchronize the data of the monitoring unit with the controller, please set the time and date of the monitoring unit.

3.1 Home page and real-time data page





As shown on the left of the figure below, the main dynamic data output is displayed on the home page. You can browse other pages in the figure through the   key. Press  on these pages to enter the main menu interface.

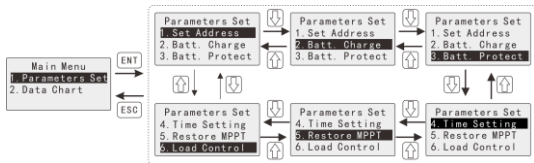


3.2 Main menu page

As shown on the right of the figure above, the main menu page is divided into two function entries: parameter setting and trend chart. Use   key to select the required function item, press  key to enter the selected function page, and press  key to return to the previous page.

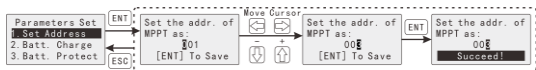
3.3 Page for setting functions

After entering the parameter setting interface, the options of address setting, charging parameter setting, protection parameter setting, time synchronization setting, MPPT controller reset setting and load output mode setting will appear. You can select the required function items by pressing  , press  to enter the selected setting page, and press  to return to the previous page.







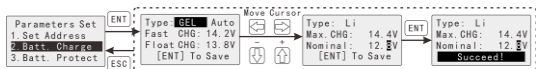
3.3.1 Address setting

The user can use this setting item to modify the device address of MPPT controller (only one MPPT controller can be accessed when using this function, and the same device address will be set if multiple MPPT controllers are connected!), change the value by key, move the cursor position by , press key to save the set parameters, and press key to return to the previous page.









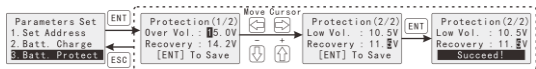
3.3.2 Charging parameter setting

The user can use this setting to modify the charging parameters of MPPT controller, change the value with  , move the cursor with  , press **ENT** to save the set parameters, and press **ESC** to return to the previous page. When the battery type is "GEL", "FLD" and "SEL", the charging parameters are solidified values and cannot be modified. The lead-acid battery is set according to the conversion setting of each 12V battery, and the lithium battery is set according to the actual voltage value of the battery pack.



3.3.3 Protection parameter setting

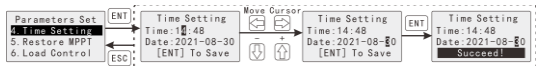
After setting the charging parameters, the user can set the protection parameters, change the value by   key, move the cursor by  , press  key to save the setting parameters, and press  key to return to the previous page.



3.3.4 Time synchronization setting

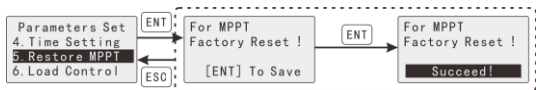
Before the MPPT controller works, be sure to set the time

synchronization of the controller (subject to the local time), change the value with **↑** **↓** key, move the cursor with **←** **→**, press **ENT** key to save the setting, and press **ESC** key to return to the previous page.



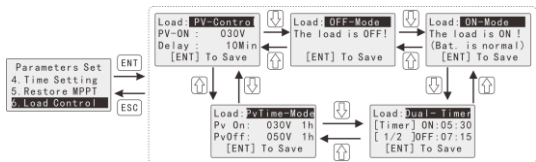
3.3.5 Reset MPPT controller







The user can initialize the controller data, press **ENT** to execute the reset action, and press **ESC** to return to the previous page. When the operation is successful, the power generation/consumption information of the controller, the operation parameter information of the controller, the protection parameter setting of the controller, the charging parameter setting of the controller and the load application setting of the controller will be restored to the factory state.



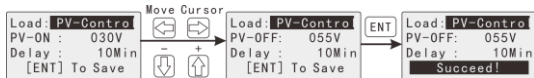
3.3.6 load output mode setting

As shown in the figure below, when the cursor is in the load mode position, you can select different modes by pressing \uparrow \downarrow , move the cursor by pressing \leftarrow \rightarrow , and press **ESC** to return to the previous page.



Select different control modes and different setting content pages will appear. Change the required value by   key, move the cursor by  , press  key to save the setting, and press  key to return to the previous page.

Light control mode:



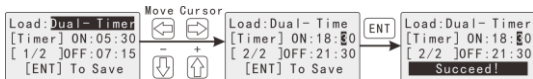
Off mode:



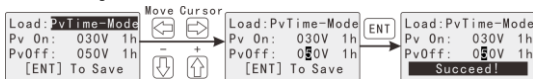
On mode:



Time control mode:



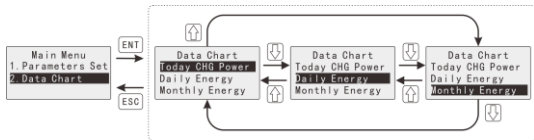
Fixed time light control mode:



3.4 Trend chart function page

As shown in the figure below, the data items of today's charging power, daily power generation and monthly power generation will appear on

the trend chart function page. You can select the required data items by pressing **↑** **↓**, enter the selected data items by pressing **ENT**, and return to the previous page by pressing **ESC**.

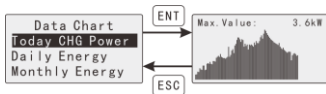


3.4.1 Today charging power trend

As shown in the figure below, press **ENT** to enter the graphical interface. The monitoring instrument will record the generation power track from 6:00 a.m. to 19:00 p.m. every day (the left of the figure starts at 6:00 and the right ends at 19:00 p.m.), and the data will be cleared at 24:00 p.m. every day. The maximum power value is

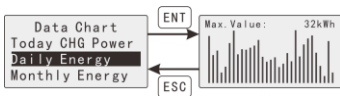
displayed at the top of the graph.

- When the monitoring instrument is disconnected from the controller, the data will be lost



3.4.2 Daily power generation trend

As shown in the figure below, press **ENT** to enter the graphical interface, and the monitoring instrument will obtain the daily power generation data of the last 31 days from the controller for display. The first on the right is today's data, the first on the left is the data of 30 days ago, and the top shows the maximum power generation value of the last 31 days.



3.4.3 Monthly power generation trend

As shown in the figure below, press **ENT** to enter the graphical interface, and the monitoring instrument will obtain the monthly power generation data of the last 12 months from the controller for display. The first on the right is the data of this month, the first on the left is the data before 11 months, and the top displays the monthly maximum power generation value of the last 12 months.



4. STATUS INDICATION

Green: It represents the state of load output. When it is always on, it indicates that it is currently in on mode and on state. When it flashes, it indicates that it is currently in on mode but does not meet the conditions of on. When it is off, it indicates off mode.

Blue: It indicates the charging state: when it flashes quickly, it indicates the fast charging state (CC), when it flashes slowly, it indicates the constant voltage charging state (CV), when it is always on, it indicates that it is in floating charge state (CF) or standby mode.

Red: It will flash when there is a fault but it can still run. It will always be on when the fault causes it to stop working. When it is off, it indicates normal.

5. WARRANTY

Maintenance procedure

Before requiring maintenance, please refer to the user's manual or contact the after-sales personnel by telephone to determine whether there is a problem with the product. If it is confirmed that it is necessary to return to the factory for repair, please express the defective products to our company, prepay the freight and provide the bill information related to the purchase as the warranty basis.

In order to enjoy the quick repair guarantee service, the returned products need to be marked with model number, operating environment data and detailed description of faults; This information is important to address your service requirements. If the equipment is damaged due to improper use or failure to follow the operation manual due to customers, the company will not be responsible!

The repair procedure refers to the above process, repairing products will incur maintenance costs.

6. APPENDIX

RJ45 interface pin definition

| Pin | Function |
|-----|----------------|
| 1 | RS485-A |
| 2 | RS485-B |
| 3 | Dry Contact |
| 4 | Dry Contact |
| 5 | GND(isolation) |
| 6 | GND(isolation) |
| 7 | +5V(isolation) |
| 8 | +5V(isolation) |

