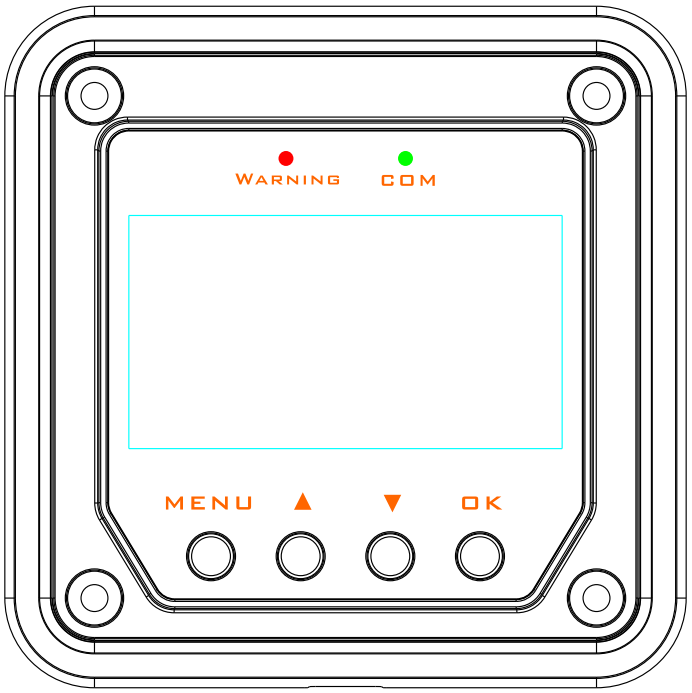
Display-Unit



User Manual

User Manual_Display Unit V1.0_FI
CE, Rohs, ISO9001:2008
Subject to change without notice!

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Dear Clients ,
Thanks for the selecting Display-Unit !
This product manual provides some important recommendations related to the product, including installation, use and troubleshooting.
This manual gives important recommendations for installing and using and so on. Read it carefully in your own interest and pay attention to the safety recommendations in it please.

1. Safety instructions and waiver of liability

1.1 Safety Instructions

■ Please check whether the goods are damaged during transport when you receive the product. If you find problems please contact our company or dealer.
■ Please read all instructions and precautions in the manual before installation to ensure that the product is working properly.
■ There are no user serviceable parts inside the Unit. Do not disassemble or attempt to repair.
■ Keep children away from batteries and the charge controller.

1.2 Liability Exclusion

The manufacturer shall not be liable for damages, especially on the battery, caused by use other than as intended or as mentioned in this manual or if the recommendations of the battery manufacturer are neglected. The manufacturer shall not be liable if there has been service or repair carried out by any unauthorized person, unusual use, wrong installation, or bad system design.

2. Pruduct Overview

Display-Unit is based on the latest communication protocol supporting the development of products adapted to all new Max series.

2.1 It comes with a number of outstanding features, such as:

■Real-time display the operational data and working status of the controller in digital, graphic and textual forms by a large LCD
■Easy to set the controller operating mode and the required parameters
■Automatic identification controller type
■Real-time display of connected devices and voice alarm fault information
■Four navigation buttons, easy to implement various operations
■No external power supply is connected
■ Based RS-485 communication standard modbus communication protocol, to maximize meet the communications needs of different occasions
■Set aside a variety of interfaces, providing a powerful upgrade feature

2.2 Main function and applicable model

Main function

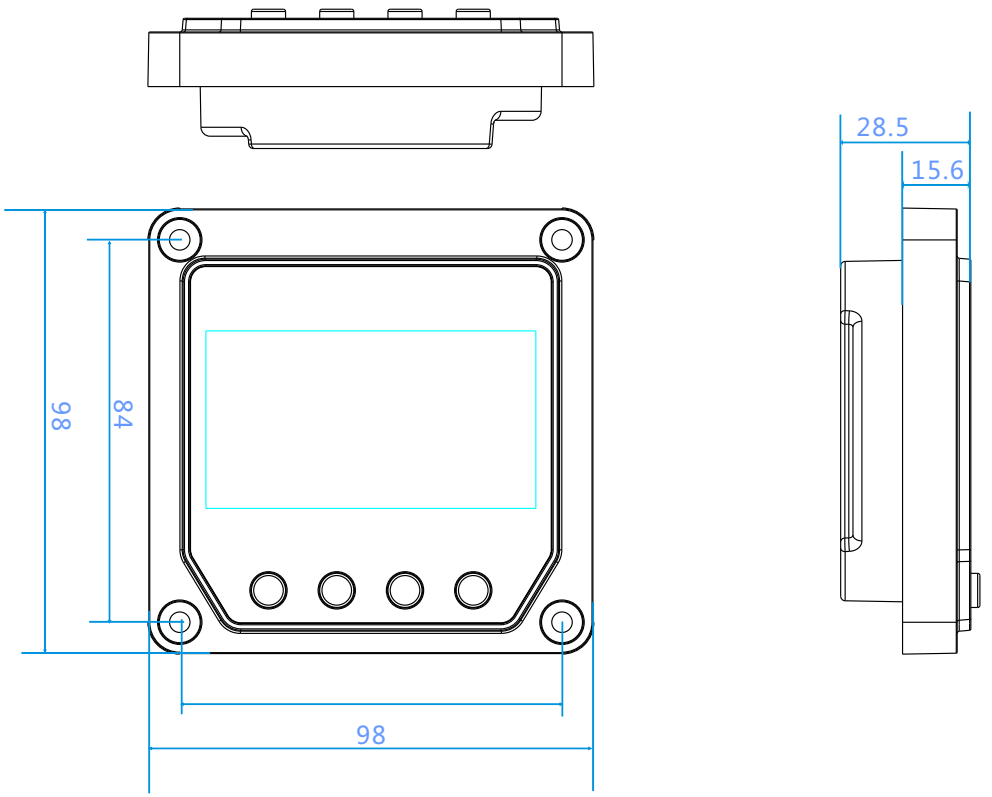
By LCD and function keys to operate, for a single-line controllers for real-time monitoring of operating data and operating state, the charging and discharging control parameter view and modify the device parameters, load control parameter settings, and restore factory default parameter function.

Applicable model

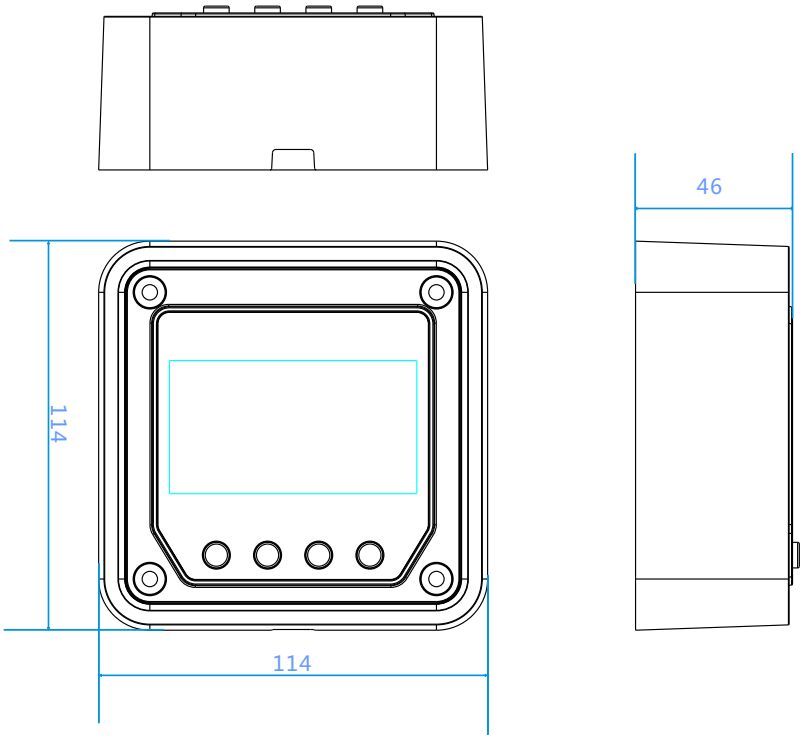
Display-Unit is adapted to the new Max and Max48 series (model suffix uppercase D), such as the old models Max40, the new model for Max40D.

3. Dimensions

3.1 Panel dimension drawings (mm)

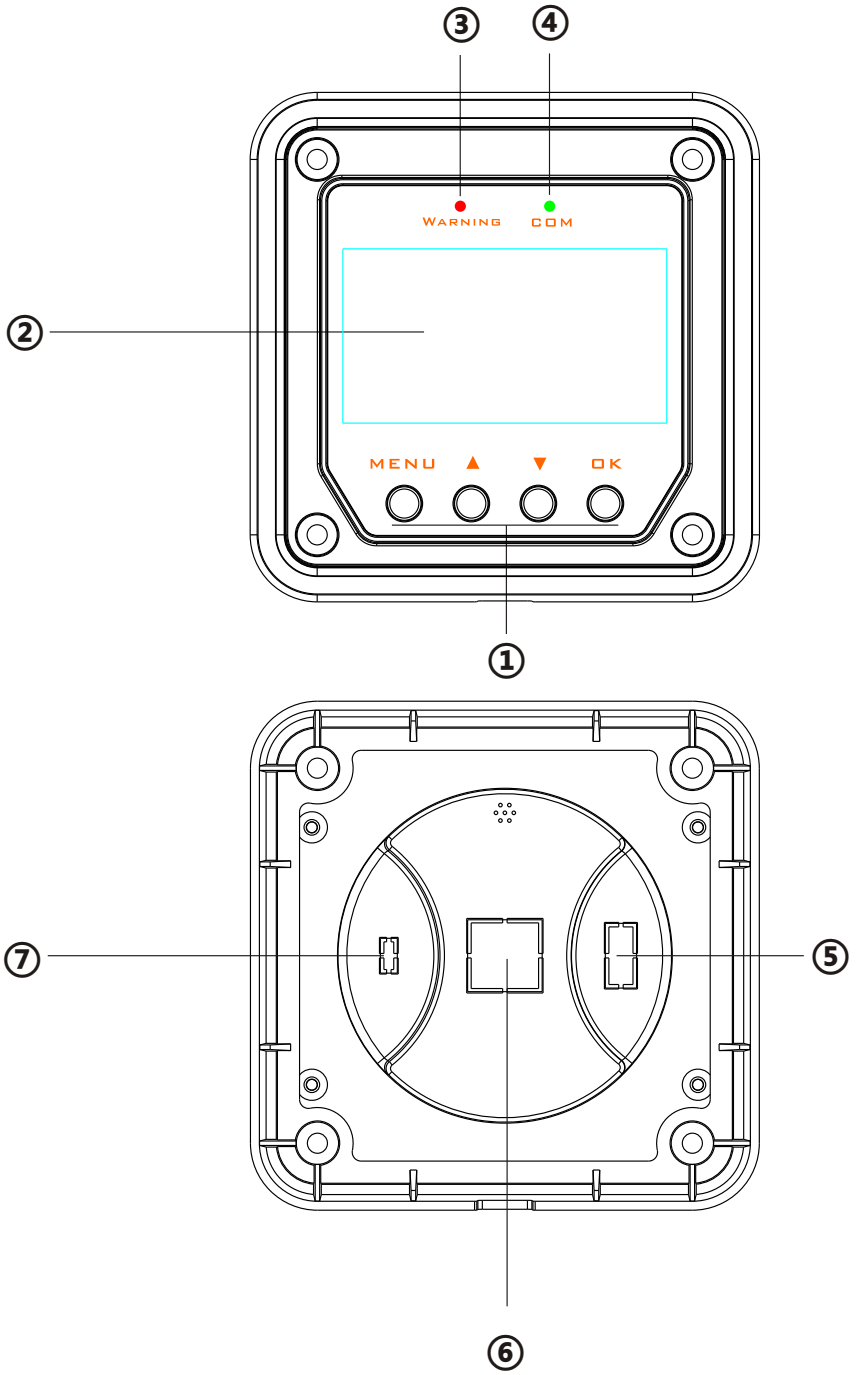


3.2 Assembly dimension drawings (mm)



4. Structure & Accessory

4.1 Structure & Characteristics



①Function buttons
Menu, Selection and Ok

②LCD screen
Real-time display the operational data and working status of the controller in digital, graphic and textual forms

③Fault LED (Warning)
The LED flashes if connection is fault

④Connection LED (COM)
The LED is on if Connection is ok

⑤USB port (Reserved)

⑥RJ11 port

⑦Mini USB port (Reserved)

4.2 Optional Accessories

1.Standard RJ11 cable (3m) - connect between the DU and the controller
2.Four M5 * 80 self-tapping screws and plastic expansion plugs -for wall mounting use
3.Four M5 * 50 self-tapping screws and plastic expansion plugs - for surface mounting use

5. Installation

CAUTION: Please read all instructions and precautions in the manual before installing!

5.1 Installation Notes

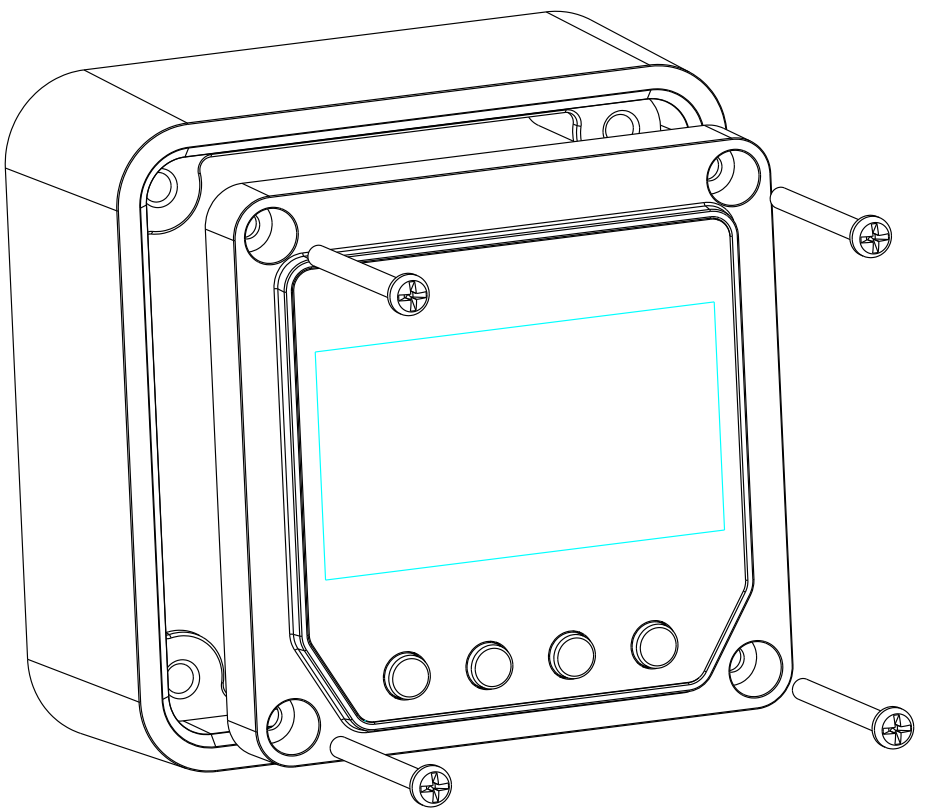
Do not mount the product outdoors or in wet rooms. Do not subject the product to direct sunshine or other sources of heat. Protect the product from dirt and moisture. Mount upright on the wall on a non-flammable substrate. Maintain a minimum clearance of 15cm below and around the device to ensure unhindered air circulation.

5.2 Wall mounting

Step 1: According to the pan installation sizing, hole and install the plastic expansion plugs (Φ8 * 40mm)

Step 2: The bottom case and the panel assembly

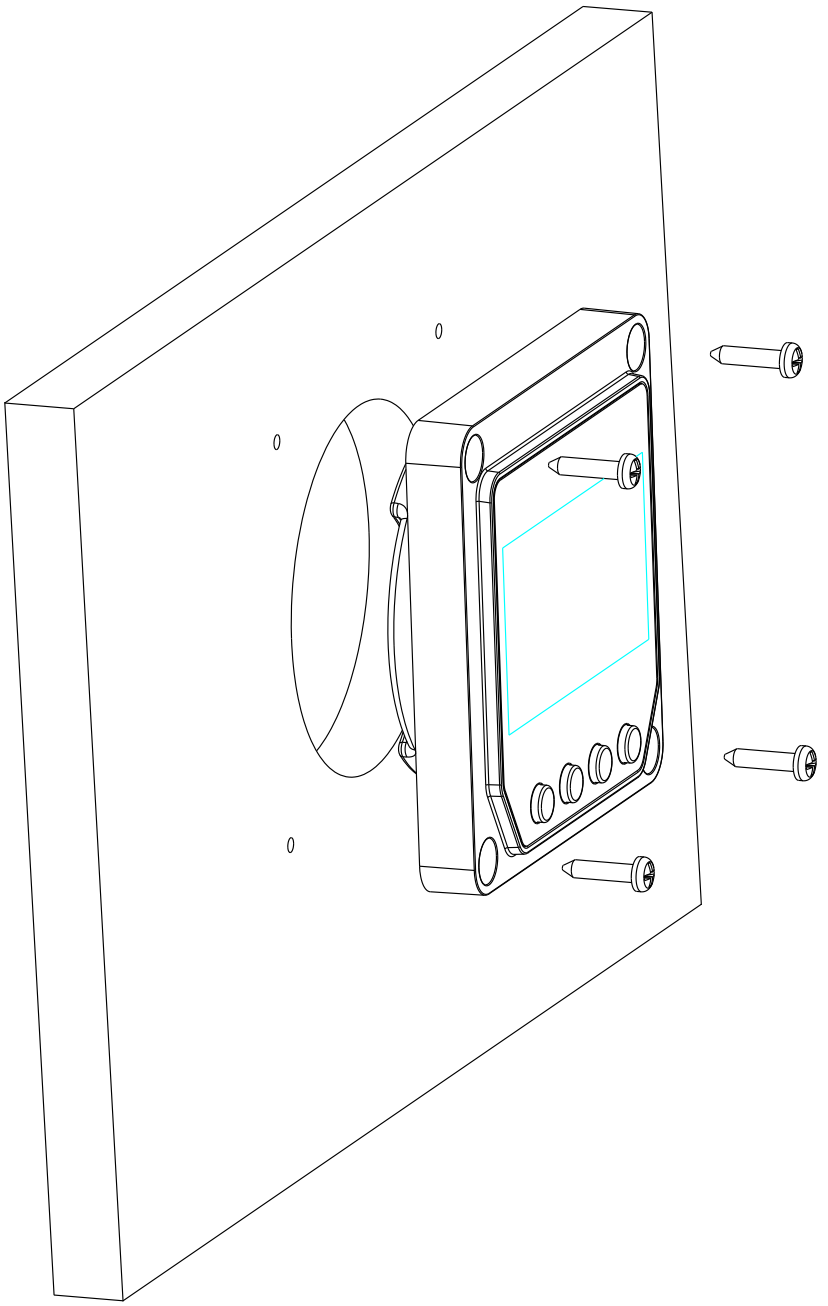
Step 3: Use four M5 * 80 self-tapping screws to fit a fixed wall



5.3 Surface Mounting

Step 1: The panel installation sizing, hole and install the plastic expansion plugs (Φ8 * 40mm)

Step 2: Use four M5 * 50 self-tapping screws DU panel mounted to the surface



Note:

1. The user can also be determined according to their installation usage.
2. When installation, Please consider if the communication cable swap space and cable length are appropriate

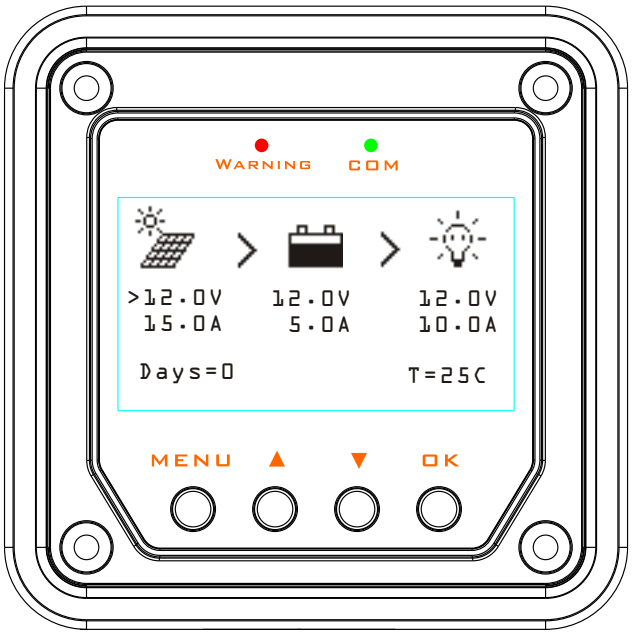
6.Start-up

Using a standard RJ11 cable (3m) connecting the DU and the controller!

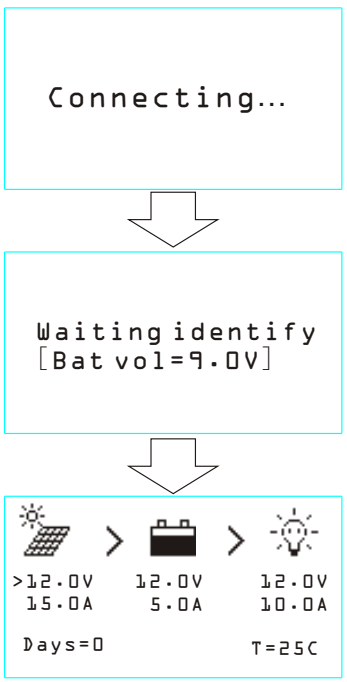
6.1 Connection start

If the green LED on the DU (COM) light after connecting, it's normal, as LCD display shown in picture, different situations showed in the initial interface 7.1

Once connected, if the red LED (Warning) indicates that the controller fails, the bottom of the LCD screen will display the fault message, first troubleshooting, reference 7.2.



After interface startup sequence is shown below:



The controller can not recognize the system voltage, there will be this show! Make sure that the system voltage is correct!

6.2 Initial Settings

1.**Battery type:** Possibilities for programming：Liquid/Gel，Default: Liquid
Menu：Menu—1.System config—#1.Battery type—Liquid/Gel
Refer to: 8.4 System parameter settings.

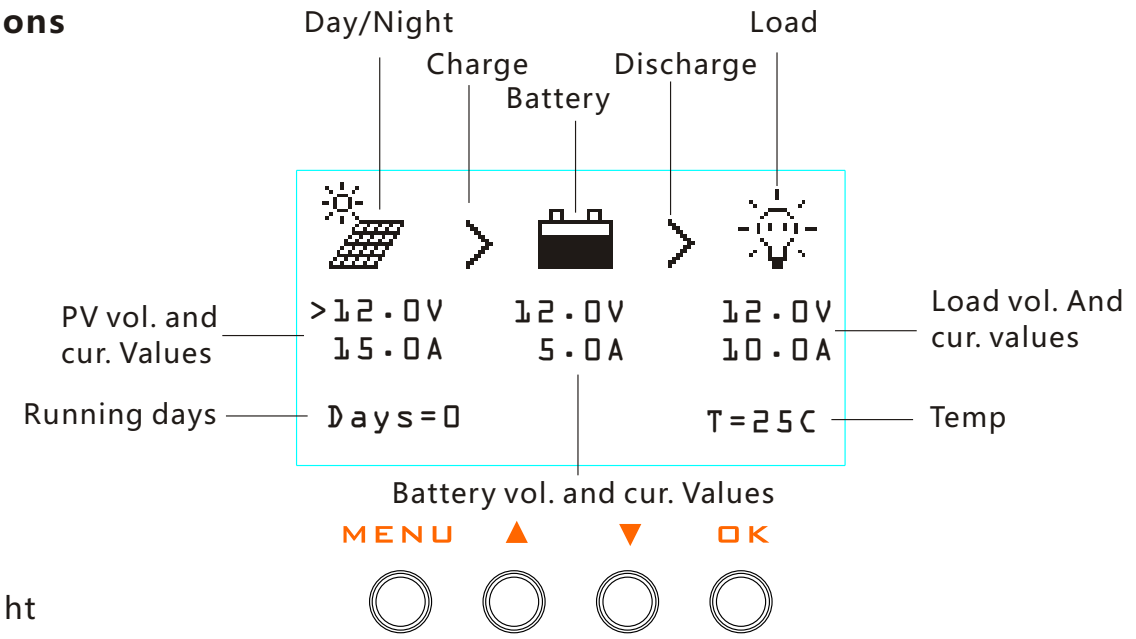
2.**Nominal capacity：**Possibilities for programming：10Ah-9990Ah，Default: 300Ah。
Menu：Menu—1.System config—#2.Capacity—0300Ah
Refer to: 8.4 System parameter settings.

3.**Date/time：**
Menu：Menu—4.Device info—#1.Year/Date/Time
Refer to: 8.7 Device information

Note: All the default settings are appropriate for most systems, but in order to ensure the normal operation of your system, we recommend that you carefully read this manual, change the settings you want!

7.Initial interface

7.1 Initial interface and icons



Day/Night icons

-Day , -Night

Charge icons

The icon is dynamically if there is charge current.

Battery icons

-10~30% , -30%~50% , -50~70% , -70~90% ,

<10% or Low voltage , Full power, float >90% ,

Discharge icons

The icon is dynamically if there is discharge current.

Load icons

-Load on , -Load off

PV voltage and current Values

Shows the input voltage and current values of PV module.

Battery voltage and current Values

Shows the voltage and current values of Battery.

Load voltage and current Values

Shows the voltage and current values of Load.

Running days

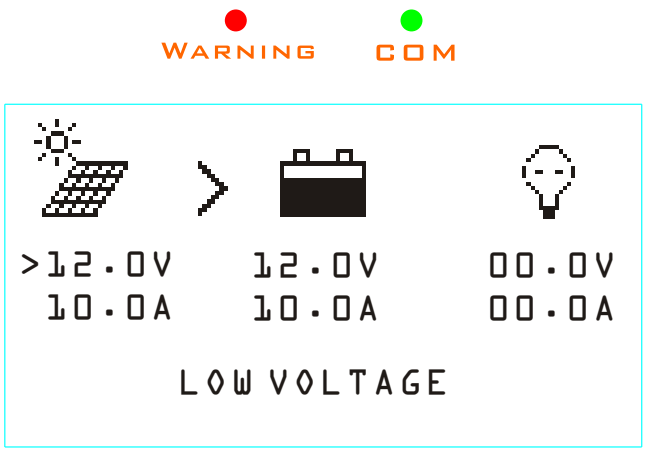
Shows the running days of controller.

Temp

Shows the temperature of controller.

7.2 Fault information

If the controller is faulty, the display module will indicate the fault information:
Red LED (Warning) flashes, the bottom line of LCD display fault information.



1. Low Voltage—Low voltage Protection

2. Over Current—Discharge current is greater than 1.1 times the rated current

3. Short Circuit—Load short circuit

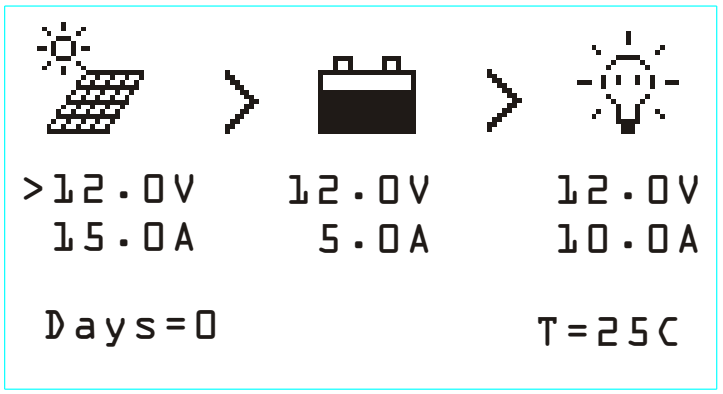
4. Over Voltage—Battery voltage is greater than 16.5V/33.0V/66.0V

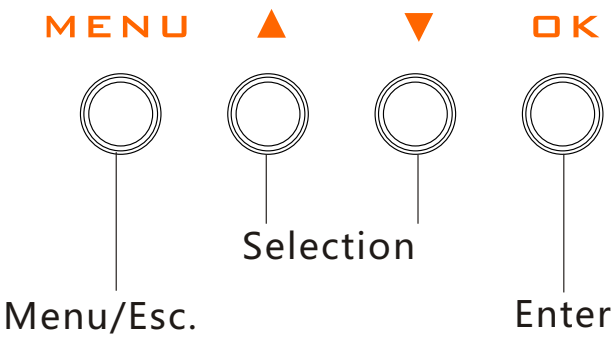
5. Over Temp—The controller temperature exceeds 90 degrees

6. Solar Short—PV short circuit

8. Operating

8.1 Defined buttons





Menu/Esc. Button

MENU

In the initial interface, press the Menu button, you can directly enter the menu interface;

Below use the " ⇨ " to indicate

Enter button

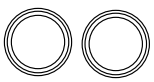
OK

Press the Enter button, you can enter the next level menu or confirm the selections.

Below use the " ➡ " to indicate

Selection button

▲ ▼

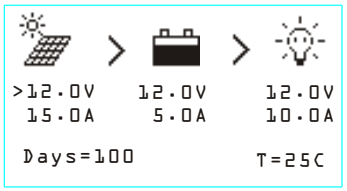


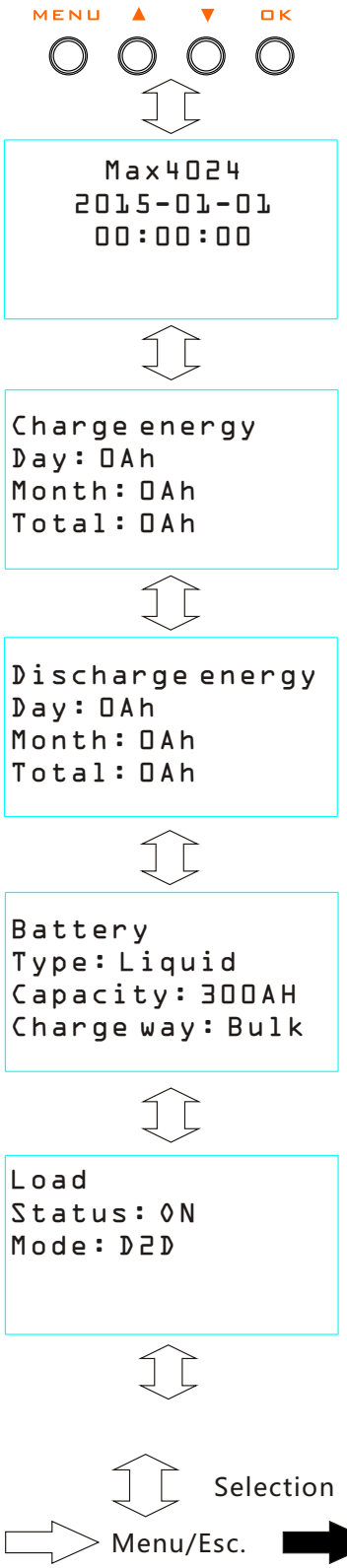
Respectively up / down Selection buttons, you can navigate menus or select

Below use the " ⇕ " to indicate

Note: If no operation within 30 seconds, the display will revert to the initial interface!

8.2 Real-time monitoring information overview

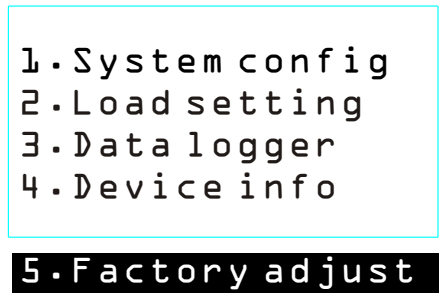


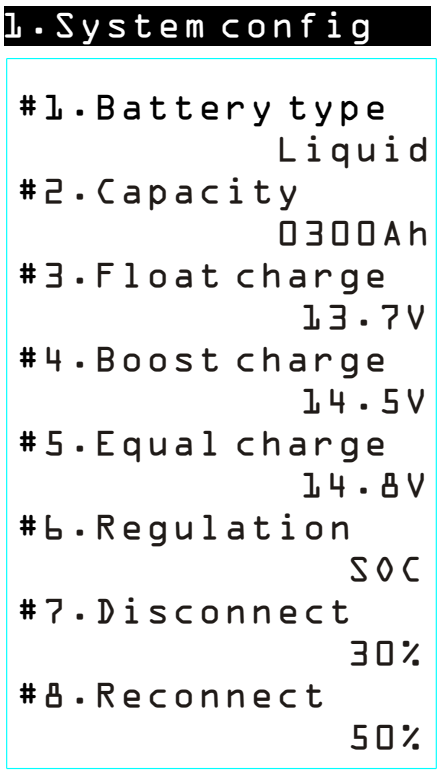


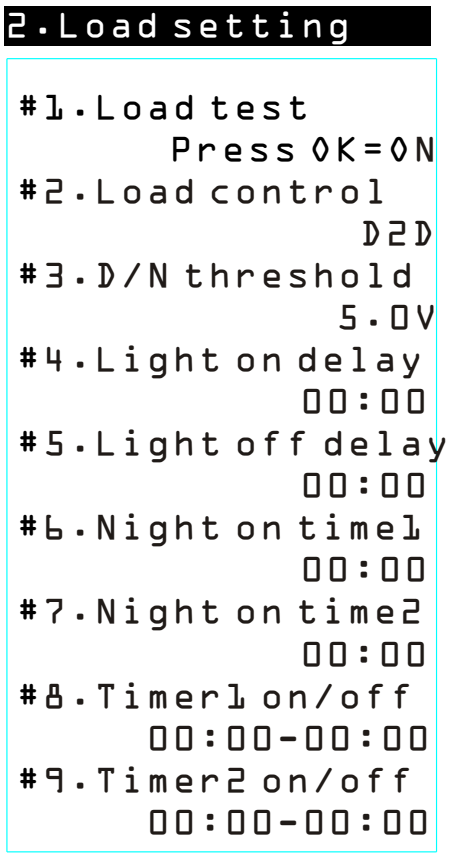
In the initial interface, press "up/down selection button", followed by the display information:
Controller type and date / time - Charge energy - Discharge energy - Battery - Load information
As shown below!

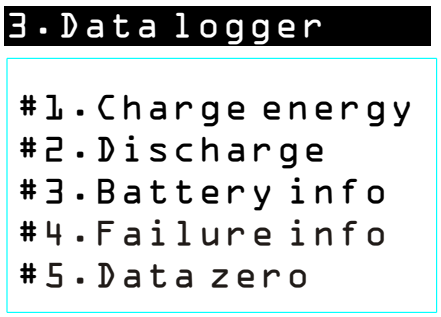
8.3 Menu overview

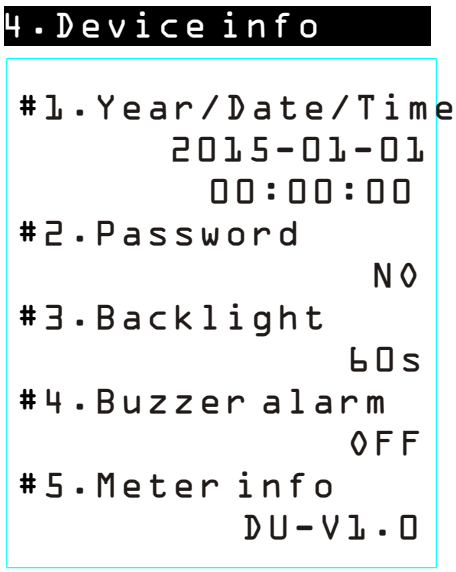
This figure includes all menus, menu items and corresponding default values, can be used as a reference for future reference!



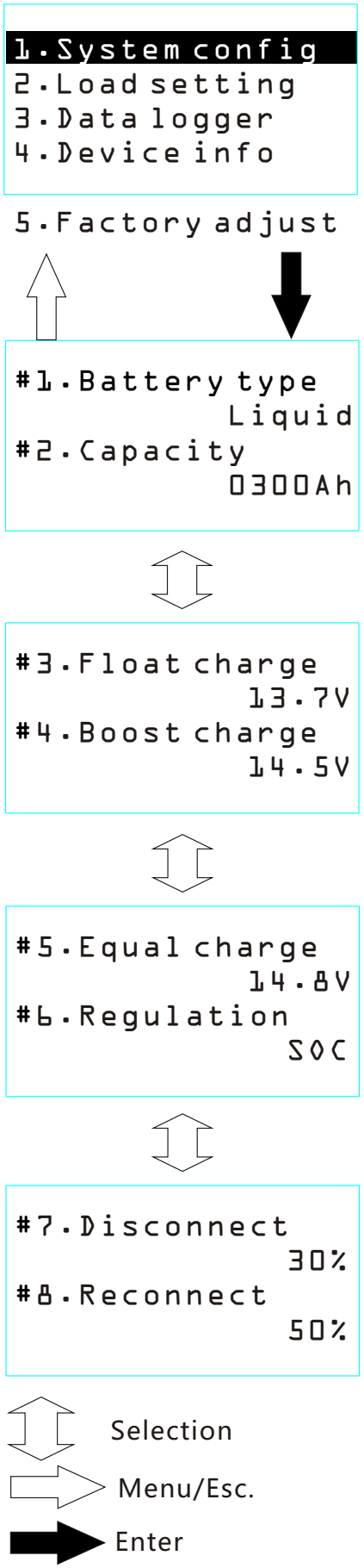








8.4 System parameter settings



1.Battery type selection: Press the **OK** button to enter the menu, you may toggle between ▲▼ Gel to liquid electrolyte.
Possibilities for programming: Liquid/Gel (Default: Liquid).

2.Battery nominal capacity: Press the **OK** button to enter the menu, press selection button ▲▼for changing the nominal capacity and press **OK** for entering the new value.
Possibilities for programming: 10-9990Ah (Default: 300Ah).
Note: The nominal capacity must be consistent with the actual battery

3.Float voltage settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
Programming: 13.0-14.5V/12V , *2/24V , *4/48V ,
Default: 13.7V/12V , 27.4V/24V , 54.8V/48V

4.Boost voltage settings: Press the OK button to enter the menu, press ▲ ▼ to change the value.
Programming: 14.0-15.0V/12V , *2/24V , *4/48V ,
Default: 14.5V/12V , 29V/24V , 58V/48V

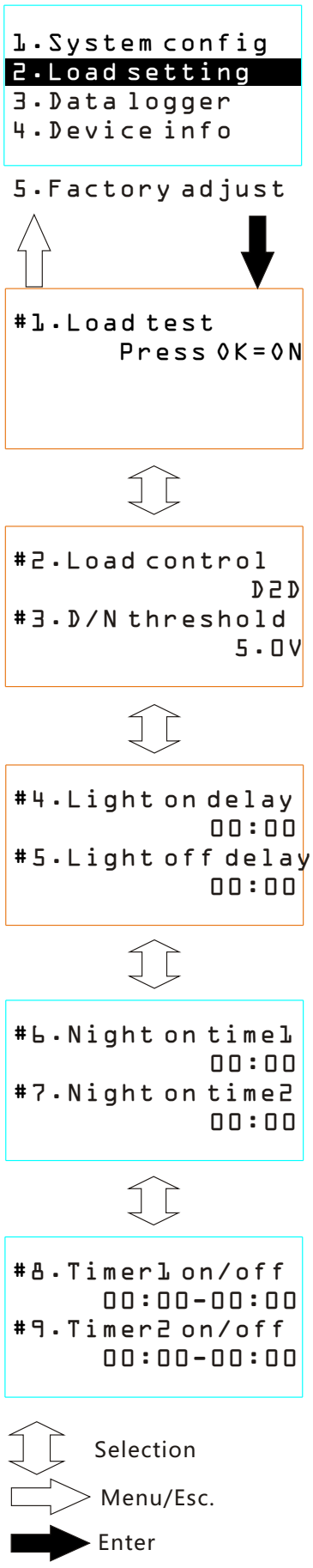
5.Equal voltage settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
Programming: 14.0-15.5V/12V , *2/24V , *4/48V ,
Default: 14.8V/12V , 29.6V/24V , 59.2V/48V
Note: The fast charge voltage is fixed at 14.0/28.0/56.0V, users do not have their own set.

6.Low voltage protection mode settings: Press the **OK** button to enter the menu, and switch with the keys ▲ ▼ between **SOC** and **Voltage**.
Programming: SOC/Voltage ,
Default: SOC

7.Low voltage disconnect settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
Possibilities for programming by SOC: 20%-70% , Default: 30%
Programming by voltage regulation: 11.0-12. 5V/12V , *2/24V , *4/48V ,
Default: 11.1V/12V , 22.2V/24V , 44.4V/48V

8.Low voltage reconnected settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
Possibilities for programming by SOC: 40%-90% , Default: 50%。
Programming by voltage regulation: 11.8-13.3V/12V , *2/24V , *4/48V ,
Default: 12.6V/12V , 25.2V/24V , 50.4V/48V。

8.5 Load parameter settings

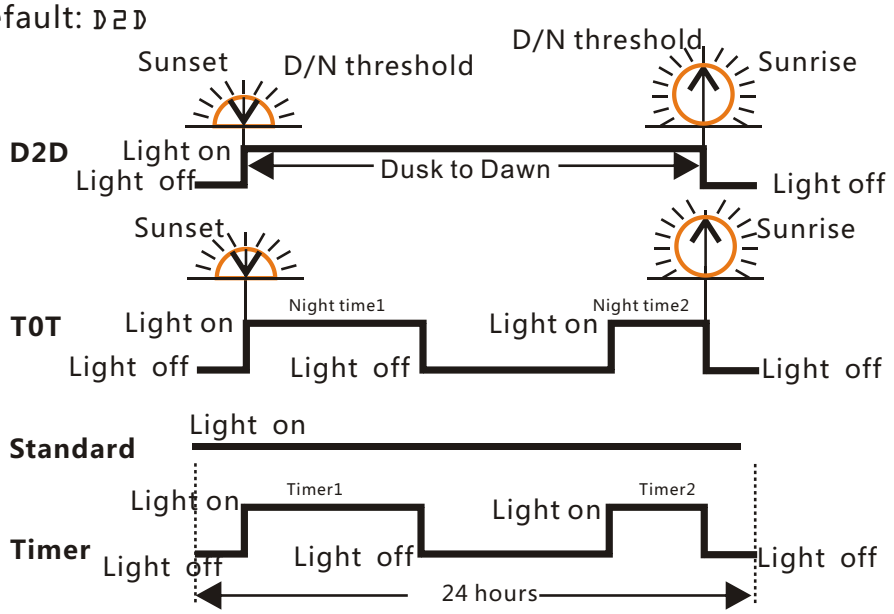


1.Load test: press the OK button to open the load - LCD show "Load testing" -- In this state, press the Menu button to turn off the load.

Note: If the load is already on, this load test function is disabled!

2.Load mode settings: Press the **OK** button to enter the menu, and press ▲ ▼ to change the load mode. Programming: "Standard" 、 "D2D" 、" TOT" "Timer"

Default: D2D



3.Day/Night threshold settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.

Programming: 3.0-7.5V/12V , *2/24V , *4/48V ,

Default: 5.0V/12V , 10.0V/24V , 20.0V/48V。

4.The time delay of load open settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.

Programming: 00:00-02:00(Internal 5min) ,

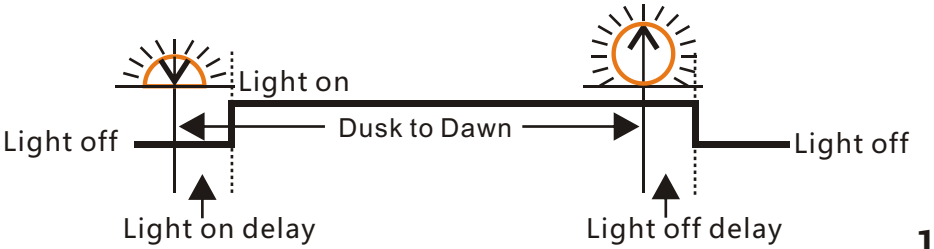
Default: 00:00

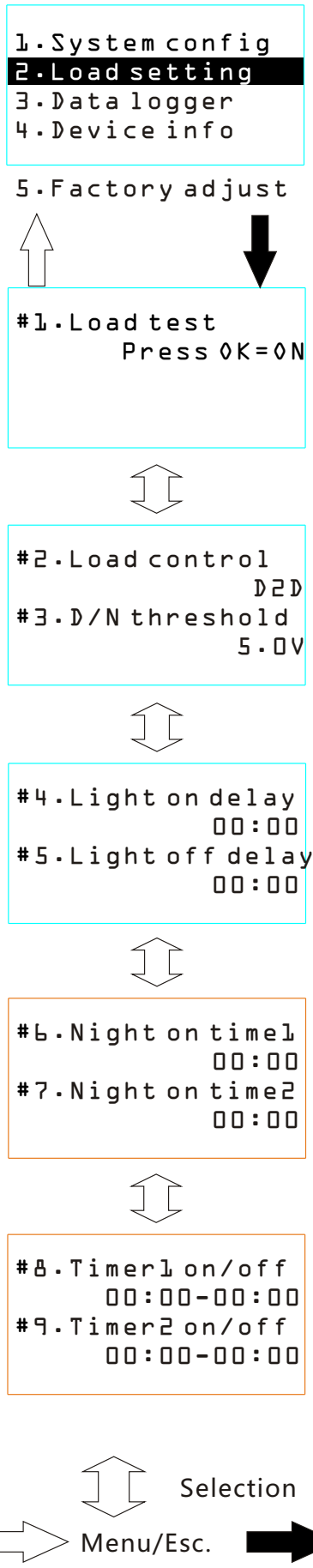
5.The delay time of load close settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value.

Programming: 00:00-02:00(Internal 5min) ,

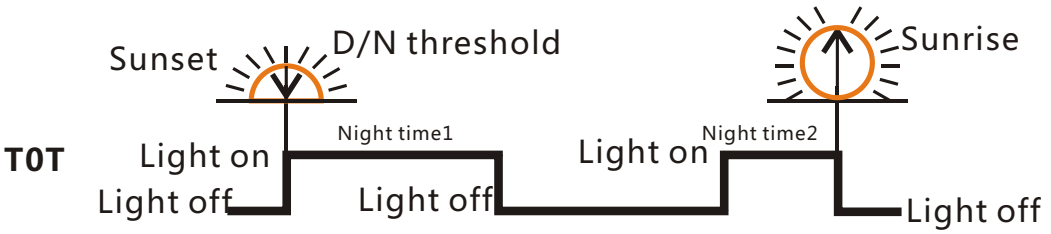
Default: 00:00。

Note: When the controller is set to "Standard"/ "Timer" ,"Light on delay" and "Light off delay" have no effect on it.



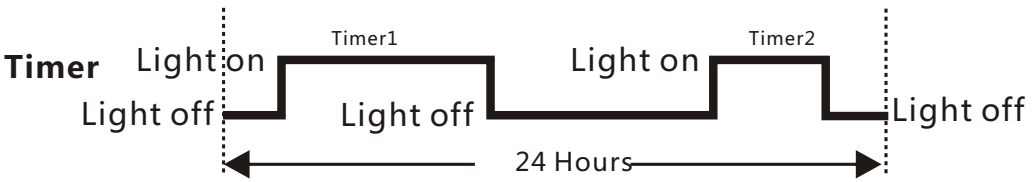


6.Night time 1 settings : Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
When the "Load control" is set to "TOT", "Night time 1"is the first period of time for the load lighting.
Programming: 00:00-09:00(Internal 15min) ,
Default: 00:00



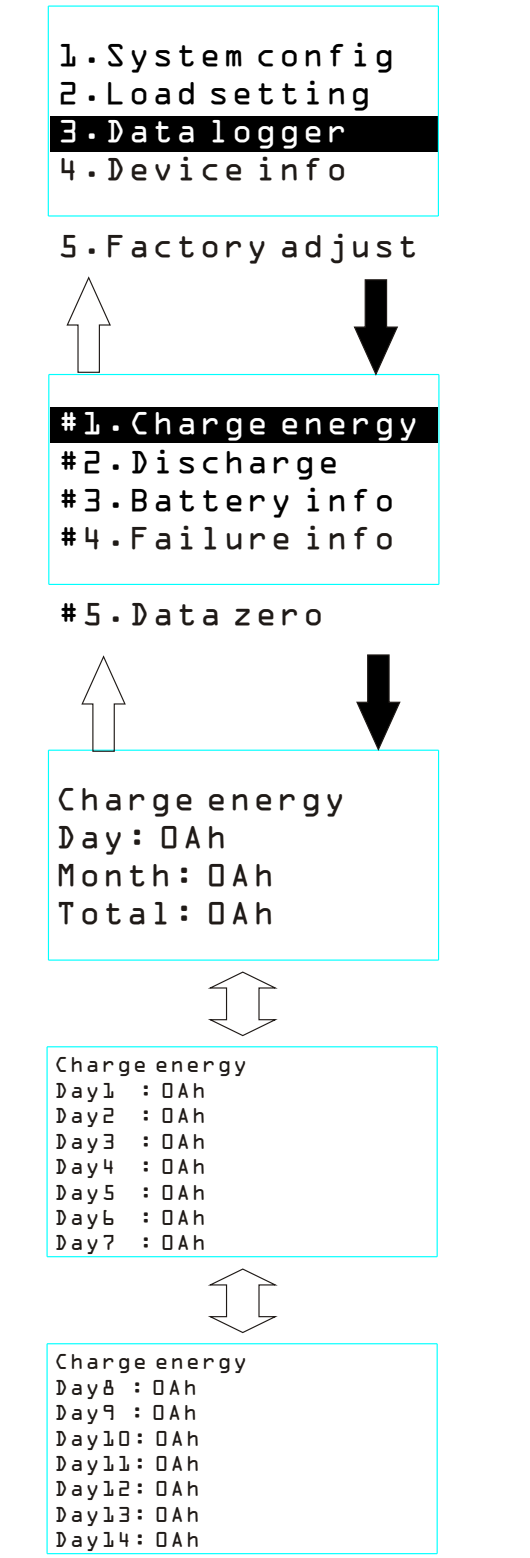
7.Night time 2 settings : Press the **OK** button to enter the menu, press ▲ ▼ to change the value.
When the "Load control" is set to "TOT", "Night time 2"is the time for the early morning arrival.
Programming: 00:00-09:00(Internal 15min) ,
Default: 00:00

8.Timer 1 on/off setting: Press the **OK** button to enter the menu, press ▲ ▼ to change the value. Note: In this setup, when you press the Menu button to exit can also be saved values.
Programming: 00:00-23:59 ,
Default: 00:00。



9.Timer 1 on/off setting: Press the **OK** button to enter the menu, press ▲ ▼ to change the value. Note: In this setup, when you press the Menu button to exit can also be saved values.
Programming: 00:00-23:59 ,
Default: 00:00。

8.6 Data logger



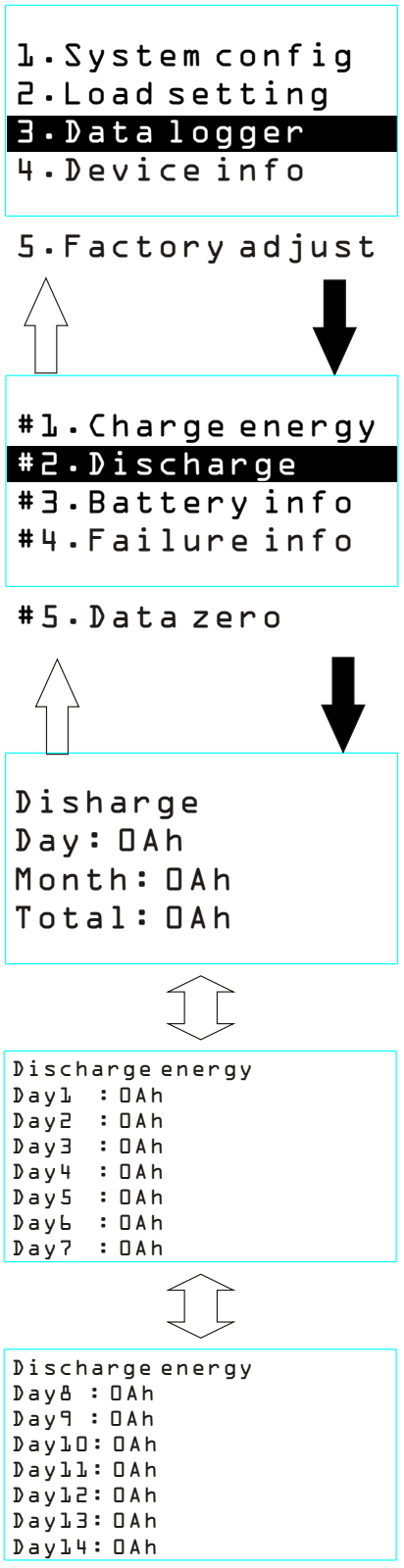
1.Charge energy information：press OK to enter the menu, browse Press ▲ ▼

The first screen display:
-Day charge amount
-The amount of the monthly charge, according to count 30 days ago
-The total amount of charge is accumulated since the installation of the controller

Second and three-screen display:
-Daily charge amount for past two weeks

Note: "Day" simply stands for today and "Day 1" for the day before, "Day 2" means two days ago. When a new day of logging starts, the data for each of "**Day**" to "**Day 13**" will be shifted to the previous day, i.e. the 14th day data will be replaced with the data for the 13th day, 13th day replaced by 12th day, etc.

Note: All historical data will be cleared only when the user do it manually.



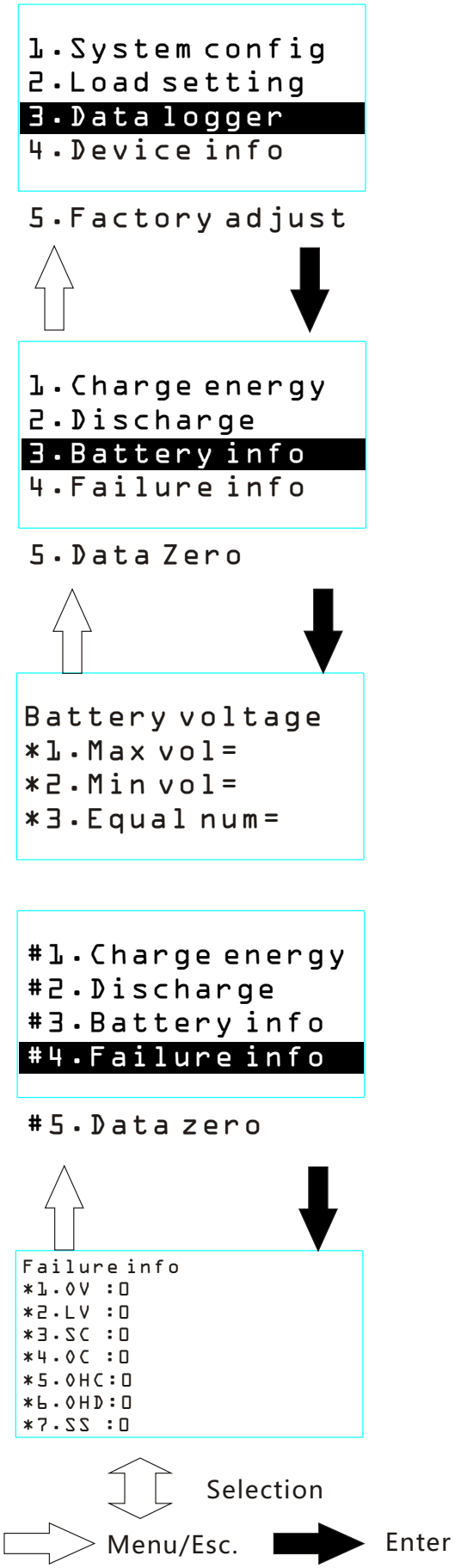
2. Discharge energy information : press OK to enter the menu, browse Press ▲ ▼

The first screen display:
-Day discharge amount
-The amount of the monthly discharge, according to count 30 days ago
-The total amount of discharge is accumulated since the installation of the controller

Second and three-screen display:
-Daily discharge amount for past two weeks

Note: "Day" simply stands for today and "Day 1" for the day before, "Day 2" means two days ago. When a new day of logging starts, the data for each of "**Day**" to "**Day 13**" will be shifted to the previous day, i.e. the 14th day data will be replaced with the data for the 13th day, 13th day replaced by 12th day, etc.

Note: All historical data will be cleared only when the user do it manually.

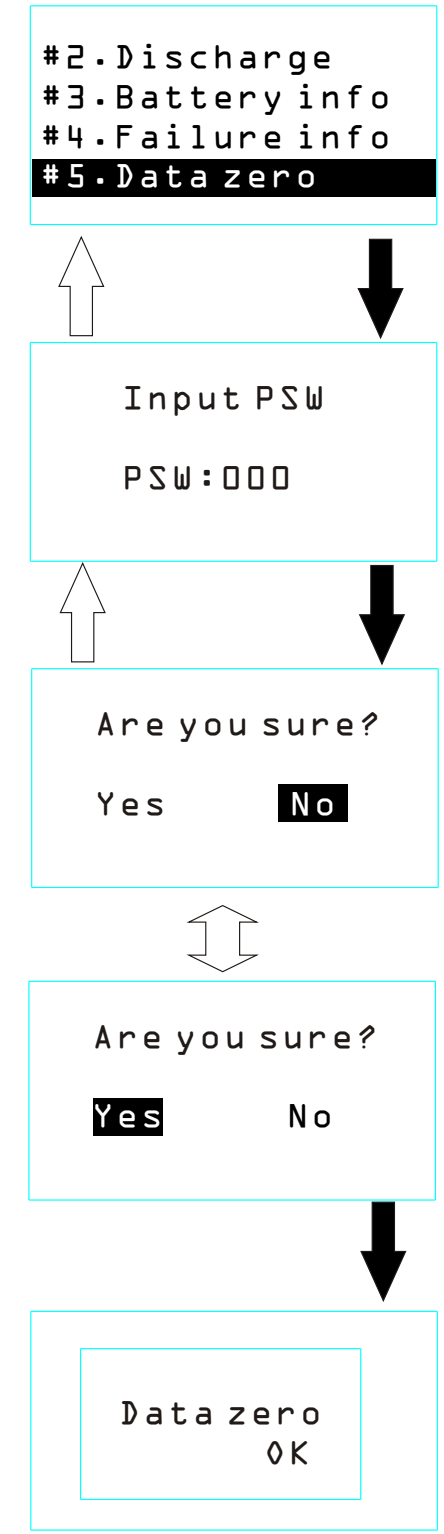


3.Battery infomation：press OK to enter the menu.

*1.Max voltage of Battery
*2.Min voltage of Battery
*3.Times of Equal

4.Failure information：press OK to enter the menu.

*1.Over voltage
*2.Low voltage
*3.Short circuit
*4.Over current
*5.Over temp of charge
*6.Over temp of discharge
*7.Solar Short



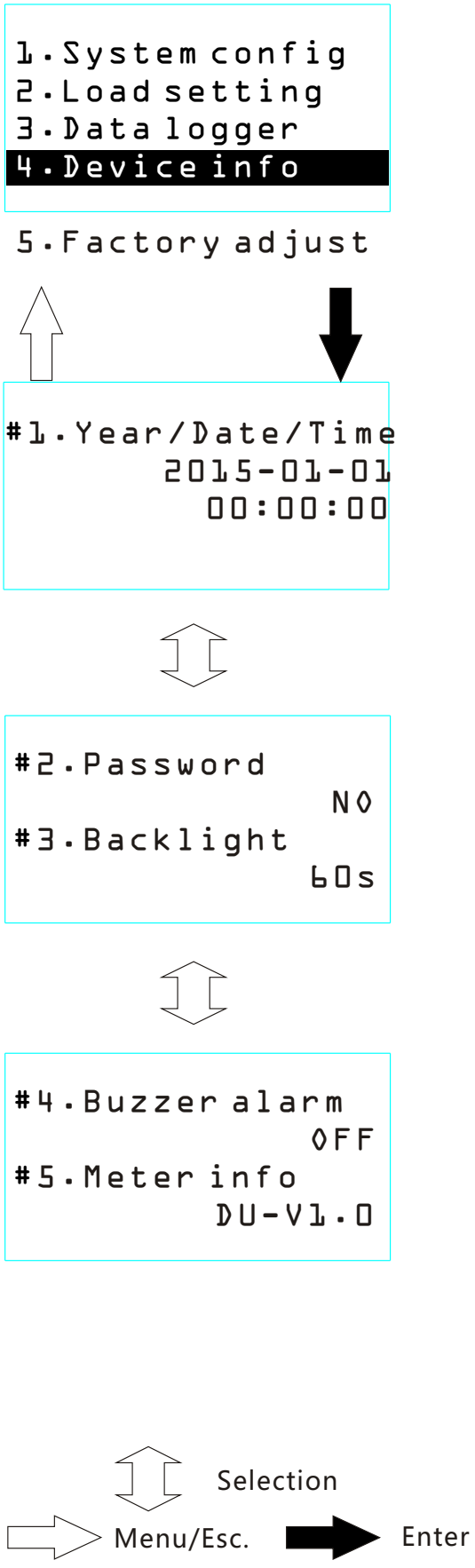
5.Data Zero : press OK to enter the menu—Enter Password—Select Yes/No——Ok or Error

Warning: This function will clear all historical data has been recorded, please caution!

Selection

Menu/Esc. Enter

8.7 Device information



1.Year/Date/Time settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value, then press Ok button to confirm and advance to the next value setting, until the completion of the last item to set the value, press the OK button to save. Note: In this setup, when you press the Menu button to exit can also be saved values.
Note: If the date of manufacture is 2015, the date of default is 2015-01-01 , Please note that when using this product to make changes.

2.Password settings : Press the **OK** button to enter the menu, press ▲ ▼ to change the value, then press Ok button to confirm and advance to the next value setting, until the completion of the last item to set the value, press the OK button to save.
Default : 000

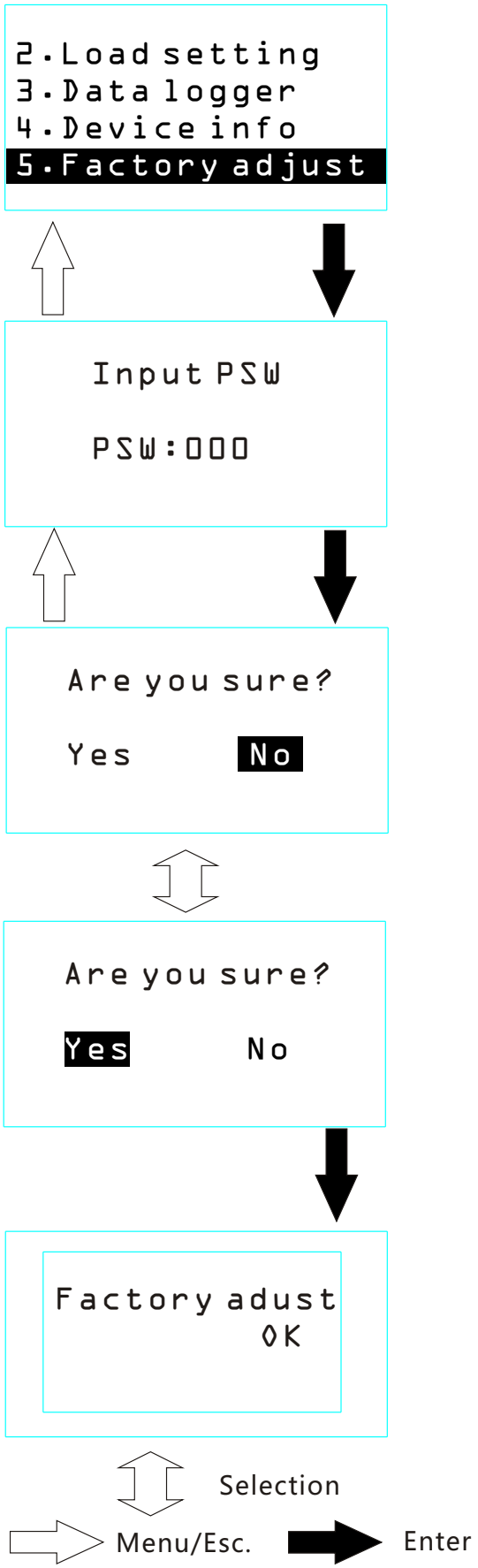
NOTE: If you forget the password, you can press Menu and Ok buttons at the same time for 2 seconds to restore the original password.

3.Backlight time settings : Press the **OK** button to enter the menu, press ▲ ▼ to change the value, then press Ok button to confirm and advance to the next value setting, until the completion of the last item to set the value, press the OK button to save.
Programming : 0-60s ,
Default: 60s—If no operation within 60 seconds, the backlight will be off.

4.Buzzer alarm settings: Press the **OK** button to enter the menu, press ▲ ▼ to change the value, press the OK button to save.
Programming : On/Off
Default : Off

5.DU information: This display DU version, can not be changed.

8.8 Factory adjust



5.Factory adjust :

press OK to enter the menu—Enter Password—Select Yes/No——Ok or Error

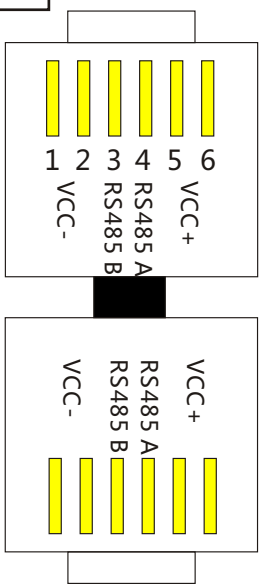
Warning: This function will restore all controller parameters to the factory settings, please caution!

9. Datasheet

Panel dimensions	98*98mm
Frame dimensions	114*114mm
Communication Interface	RJ11
Cable length	3m
Weight	185g
Working temperature	-10℃~+60℃

Data cable pin definitions-RJ11

Pin No.	Definition
1	VCC-
2	
3	RS485 B
4	RS485 A
5	VCC+
6	



RJ11(Cable) for DU

RJ11(Cable) for Max

10. Warranty

The DU is warranted to be free from defects for a period of TWO (2) years from the date of shipment to the original end user.

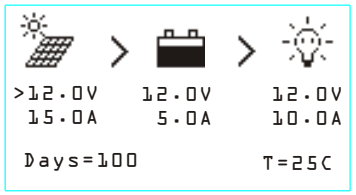
Maintenance procedures:

Before calling service, check user manual to determine the controller does have a problem. If you can not solve a problem with the controller will be delivered back to the company, freight prepaid, and provide the relevant date and place of purchase information. In order to enjoy the detailed reasons for the rapid repair warranty service, return the product must be marked with model number, serial number, and failure, and the type of Module and related parameters, the battery and the load of the system; this information to quickly resolve your maintenance is very important requirement .

If the reason due to customer misuse or failure to follow this manual operation, resulting in damage to the controller, the Company shall not be responsible!

Appendix 1, additional way of Menu to editing

Initial interface



This DU provides direct access from the menu to edit menu: As shown in the display, press the up or down to select the button to enter the browser menu, then press Ok button again, it will directly enter the edit menu, press the Menu button quit the editing.