Our multifunctional meter measures DC voltage, current, power levels, charge and discharge capacity, wattage, time and other physical quantities. It has protection against over current, as well as over and under voltage protection, and time-limited protection by setting the parameters. The meter is suitable for monitoring output voltage and current, battery charging and discharging.

**Product Features:**

- Data can be transmitted wirelessly between the meter and the device to be tested, which can reduce cumbersome wiring and avoid errors caused by losses in the wiring. The furthest communication distance is 10 meters. You can also use the standard USB cable for wired communication.
- Bi-directional Current Detector: when checking battery charging and discharging bidirectional currents can be detected without changing the wiring.
- Power-off Memory Function: when the power is off, the meter will remember various settings such as Ah, wattage and time if saved before powering off. Please note that you need to press the OK button to save these parameters before switching off the power.
- It can display voltage, current, power, charge and discharge capacity, wattage and time simultaneously; all information is clearly displayed.
- This meter has protection against over current, over and under voltage protection, time-limited protection (extended relay working time) and other functions.
- The Ah, wattage and time reset functions will not affect the next measurement.
- You can set the address and channel individually for each machine so they will not interfere with each other.
- When using multiple machines simultaneously, machines can be set individually to different channels to avoid mutual interference.
- There are functions for screen lock, timed closure, brightness adjustment and change of the display language.

**Technical Specifications:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage measurement range</td>
<td>0.01~120Volts</td>
</tr>
<tr>
<td>Voltage accuracy</td>
<td>±0.01Volts</td>
</tr>
<tr>
<td>Voltage error range</td>
<td>±1%+2digits</td>
</tr>
<tr>
<td>Current measurement range</td>
<td>0~100Amps</td>
</tr>
<tr>
<td>Current accuracy</td>
<td>±0.1A</td>
</tr>
<tr>
<td>Current error range</td>
<td>±2%+5digits</td>
</tr>
<tr>
<td>Power measurement range</td>
<td>0~200 KW</td>
</tr>
<tr>
<td>Capacity measurement range</td>
<td>0~2000 KAH</td>
</tr>
<tr>
<td>Wattage measurement range</td>
<td>0~4000 KWH</td>
</tr>
<tr>
<td>Time measurement range</td>
<td>0~999 days</td>
</tr>
<tr>
<td>Address range</td>
<td>A01~A99</td>
</tr>
<tr>
<td>Wireless channel setting range</td>
<td>A-Z</td>
</tr>
<tr>
<td>Decimal display will automatically change as the data value changes, for example at zero it displays as 00.000Ah, but when it reaches 100Ah, the display becomes 000.00</td>
<td></td>
</tr>
</tbody>
</table>

**Instrument Description:**

**Display Description**

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

![Figure 2-1](image)

**Wiring Method**

**Electricity supply wiring diagram**

- The display panel can use a standard 5V USB connection to supply power; either insert the provided USB extension cable to the USB power port, or use it connected to the USB port of measuring board (shown in Figure 2-2).

![Figure 2-2](image)

**Wiring diagram and power supply method**

- Check the wiring is in accordance with the wiring diagram shown in Figure 1. The positive terminal of VIN + and the load are connected to the power supply positive terminal; the negative terminal of the power supply is connected to the left large screw on the measuring board (small current can also be connected to VIN-), and the negative terminal of the load is connected to the right large screw, at the same time, put jumper at "2W" position. Note that the Vex1. Relay does not need to have wires connected. Please check that the negative terminal wiring is properly in contact with the brass screw, as this will reduce any error.

![Figure 1](image)  Two-wire wiring diagram

![Figure 2](image)  Three-wire wiring diagram relay is not connected

**Wiring diagram and external power supply method when not connected to the relay**

- Check the wiring is in accordance with wiring diagram shown in Figure 2. The positive terminal of VIN + and the load are connected to the positive terminal of the power supply; the negative terminal of the power supply is connected to the left large screw on the measuring board, and the negative terminal of the load is connected to the right large screw, at
the same time put jumper at “3W” position. Vext. needs to be connected to an external power supply to power the meter, and the external power supply voltage should be DC10V - 30V. Please note that the wiring should be in accordance with the wiring schematic, do not connect wrongly or get wires reversed.

Wiring diagram and external power supply method when connected to the relay

- Check the wiring in accordance with the wiring diagram shown in Figure 3. The positive terminal of the power supply is connected to the measuring board Vin+, and the negative terminal of the power supply is connected to the left large screw on the measuring board; the negative terminal of the load is connected to the right large screw. The control terminal of the relay needs to be connected between the positive terminal of the load and the positive terminal of the power supply. Vext. needs an external power supply to power the meter, the external power supply voltage should be DC10V - 30V. The “relay” place connects to the relay, and the voltage of the relay needs to match the voltage of the 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 supplying own electricity: 10V~120V, 2W jumper inserted in place.
    - Range of voltage when electricity from external power supply: 0~120V, 3W jumper inserted in place.

Communications

- Before operation, please carefully check that the wiring is correct. After the power switch is on, the red LED on the measurement board comes on; on the top left corner of the screen, the signal indicator will show “OK”, if the connection is unsuccessful, it shows “X”, and will show “X” when the wires are connected.

Operation

- The display of this instrument shows English by default; if you want to change the language display, please check how in the special functions menu.

- **OUT open output:** “OUT” is used to control the screen “OFF/ON”, “OFF” refers to closed output, “ON” refers to open output. After the voltmeter ammeter powers on, the default state is “OFF”, and the red cursor points to “OUT”, then give the “OK” button a short press, the “OFF” turns to “ON”; meanwhile, the measurement functions of AH, WH and time are enabled, and on the bottom of the screen, the three data displays begin to change. During the measuring process, when the “OK” button is pressed shortly, the measurement function will close and save the parameters automatically. In the case of a three-wire connection to a relay, a short press on the “OK” button will control the closing and opening of the relay.

- **NCP** negative over-current protection (Note: discharging means positive current, charging refers to negative current, it automatically detects this.) After powering up, pressing the up arrow key makes the red cursor point to “NCP”, then give a short press on the “OK” button, at this time the “NCP” backlight becomes a white small square, and an adjustable function area will appear below the corresponding screen, where the settings can be entered; when the “OK” button is pressed shortly, the circuit will not be protected, if it is constantly more than 30V for more than 2s, the protection function is activated. Meanwhile, the “OK” backlight on the top of the screen turns red and displays “OVP”.

- **RELAY** level setting: when it is set to H, the relay terminal outputs at high level and the relay connects to normally open the contact; when set to L, the relay outputs at low level and connects to normally closed the contact.

- Off-screen time setting: the range is 0~60s. Assuming that it is set to 10s, press “OK” to save and the screen will automatically turn off after 10 seconds; press any key and the screen will re-open.

- **ADR** is the address setting and view function for different addresses on the measuring board.

- Enter the settings interface in the wired connection status and you can change the address with the up and down keys above the address “A” and “B” value; then the address can be set in the range from A01 ~ A99, at this time, if it is set to A02, and the “OK” button is given a long press, it means that the address of the measurement board is set to A02.

- Enter the “ADR” settings page in the wireless state, and then you can change the address “A01” by pressing arrow key; press “OK” to view the parameters of the different addresses on the measurement board, thus you can view the multiple parameters of the measuring board.

Special Functions

- After moving the red cursor to “ADR” by pressing the arrow key, give a long press on the button to access the special functions.

- **LNG** language function setting: move the red cursor to “LNG”, give a short press on the button in this function time, turn on this function in order to avoid interference. After entering the function-setting interface, you can set the parameters by pressing the arrow key. The range is from A1 to A5, and then press the “OK” button to save.

- **FCH** channel setting function: this function should be carried out in wired connection state, or it will be invalid. When multiple machines are used at the same time, you can use this function in order to avoid interference. After entering the function-setting interface, you can set the parameters by pressing the arrow key. The range is from F1 to F15, and then press the “OK” button to save.

- **BRI** screen brightness setting: after entering the setting interface, you can adjust the brightness of the screen by pressing the arrow key. The brightness has 15 levels, after setting, press “OK” button to save.

- When the red cursor points to “OUT”, give the “OK” button a long press 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, give the “OK” button a long press to open.