Description:

Our multifunctional meter can measure DC voltage, current, power, charge and discharge capacity, watt, time, and other physical quantities. It has over-current protection, overvoltage protection, under-voltage protection and time-limited protection by setting parameters. The meter is very suitable for monitoring output voltage and current, battery charging and discharging.

Product Features:

- Wireless transmission data can be used between the meter and the tested module, which can reduce the cumbersome wiring and avoid errors caused by line loss. The furthest communication distance is 10 meters. You can also use standard USB cable for wired communication, and the length of the line can be extended to 1200m due to the 485 communication.
- Bidirectional Current Detector: the user who detects battery charging and discharging can easily detect bidirectional current without changing the wiring.
- Power-off Memory Function: when power off, the meter can remember various settings, Ah, watts and time which are saved before power off. And please note that you need to press the OK button to save parameters before power off.
- It can display voltage, current, power, charge capacity, discharge capacity, watt and time simultaneously; all information are displayed fully clear.
- This meter has over-current protection, overvoltage protection, under-voltage protection, time-limited protection (extending relay working time) and other functions.
- Ah, watt and time reset function will not affect the next measurement.
- You can set address and channel individually for each machine to avoid interfering with each other.
- The use of multiple machines simultaneously, the machine can be set individually for each channel to avoid mutual interference.
- There are functions of screen lock, timing closure, brightness adjustment and function of changing language display.

Technical Specifications:

-Specification	Parameter
Voltage measuring range	0.01~120V
Voltage accuracy	0.01V
Voltage error	±1%+2 figures
Current measurement range	0-100A
Current accuracy	0.1A
Current error	±2%+5 figures
Power measurement range	0~200KW
Capacity measurement range	0~2000KAH
Watt measurement range	0~4000KWH
Time measurement range	0~999Days
Address range	A01~A99
Wireless channel setting range	A-Z
Decimal display section will change automatically as data bits shift, for example, it displayed as 00.000Ah, when the display exceeds 100Ah, the display becomes 000.00	
NCP(Negative over-current protection)	0~-300A
OCP(Forward over-current protection)	0~300A
OVP(Overvoltage Protection)	0~120V
LVP(Under-voltage protection)	0~120V
Time delay protection	0~10S
Power measurement plate	0.4W/S
Power consumption of the display panel	0.5W/S
Sample rate	5 Times/s
Communication distance	10m single set of open land
Display board size (mm)	79×43×52(mm)
Measurement plate size (mm)	81×50×59 (mm)

Instrument Description:

Display Description

- This meter is a split structure, consists of the display panel and measuring board. Figure 2-1 is description for display board interface. Two parts transfer data via the wireless module, and also can be connected with wire.

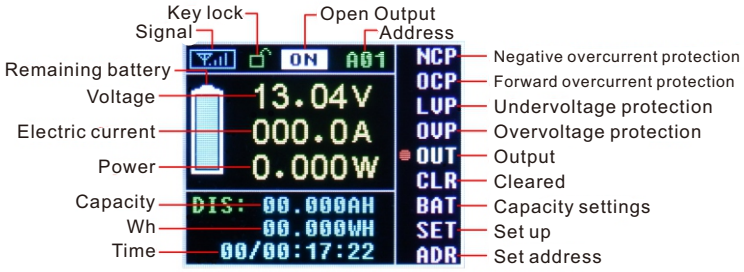

Figure 2-1

Wiring Method

Electricity supply wiring diagram

- The display panel can use standard 5V USB to supply electricity that you can separately insert the provided USB extension cable to USB port, and also can use the provided USB extension cable connected to the measuring module. The display panel can supply electricity via extended power supply port; power supply need to adopts direct current, and the voltage range is 10V-30V.

Wiring diagram and method of power supply itself

- To carry out the wiring is in accordance with wiring diagram shown in Figure 1. The positive pole of VIN + and load are connected to the power supply positive pole; the negative pole of power supply is connected to left large screw of shunt on the measuring board (small current can also be connected to VIN-), and the negative pole of load is connected to the right large screw of shunt, at the same time, put jumpers on "2W" place. At this time, Vext and Relay don't need to connect wires. Please note that the negative pole wiring is in contact with the brass of shunt as much as possible, which can reduce the error.

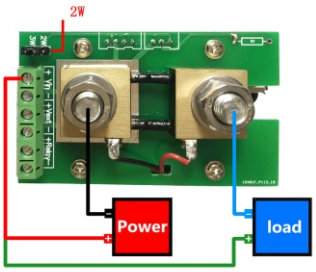

Figure1 Two-wire wiring diagram

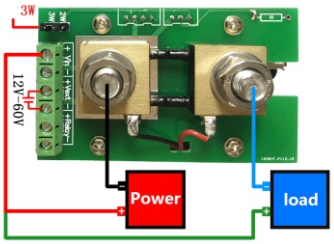

Figure 2 Three-wire relay wiring diagram is not connected

Wiring diagram and method of the external power supply which is not connected to the relay

- To carry out the wiring is in accordance with wiring diagram shown in Figure 2. The positive pole of VIN + terminal and the load are connected to the positive pole of power supply; negative pole of power supply is connected to left large screw of shunt on the measuring board, and negative pole of the load is connected to right large screw of the shunt, at the same time put jumpers on "3W" place. At this time, Vext needs to an external power supply to power up the meter, and the external power supply voltage is DC10V - 30V. Please note that wiring should be in accordance with the wiring schematic, do not connected reversely or wrong.

Wiring diagram and method of the external power supply which is connected to relay

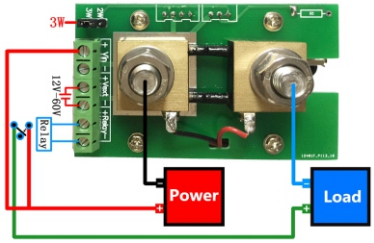

Figure 3 Three-wire connection Relay wiring diagram

- To carry out the wiring is in accordance with wiring diagram shown in Figure 3. The positive pole of power supply is connected to the measuring board V +, and the negative pole of power supply is connected to left large screw of shunt on the measuring board; the negative pole of load is connected to the right large screw of the shunt. Control terminal of the relay need to be connected between positive pole of load and positive pole of power supply. Vext needs an external power supply to power up the meter, and the external power supply voltage is DC10V - 30V. The "relay" place connects relay, and voltage of relay need to match with the voltage of external power supply.

  Description: Relay users need prepare their own equipment

How to Use

Wiring

- Select the appropriate wiring based on the measured voltage, and ensure that the input voltage is within the tolerance range of the instrument.

  NOTE:
  - Range of voltage when supply electricity by itself: 10V~120V, 2W jumper inserted in place.
  - Range of voltage when supply electricity by external power supply: 0~120V, 3W jumper inserted in place.

Communications

- Before operation, please carefully check if the wiring is correct. After power up, red LED on the measurement board is on; on the top left corner of the screen, signal indicator place will become“ ”,if the connection is unsuccessful, it shows“ ”, and will show“ ” under the condition of connecting wires.

Operation

- Display interface of this instrument shows English by default; if you want to change the language display, please check the operation in special functions)
- **OUT** open output: “OUT” is used to control the top of the screen “OFF/ON”, “OFF” refer to close output, “ON” open output. After voltmeter ammeter power up, the default state is “OFF”, the red cursor points to “OUT”, then shortly press “OK” button, “OFF” turns to “ON”; meanwhile, measurement function of AH, WH, time is enabled, and on the bottom of the screen, three data sets begin to change. During measuring process, as long as shortly press “OK” button, the measurement function will close and save the parameters automatically. In the case of three-wire connection to relay, shortly press “0K” button, you can control close and open of the relay.
- **NCP** negative over-current protection (Note: discharging means forward current, charging refers to negative current, automatic identification.): After power up, pressing up arrow key makes the red cursor pointing to “NCP”, then shortly press “OK” button, at this time, “NCP” backlight becomes white small square, and it will appear adjustable function area below the corresponding screen, namely entering setting interface; you can set numerical value by pressing up arrow and down arrow key, and then press “OK” button to save the settings after finishing setting (open method of entering each function’s setting interface are the same, so will not go into details below).
- **OCP** is forward over-current protection; OVP is overvoltage protection; LVP is under-voltage protection; operation is as stated above.
- **CLR** (zero-clear function of AH, WH and time): after the red cursor points to “CLR”, shortly press “OK” key, AH, WH and time becomes zero, “BAT” battery capacity setting will become zero and real-time capacity setting will become a hundred percent.
- **BAT** battery capacity setting and real-time capacity setting: after this function is turned on, press “OK” button to set the battery capacity and real-time capacity.
  - Setting the battery capacity: after turn on “BAT”, there is “Setting the battery capacity (range: 0~6500AH)” on the bottom of the screen, then you can set the capacity value by pressing up arrow and down arrow key, and then shortly press “OK” button to save after setting is finished.
  - Real-time capacity setting function: after turn on the “BAT”, shortly press “OK” button to switch to the real-time capacity setting function, then you can set real-time capacity percentage by pressing up arrow and down arrow key.
  - Situation under Charging Mode:

    After entering BAT, we set this battery capacity an appropriate value; assuming that the value is about 10AH, then set 80% capacity, and the remaining 80% capacity means that there are 20% capacity need to charged, and then press “OK” to exit. At this time, we can see CHG displayed 002.00A which means it still need 2AH. This value constantly decreases along with time’s increasing. It will display in real time how much electricity need to be charged, if it still can be charged when the charged electricity is over 2AH, the value will continue to decrease to a negative value, and the negative value indicates over-charge energy.
  - Situation under Discharge Mode:

    After entering BAT, we set battery capacity value an appropriate value, assuming that the value is about 10AH, then set 80% capacity, and the remaining 80% capacity means that 20% capacity have been discharged, and then press “OK” to exit. At this time, we can see DIS displayed 002.00AH which means it has discharged 2AH. This value constantly decreases along with time’s increasing. It will display in real time how much capacity has been discharged, if it still can discharge when the released capacity is more than 10AH, then again, this value will continue to increase.
- **SET** Restore to factory settings and set boot default state, time delay, relay level and off-screen time. When the red cursor points to “SET”, long press “OK” button and the function bar which display time on the bottom of screen will suddenly show –OK--, which means that it is successful to restore to factory settings. When red cursor points to “SET”, shortly press “OK” button and then the four functions will show up circularly, and you can change every function’s state by pressing up arrow and down arrow key.
  - Set boot default state: after entering the interface, you can change the default status to “ON” by pressing arrow key. After the voltmeter ammeter power on, measurement functions of AH (capacity), WH (watt), H (time) will be turned on automatically.
  - Time delay setting: it’s range is 0~10S, and this function is mainly to cater for the various protection functions, for example: set the delay time as 2 seconds, and open the “OVP” function, then set a protection voltage as 30V, when the voltage is higher than 30V in an instant and this high voltage lasts for less than 2s, the circuit will not be protected, if it is constantly more than 30V after the time is lasted over 2s, the protection function is activated. Meanwhile, “ON” backlight on the top of the screen turns red and displays “OVP”.
  - Relays level setting: when it is set to H, relay port outputs high level and the relay connects normally closed contact; when set to L, relay outputs low level and connects to normally open contacts.
  - Off-screen time setting: the range is 0~60s. Assuming that it is set to 10s, press “OK” to save and screen will automatically turn off after 10 seconds, and press any key, the screen can be re-opened.
- **ADR** addresses setting function and view function of different addresses measuring board.
  - Enter the settings interface under wired connection status, you can change the screen up and down keys above the address “A01” value, then the address can be set in the range of A01 ~ A99, at this time, if it is set to A02, and then long press the OK button, which means that the address of measurement board is set to A02.
  - Enter the “ADR” settings page in a wireless state, and then you can change the address “A01” by pressing arrow key, and press “OK” to view the parameters of different addresses measurement board, thus can achieve a function of viewing multiple measuring boards’ parameter.

Special Functions

After move the red cursor to “ADR” by pressing arrow key, long press the button, and you can call out special functions.

- **LNG** language function setting: move the red cursor to “LNG”, shortly press the OK button to enter the setting interface, then you can change the current status by pressing arrow key, “CHN” is on behalf of Chinese display, “ENG” represents English display, press “OK” button to save after setting.
- **FCH** channel setting function: this function must be operated under the condition of wired connection, otherwise invalid. When multiple machines are used at the same time, in order to avoid interference, you can use this function. After enter the function setting interface, you can set the parameter by pressing arrow key. The range is from A to Z, and then press “OK” button to save.
- **BRI** screen brightness setting: after entering the setting interface, you can adjust brightness of the screen by pressing arrow key. The screen brightness is divided into 15 grades, after setting, press “OK” button to save.
- When the red cursor points to “OUT” place, long press “OK” button to lock the screen, at this time, the lock symbol will begin to change, and then turns red. If you want to open after locking, long press the “OK” button to open.